SCIENCE AND ELEMENTARY TECHNOLOGY (SET)

PRIMARY THREE (P3)

TEACHER'S GUIDE

EXPERIMENTAL VERSION

Adapted edition

Kigali, 2022

FOREWORD

Dear teacher,

Rwanda Basic Education Board is honoured to present to you the Primary Three Science and Elementary Technology Teacher's Guide which serves as a guide to competence-based teaching and learning to ensure consistency and coherence in the learning of Science and Elementary Technology subject. The Rwandan educational philosophy is to ensure that learners achieve full potential at every level of education which will prepare them to be well integrated in society and exploit employment opportunities.

In line with efforts to improve the quality of education, the government of Rwanda emphasizes the importance of aligning teaching and learning materials with the syllabus to facilitate their learning process. Many factors influence what they learn, how well they learn and the competences they acquire. Those factors include the relevance of the specific content, thequality of teacher's pedagogical approaches, the assessment strategies and the instructional materials available. We paid special attention to the activities that facilitate the learning process in which learners can develop ideas and make new discoveries during concrete activities carried out individually or with peers. With the help of the teacher, learners will gain appropriate skills and be able to apply what they have learnt in real life situations. Hence, they will be able to develop certain values and attitudes allowing them to make a difference not only to their own life but also tothe nation.

This is in contrast to traditional learning theories which view learning mainly as a process of acquiring knowledge from the more knowledgeable person who is mostly the teacher. In competence-based curriculum, learning is considered as a process of active building and developing of knowledge and understanding, skills and values and attitude by the learners whereconcepts are mainly introduced by an activity or situation that helpsthe learners to construct knowledge, develop skills and acquire positive attitudes and values.

In addition, such active learning engages learners in doing things and thinking about the things they are doing and they are encouraged to bring their own real experiences and knowledge into the learning processes. Inview of this, your role is to:

- Plan your lessons and prepare appropriate teaching and learning materials.
- Organize group discussions for learners considering the importance of social constructivism suggesting that learning occurs more effectively

when the learners work collaboratively with more knowledgeable and experienced people.

- Engage learners through active learning methods such as inquiry methods, group discussions, research, investigative activities and group and individual work activities.
- Provide supervised opportunities for learners to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and cooperation.
- Support and facilitate the learning process by valuing learners' contributions in the class activities.
- Guide learners towards the harmonization of their findings.
- Encourage individual, peer and group evaluation of the work done in the classroom and use appropriate competence-based assessment approaches and methods.

To facilitate you in your teaching activities, the content of this teacher'sguide is self-explanatory so that you can easily use it. It is divided in 3parts:

The part 1: Explains the structure of this Teacher's guide and gives you the methodological guidance;

The part 2: Gives the sample lesson plans as reference for your lesson planning process;

The part 3: Provides the teaching guidance for each concept given in the Pupil's book.

Even though this teacher's guide contains the answers to all activities given in the student's book, you are requested to work through each question and activity before judging learner's findings.

I wish to sincerely appreciate all people who contributed towards the development, translation and adaptation of this teacher's guide, particularly REB staffwho organized the whole process from its inception. Special gratitude goes to translators, illustrators and designers who diligently worked to successful completion of this teacher's guide. Any comment or contribution would be welcome for the improvement of this teacher's guide for the next edition.

Dr. MBARUSHIMANA Nelson

Director General, REB

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Finally, my word of gratitude goes to the Rwanda Basic Education Board staff particularly those from the Curriculum, Teaching and Learning Resources Department (CTLRD) who were involved in the whole process of writing of this translated teacher's guide.

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Head of Curriculum, Teaching and Learning Resources Department

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PART I: GENERAL INTRODUCTION

1.0. About the Teacher's guide

This book is a Teacher's guide for Primary Three Science and Elementary Technology subject. It is designed to accompany Pupil's book and intends to help teachers in the implementation of competence basedcurriculum specifically Science and Elementary Technology syllabus.

As the name says, it is a guide that teachers can refer to when preparing their lessons. Teachers may prefer to adopt the guidance provided but they are also expected to be more creative and considertheir specific classes' contexts and prepare accordingly.

1.1. The structure of the guide

This section presents the overall structure, the unit and sub-heading structure to help teachers to understand the different sections of this guide and what they will find in each section.

Overall structure

The whole guide has three main parts as follows:

- **Part I: General Introduction**

  This part provides general guidance on how to develop the generic competences, how to integrate cross cutting issues, how to cater for students with special educational needs, active methods and techniques of teaching Science and Elementary Technology and guidance on assessment.

- **Part II: Sample lesson plan**

  This part provides a sample lesson plan, developed and designed to help the teacher develop their own lesson plans.

- **Part III: Unit development**

  This is the core part of the guide. Each unit is developed following the structure below:

Each unit is made of the following sections:

- **Unit title:** from the syllabus
- **Key unit competence**: from the syllabus

- **Prerequisites (knowledge, skills, attitudes and values)**

  This section indicates knowledge, skills and attitudes required for the success of the unit. The competence-based approach calls for connections between units/topics within a subject and interconnections between different subjects. The teacher will find an indication of those prerequisites and guidance on how to establish connections.

- **Cross-cutting issues to be addressed**

  This section suggests cross cutting issues that can be integrated depending on the unit content. It provides guidance on how to come up with the integration of the issue. Note that the issue indicated is a suggestion; teachers are free to take or add another cross-cutting issue taking into consideration the learning environment.

- **New key vocabularies**

  This is a list of key words which seems to be new to students. While teaching, the teacher will make sure that the meaning of those words are well understood by students. This will allow the mastery of concepts and content detailed within the unit.

- **List of lessons**

  This section presents in a table the list of suggested lessons, lesson objectives copied or adapted from the syllabus and duration for each lesson.

- **Teaching approach for each lesson**

In this section, each lesson is developed by describing how it will be conducted in classroom. Note that it is a proposal which leaves the room to the teacher of adapting the lesson to the context of the class and school environment. Each lesson development shows the lesson objectives, teaching and learning materials, teaching and learning activities, conclusion of the lesson and assessment of the lesson.

- **Summary of the unit**

This part provides the key points of content developed in the Pupil's book.

- **Additional information for the teacher**

  This part gives the teacher additional content and advanced knowledge on the unit to be taught. Remember that the teacher must have more knowledge and understanding beyond the content or topic in the syllabus and Pupil's book.

- **Answers to End of unit assessment**

  This part provides answers or guidance to questions of the end of unit assessment in the Pupil's book and suggests additional questions and related answers to assess the key unit competence.

- **Additional activities (remedial, consolidation and extended activities)**

  The purpose of these activities is to accommodate each learner (slow, average and gifted) based on end of unit assessment results.

Structure of each lesson

Each lesson is made of the following sections:

Lesson title 1: ……

- **Lesson objectives**
- **Teaching and learning materials**

  This section suggests the teaching aids or other resources needed in line with the activities to achieve the learning objectives. Teachers are encouraged to replace the suggested teaching aids by the available ones in their respective schools and based on learning environment.

- **Teaching and Learning activities**

  This section provides a short description of the methodology and any important aspect to consider. It provides also answers to learning activities with cross reference to Pupil's book.

- **Conclusion**
- **Exercises for assessment or application activities**

  This provides questions and Answers to exercises of assessment or application activities.

  Note: The guide ends with references.

1.2. Methodological guidance

1.2.1. Developing competences

Since 2015, Rwanda shifted from a knowledge based to a competence based curriculum for pre-primary, primary and general secondary education. For TTCs, it is in 2019 that the competence based curriculum was embraced. This called for changing the way of learning by shifting from teacher centered to a learner centered approach. Teachers are not only responsible for knowledge transfer but also for fostering pupil's learning achievement, and creating safe and supportive learning environment. It implies also that a learner has to demonstrate what he/she is able to do using the knowledge, skills, values and attitudes acquired in a given situation.

The competence-based curriculum employs an approach of teaching and learning based on discrete skills rather than dwelling on only knowledge or the cognitive domain of learning. It focuses on what learners can do rather

than what they know. Learners develop basic competences through specific subject unit competences with specific learning objectives broken down into knowledge, skills and attitudes. These competences are developed through learning activities disseminated in learner-centered rather than the traditional instructive approach. The learner is evaluated against set standards to achieve before moving on.

In addition to specific subject competences, learners also develop generic competences which are transferable throughout a range of learning areas and situations in life.

Below are examples of how generic competences can be developed in Science and Elementary Technology:

Generic competence	**Examples of activities that develop generic competences**
Critical thinking	These activities require learners to think critically about subject content. These may include: - Work in groups in different ways e.g. taking turns, listening, taking decisions, - Observe and analyse. Example: mark out areas in the school and get different groups to record living things like insects, people, animals, birds - Discuss and give scientific reasons of phenomenon commonly known like sun shining, raining, changing colours for plants, e.t.c. - Observe, record, interpret data recorded during experiments - Identify and use the applications of Science and Elementary Technology concepts to solve problems of life and society
Research and Problem solving	- Research using internet or books from the library - Design a project for making toys and materials
Innovation and creativity	- Create an experiment procedure to prove a point - Making practice in different units - Conduct experiments with objectives, methodology, observations, results, conclusions - Identify local problems and ways to resolve them

Cooperation, Personal and Interpersonal management and life skills	- Work in Pairs - Small group work - Large group work
Communication	- Telling a story related to the lesson of SET needed to be studied - Presenting ideas verbally or in writing - Reading a text related to SET
Lifelong learning	- Take initiative to update knowledge and skills with minimum external support - Cope with the evolution of knowledge and technology advances for personal fulfilment - Seek out acquaintances more knowledgeable in areas that need personal improvement and development - Exploit all opportunities available to improve knowledge and skills in SET.

1.2.2. Addressing cross cutting issues

Among the changes in the competence based curriculum is the integration of cross cutting issues as an integral part of the teaching/learning process as they relate to and must be considered within all subjects tobe appropriately addressed. The eight cross cutting issues identified inthe national curriculum framework are: genocide studies, environmentand sustainability, gender, Comprehensive Sexuality Education (CSE), Peace and Values Education, Financial Education, standardizationCulture and Inclusive Education.

Some cross cutting issues may seem specific to particular learning areas or subjects but the teacher needs to address all of them whenever an opportunity arises. In addition, student should always be given an opportunity during the learning process to address these cross cutting issues both within and out of the classroom so as to progressively develop related attitudes and values.

Below are examples on how crosscutting issues can be addressed in Science and Elementary Technology:

Cross-cutting issues	**Examples on how to integrate the cross-cutting issues**
Inclusive education	Involve all learners in all activities without any bias. Eg: Allow a learner with physical disability (using wheelchair) to take notes or lead the team during a task or an experiment.
Gender	Involve both girls and boys in all activities: No activity is reserved only to girls or boys. Teacher should ensure equal participation of both girls and boys during activities as well as during cleaning activities after practical tasks.
Peace and Values Education	During group activities, the teacher will encourage learners to help each other. During all teaching and learning activities, texts and examples used by the teacher should reflect promotion of peace and values among them at school and with others in society.
Standardization culture	- Some lessons involve carrying out practical tasks. Instructions should be clear for learners to always check if they are using appropriate materials. - Through making quality work/objects which are attractive to the community.
Environment and sustainability	- In order to avoid the environment pollution, before, during or after practical tasks, learners should avoid throwing wastes anywhere; special places or appropriate containers should be used. - During field visits, learners should be reminded of not damaging or destroying environment components or of not throwing wastes in environment.
Financial Education	- When making toys and objects for example, learners are encouraged to use well the resources by using the quantities that are just required. - Using materials, tools and materials in proper way for safeguarding their durability - Making different objects that can be sold

1.2.3. Attention to special educational needs specific to teaching and learning SET subject

In the classroom, pupils learn in different way depending to their learning pace, needs or any other special problem they might have. However, the teacher has the responsibility to know how to adopt his/her methodologies and approaches in order to meet the learning needs of each pupil in the classroom. Also teacher must understand that learners with special needs need to be taught differently or need some accommodations to enhance the learning environment. This will be done depending on the unit and the nature of the lesson.

In order to create a well-rounded learning atmosphere, teacher needs to:

- Remember that pupils learn in different ways so they have to offer a variety of activities (e.g. role-play, music and singing, word games and quizzes, and outdoor activities).
- Maintain an organized classroom and limits distraction. This will help learners with special needs to stay on track during lesson and follow instructions easily.
- Vary the pace of teaching to meet the needs of each learner. Some learners process information and learn more slowly than others.
- Break down instructions into smaller, manageable tasks. Learners with special needs often have difficulty understanding wordy or several instructions at once. It is better to use simple, concrete sentences in order to facilitate them understand what you are asking.
- Use clear consistent language to explain the meaning (and demonstrate or show pictures) if you introduce new words or concepts.
- Make full use of facial expressions, gestures and body language.
- Pair a learner who has a disability with a friend. Let them do things together and learn from each other. Make sure the friend is not over protective and does not do everything for the learner. Both learners will benefit from this strategy
- Use multi-sensory strategies. As all pupils learn in different ways, it is important to make every lesson as multi-sensory as possible. Pupils with learning disabilities might have difficulty in one area, while theymight excel in another. For example, use both visual and auditory cues.

Below are general strategies related to each main category of disabilities and how to deal with every situation that may arise in the classroom. However, the list is not exhaustive because each learner is unique with different needs and that should be handled differently.

Strategy to help learners with developmental impairment

The teacher should:

- Use simple words and sentences when giving instructions.
- Use real objects that the learner can feel and handle, rather than just working abstractly with pen and paper.
- Break a task down into small steps or learning objectives. The learner should start with an activity that s/he can do already before moving on to something that is more difficult.
- Gradually give the learner less help.
- Let the learner work in the same group with those without disability.

Strategy to help learners with visual impairment

The teacher should:

- Help learners to use their other senses (hearing, touch, smell and taste) to play and carry out activities that will promote their learning and development.
- Use simple, clear and consistent language.
- Use tactile objects to help explain a concept.
- If the learner has some sight problem, ask him/her what they can see. Get information from parents/caregivers on how the learner manages their remaining sight at home.
- Make sure the learner has a group of friends who are helpful and who allow them to be as independent as possible.
- Plan activities so that learners work in pairs or groups whenever possible.

Strategy to help with hearing impairment

The teacher should:

- Set strategies to help learners with hearing disabilities or communication difficulties
- Always get the learners' attention before you begin to speak.

- Encourage the learners to look at your face.
- Use gestures, body language and facial expressions.
- Use pictures and objects as much as possible.
- Ask the parents/caregivers to show you the signs they use at home for communication. Use the same signs and encourage other learners to also use them.
- Keep background noise to a minimum.

Strategies to help children with physical disabilities or mobility difficulties

The teacher should:

- Adapt activities so that learners who use wheelchairs or other mobility aids, or other learners who have difficulty moving, can participate.
- Ask parents/caregivers to assist with adapting furniture e.g. The height of a table may need to be changed to make it easier for a learner to reach it or fit their legs or wheelchair under.
- Encourage peer support. Friends can help friends.
- Get advice from parents or a health professional about assistive devices.

1.2.4. Guidance on assessment

Each unit in the Teacher's guide provides additional activities to help learners achieve the key unit competence. Results from assessment inform the teacher which learner needs remedial, consolidation or extension activities. These activities are designed to cater for the needs of all categories of learners; slow, average and gifted respectively.

Assessment is an integral part of teaching and learning process. The main purpose of assessment is for improvement. Assessment for learning/ **Continuous/ formative assessment** intends to improve learners' learning and Teacher's teaching whereas assessment of learning/summative assessment intends to improve the entire school's performance and education system in general.

Continuous/ formative assessment

It is an ongoing process that arises out of interaction during teaching and learning process. It includes lesson evaluation and end of sub unit assessment. This formative assessment plays a big role in teaching and learning process. The teacher should encourage individual, peer and group evaluation of the work

done in the classroom and uses appropriate competence-based assessment approaches and methods.

In Primary Three, formative assessment principle is applied through application activities that are planned in each lesson to ensure that lesson objectives are achieved before moving on. At the end of each unit, the end of unit assessment is formative when it is done to give information on the progress of learners and from there decide what adjustments need to be done. Assessment standards are taken into consideration when setting tasks.

Summative assessment

The assessment done at the end of the term, end of year, is considered as summative. The teacher, school and parents are informed on the achievement of educational objectives and think of improvement strategies. There is also end of level/ cycle assessment in form of national examinations.

1.2.5. Pupils' learning styles and strategies to conduct teaching and learning process

There are different teaching styles and techniques that should be catered for. The selection of teaching method should be done with the greatest care and some of the factors to be considered are: the uniqueness of subjects, the type of lessons, the particular learning objectives to be achieved, the allocated time to achieve the objective, available instructional materials, the physical/sitting arrangement of the classroom, individual learner's needs, abilities and learning styles.

There are mainly four different learning styles as explained below:

a) Active and reflective learners

Active learners tend to retain and understand information best by doing something active with it, discussing or applying it or explaining it to others. Reflective learners prefer to think about it quietly first.

b) Sensing and intuitive learners

Sensing learners tend to like learning facts while intuitive learners often prefer discovering possibilities and relationships. Sensors often like solving problems by well-established methods and dislike complications and surprises; intuitive learners like innovation and dislike repetition.

c) **Visual and verbal learners**

Visual learners remember best what they see (pictures, diagrams, flow charts, time lines, films, demonstrations, etc.); verbal learners get more out of words (written and spoken explanations).

d) **Sequential and global learners**

Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one. Global learners tend to learn in large jumps, absorbing material almost randomly without seeing connections, and then suddenly "getting it."

1.2.6. Teaching methods and techniques that promote the active learning

The different learning styles mentioned above can be catered for, if the teacher uses active learning whereby learners are really engaged in the learning process.

What is Active learning?

Active learning is a pedagogical approach that engages students in doing things and thinking about the things they are doing. In active learning, learners are encouraged to bring their own experience and knowledge into the learning process.

The role of the teacher in active learning

- The teacher engages learners through active learning methods such as inquiry methods, group discussions, research, investigative activities and group and individual work activities.
- He/she encourages individual, peer and group evaluation of the work done in the classroom and uses appropriate competence-based assessment approaches and methods.
- He provides supervised opportunities for learners to develop different competences by giving tasks which enhance critical thinking, problem solving, research, creativity and innovation, communication and cooperation.
- Teacher supports and facilitates the learning process by valuing learners' contributions in the class activities.

The role of learners in active learning

Learners are key in the active learning process. They are not empty vessels to fill but people with ideas, capacity and skills to build on for effective learning.

A learner engaged in active learning:

- Communicates and shares relevant information with other learners through presentations, discussions, group work and other learner-centred activities (role play, case studies, project work, research and investigation)
- Actively participates and takes responsibility for their own learning
- Develops knowledge and skills in active ways
- Carries out research/investigation by consulting print/online documents and resourceful people, and presents their findings
- Ensures the effective contribution of each group member in assigned tasks through clear explanation and arguments, critical thinking, responsibility and confidence in public speaking
- Draws conclusions based on the findings from the learning activities.

Some active techniques that can be used in Science and Elementary Technology

The teaching methods strongly emphasised in the competence Based Curriculum (CBC) are active methods. Below are some active techniques that apply in sciences:

A. Practical work/ experiments:

Many of the activities suggested in the Science and Elementary Technology curriculum as well as in the Pupil's book are practical work or experiments.

Practical work is vital in learning Science and Elementary Technology; this method gives the learner the opportunity to implement a series of activities and leads to the development of both cognitive and hands-on skills. The experiments and questions given should target the development of the following skills in learners: observation, recording and report writing, manipulation, measuring, planning and designing.

A practical lesson/Experiment is done in three main stages:

- **Preparation of practical lesson/ experiment:** Checking materials to ensure they are available and in a good state; try the task before the lesson; think of safety rules and give clear instructions.
- **Performance of practical lesson/ experiment:** Sitting or standing arrangement of learners; introduction of the experiment: aims and objectives; setting up the materials; performing the experiment; write and record the data.
- **Discussion:** Observations and interpreting data; make generalisations and assignment: writing out the experiment report and further practice and research.

In some cases, demonstration by the teacher is recommended when for example the experiment requires the use of sophisticated materials or very expensive materials or when safety is a major factor like dangerous experiments and it needs specific skills to be learnt first.

In case your school does not have enough science kit materials, experiments can be done in groups but make sure every learner participates.

B. Project work

Science and Elementary Technology teachers are encouraged to sample and prepare project works and engage their learners in, as many as possible. Learners in groups or individually, are engaged in a self-directed work for an extended period of time to investigate and respond to a complex question, problem, or challenge. Projects are based on real-world problems that capture learners' interest. This technique develops higher order thinking as the learners acquire and apply new knowledge in a problem-solving context.

C. Field trip

One of the main aims of teaching Science and Elementary Technology in Rwanda is to apply its knowledge for development. To achieve this aim we need to show to learners the relationship between classroom science lessons and applied sciences. This helps them see the link between science principles and technological applications.

To be successful, the field visit should be well prepared and well exploited after the visit:

Before the visit, the teacher and learners:

- agree on aims and objectives
- gather relevant information prior to the visit
- brainstorm on key questions and share responsibilities
- discuss materials needed and other logistical and administrative issues
- discuss and agree on accepted behaviours during the visit
- Visit the area before the trip if possible to get familiar with the place

After the visit

When learners come back from trip, the teacher should plan for follow-up. The follow-up should allow learners to share experiences and relate them to the prior science knowledge.

Main steps for a lesson in active learning approach

All the principles and characteristics of the active learning process highlighted above are reflected in steps of a lesson as displayed below. Generally, the lesson is divided into three main parts whereby each one is divided into smaller steps to make sure that learners are involved in the learning process. Below are those main parts and their small steps:

1) Introduction

Introduction is a part where the teacher makes connection between the current and previous lesson through appropriate technique. The teacher opensshort discussions to encourage learners to think about the previous learning experience and connect it with the current instructional objective. The teacher reviews the prior knowledge, skills and attitudes which have a link with the new concepts to create good foundation and logical sequencing.

2) Development of the new lesson

The development of a lesson that introduces a new concept will go through the following small steps: discovery activities, presentation of learners' findings, exploitation, synthesis/summary and exercises/application activities, explained below:

- **Discovery activity**

  Step 1

  - The teacher discusses convincingly with learners to take responsibility of their learning
  - He/she distributes the task/activity and gives instructions related to the task (working in groups, pairs, or individual to instigate collaborative learning, to discover what is to be learnt.)

  Step 2

  - The teacher allows the learners to work collaboratively on the task.
  - During this period the teacher refrains to intervene directly on the task.
  - He/she then monitors how the learners are progressing towards the task to be done and boost those who are still behind (but without communicating to them)

- **Presentation of learners' findings.**

  - In this section, the teacher invites representatives of groups to present the learners' productions/findings.
  - After three/four or an acceptable number of presentations, the teacher decides to engage the class into discussion about the learners' findings. .
  - **Discussion on the learners' findings.** The teacher asks the learners to evaluate the findings citing the ones that are correct, incomplete or false.
  - Then the teacher judges the logic of the learners' findings, corrects those which are false, completes those which are incomplete, and confirms those which are correct.

❖ **Institutionalization (summary/conclusion/ and examples)**

- The teacher summarises the learnt content and gives examples which illustrate the learnt content.

❖ **Exercises/Application activities**

- Exercises of applying processes and products/objects related to covered unit/sub-unit
- Exercises in real life contexts
- Teacher guides learners to make the connection of what they learnt to real life situations. At this level, the role of teacher is to monitor the fixation of process and product/object being learnt.

3) Assessment

In this step the teacher asks some questions to assess achievement of instructional objective. During assessment activity, learners work individually on the task/activity. The teacher avoids intervening directly. In fact, results from this assessment inform the teacher on next steps for the whole class and individuals. In some cases, the teacher can end with a homework assignment.

PART 2. SAMPLE LESSON PLAN

School term	Date	Subject	Grade	Unit	Lesson	Lesson duration	Number of pupils
1	(dd/mm/ yyyy)	SET	3	1	1/7	40 min	42

Number of pupils with special needs	Two pupils have physical disability(1 with arm handicap and 1 with leg handicap
Unit title	Toys, basic materials and teaching and learning aids
Key unit competence	To make toys, basic materials and teaching and learning materials
Lesson title	To make a chalkboard duster using pieces of cloths
Instructional objective	Using pieces of cloths, a sewing needle and scissors, at the end of this lesson, the learner will be able to make appropriately a chalk board duster.
Where the lesson takes place	In the classroom
Teaching and learning materials	Pictures showing how to make a chalkboard duster, thread, sewing needle, pieces of cloths...
References (Text books used)	Pupil's book, teacher's guide and SET syllabus for lower primary,

Parts of the Lesson and duration.	A summary of the teacher's activities and pupils' activities: To give pupils learning materials to make a chalkboard duster. To demonstrate to the pupils how to make a chalkboard duster while they are looking carefully. To put pupils in groups and watch their activities. Pupils imitate how to make the chalkboard duster.	Attitudes and values; and crosscutting issues (write the skill and its short explanation)

Introduction: 5min	**The teacher's activities:** - Ask questions about materials to be used when making a chalkboard duster and the importance of making them. Example: 1) What do you use to clean the chalkboard? 2) In which material is the chalkboard duster in your class made?	**The pupils' activities:** Answer the questions related to explanations about materials used in making chalkboard dusters and their importance. Possible answers: 1) To clean our chalkboard, we use water and dusters. 2) The dusters are made of pieces of cloths, with thread and sponge. ..	**Attitude and values** Paying attention when learning Socialization with classmates Love for work well done Speak with respect and precision/ focus - To have a creative mind while making the chalkboard duster. - Eagerness to learn new things. - Problem solving while making a duster. - Job creation if he/she can produce chalkboard dusters for sale. 2. Crosscutting issues - Gender: boys and girls work together without gender discrimination. - Inclusive education: pupils with disability work with other pupils helping each other. - Take care of environment while cleaning their place of study and taking good care of their learning materials. - Peace when they are learning with fellow pupils peacefully without bothering one another. - The good practice of using materials of good standard when they are making chalkboard duster. The duster shouldn't scratch the chalkboard or contaminate people.

Body of the lesson:30 min	Activity 1. - Take pieces of cloths, a sewing needle, thread and scissors. Model for pupils how to make chalkboard duster. Explain all the steps followed when making the chalkboard duster. Activity 2. - Put pupils in groups; give them the materials they need to make a chalkboard duster (pieces of cloths, sewing needles, thread and scissors). - Display for pupils the pictures which show the steps that should be taken in order to make a chalkboard duster with pieces of cloths. - Explain to the pupils the activity they going to carry out and the way to do it.	Activity 1. To observe how the teacher makes the chalkboard. Ask questions about the steps they didn't understand well. Activity 2. -Take the materials from the teacher. - Observe the pictures which show different actions that lead to making a chalkboard. - Make a chalkboard following what they observed from the teacher and also the steps described in the pictures. - To present the chalkboard duster they produced in their groups, to listen to the remarks given by the teacher and also	

	- To guide in the activity of presenting the dusters which were made in groups. To tell each group where they went wrong and how to correct the step which was not well performed. - To congratulate the groups which produced good dusters and give advice to those who didn't perform well. Activity 3. To tell pupils to collect the remaining materials they brought for the activity of making chalkboard dusters (pieces of cloths, sewing needles, thread and scissors) - To ask each pupil to take the required materials for making chalkboard dusters from those they brought (pieces of cloths, sewing needles, thread and scissors)	**Activity 3.** - To have the materials they brought from home for the activity of making chalkboard dusters. - To produce a chalkboard duster following the steps performed by the teacher and even compare their dusters made in their groups with those made by other groups. Take their teacher's advice and make a duster. - To show to the class the chalkboard duster he/she produced. - To clean the chalkboard with the duster he/she made him/herself, starting from up downwards. - Listen and implement the teacher's advice to them.	

	- To ask each pupil to make a duster based on what they observed from the pictures, how this was done in groups and the advice their groups were given. - To ask each pupil to show his/ her duster he/she made, to check each duster and give advice to the pupil who did it. To ask pupils to clean the chalkboard with the dusters they made. To tell them also that for them to clean well the chalkboard, they should start from up downwards. - To praise those who produced good chalk dusters and encourage those who didn't do well to continue improving them at home.	- To identify the steps followed when making a chalkboard duster. - To write on the chalkboard the step he/she says. -To rub the step he/she has written on the chalkboard. - If he/she didn't do well her/his duster, he/she must continue working on it at home and bring it to the class before the start of the lesson. - In case he/she produced well the duster, he/ she goes home with the task of making another duster which is even better than the first one.	

Lesson conclusion: Summary: 5 min. Evaluation: 5min.	-To ask pupils to state the steps involved in making a chalkboard duster. - To tell each pupil to write on the chalkboard the step he/she mentions. - To ask the pupils to rub the steps they have written on the chalkboard using the chalkboard duster they have produced. - To ask those who didn't manage to produce their dusters to do it at home and come with their dusters to show them to you before starting the next lesson. - Regarding those who finished to make dusters, they should be asked to make better dusters at home and bring them at school as well.		
Teacher self-evaluation	Basing on what pupils did and the evaluation I did, I will check whether the lesson was successful or not. I will take strategies according to the way the lesson was conducted. I will make sure I praise my pupils so that they may be encouraged to perform well and enjoy learning.		

PART 3: UNITS DEVELOPMENT

Unit

01

TOYS, BASIC MATERIALS, TEACHING AND LEARNING AIDS

1.1. Key Unit Competence

To be able to make various toys, materials and teaching and learning aids

1.2. Prerequisites

Pupils will learn this unit better if they know to make toys like an aeroplane in paper, sticks and plastics.

1.3. Introductory activity.

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *What materials are you able to make using threads or banana fibers?*
  2. *What toy can you make using wires?*
– In pairs, Ask learners to read the scenario of the introductory activity on page 1 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions:
  1. *What should the boy use to clear the chalkboard? Do you know how to make it?*
  2. *What would you advise pupils to fight against sore throat?*
  3. *Suggest the procedures will you follow to make a sweater.*
– Guide the learners to discover and suggest some of the toys or materials and teaching aids are able to make.

- **Answers to the introductory activity.**

1. The boy should use a duster to clean the chalkboard.

   The duster can be made by following the following steps:

   - Put a piece of thread in the needle.
   - Fold a piece of cloth into two and sew it to make a small bag.
   - Fill the bag with small pieces of cloth.
   - Sew the top part of the bag.
   - Clean the chalk board you made.

2. To wear scarf when it is very cold.
3. Refer to the activity 1 of sub-unit 1.2 on page 3 in pupil's book.

1.4. Cross-cutting issues to be addressed

- **Gender Equality:** When working together to produce toys, basic materials and teaching learning materials, without gender discrimination.
- **Inclusive education**: When learners with a disability or other special needs learn with other learners without any disability and both face no difficulty. Give Learners that are slow in their studies specific activities prepared in this book. Know about the physically disabled learners and their inabilities prepare specific teaching/learning aid materials and activities you'd give to even the rest. Give Learners gifted to understand and work quickly activities that drive them to research on the lesson prepared in this book.
- **Environment and sustainability**: When learners know how to clean their learning place and look for teaching learning aid materials without destroying the environment.
- **Peace and values education**: When a learner works in harmony with the others without disturbing them.
- **Financial education:** When taking care of their learning aids and toys as well as producing durable materials.
- **Standardisation culture:** When using standard materials that cannot hurt or harm learners and attain long lasting original materials. These are; New or not so old threads, clean fresh cloths, dry and clean banana leaves, clean fresh grass, needles with no rust, clean water, safe scissors that won't hurt the learner's hands, a new razor-blade, pure harmless sand soil without any objects that might hurt the learner, etc.

1.5. Key new vocabularies

Trimming: To cut the head linings on the mat when completely knit.

Setting foundation/base: When the knitting is starting.

Tools: What a person needs when doing a certain activity.

Materials: Things one needs to start doing a certain activity.

Heated clay: Fine stamped on clay, ready to be used.

Knot knitting: A style of knitting with knots.

One-way knitting: A style like a bracelet going around one way.

Clay quarry/excavation: Source of clay.

Interspace: The space between the lines of a mat.

Papyrus: A type of plant, prepared and used when smoothening a structure being moulded.

Thread linings: Hanging thread like linings on a cloth usually on scarfs.

Sandy soil: Type of soil mixed in clay to harden it.

1.6. List of lessons

#	Lesson title	Learning objectives	Number of periods (15)
1	Making a duster for the chalkboard using a piece of cloth	- Explain how to make a duster using a piece of cloth	2
2	Knitting a neck scarf with single loop	- Explain how to make a neck scarf with single loop - Knit a neck scarf	2
3	Knitting a neck scarf with multiple	- Explain how to make a neck scarf with multiple loop - Knit a neck scarf	1
4	Weaving a mat with grass	- Explain how to make a mat using grass. – Weave a mat	2
5	Weaving a bag with grass	– Explain how to make a school bag using grass – Weave a school bag	1
6	Making square in paper and boxes	- Explain how to make square in paper and boxes - Make square in paper and boxes	1
7	Making rectangle in paper and boxes	- Explain how to make rectangle in paper and boxes - Make rectangle in paper and boxes	1
8	Making triangle in paper and boxes	- Explain how to make triangle in paper and boxes - Make triangle in paper and boxes	1
9	Moulding pots in clay	- Explain how to mould a pot in clay. - Mould a pot	1

10	Making cars in wires	- Explain how to make a car in wires. - Make a car in wires	2
11	End unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	1

Teaching approach for each lesson

Lesson 1: **Making a chalkboard duster in cloths**

a) Objectives:

At the end of this lesson, learners should be able to:

- Explain how to make a duster using a piece of cloth
- Knit a chalk board duster

b) Teaching and learning materials:

Cloths, threads, sewing needles, scissors, razor blade.

c) Teaching and learning activities:

- Prepare enough teaching and learning aid materials to help every learner know how to make a duster for the blackboard in clothes.
- At the beginning of the lesson, request learners to **o**bserve pictures showing how to make a chalkboard duster and allow discussion.
- Give learners instructions to follow when observing, imitating and making the duster.
- Go around to see each learner's work.
- Give time each learner to correct where they didn't do well.
- Guide learners in the activity of presenting and showing their work.
- Be around those that need special help in their studies, and give them activities according to their abilities

Example, Learners with physical disabilities but able to use the mouth or legs…

- Give equal opportunities to both male and female learners on different activities helping learners understand more.
- Guide learners with a difficulty in making the duster as asked, so that each learner is able to work well and fast.

d) Conclusion of the lesson:

Ask learners questions summarizing all they learnt.

***Example*:** How do you make a chalkboard duster with clothes?

When making a duster with pieces of cloths follow these steps:

- Put the thread in the needle
- Fold a piece of cloth into two.
- Sew and make a pocket.
- Squeeze small pieces of cloths inside the pocket.
- Sewing the top of the pocket and you have a chalkboard duster.
- Cleaning the chalkboard.

e) Assessment

Give learners activities in the Pupil's book about making a chalkboard duster

Answers to the question of exercise in the Pupil's Book

When making a chalkboard duster you follow the following steps;

- Put the thread in the needle
- Fold a piece of cloth into two.
- Sew and make a pocket.
- Squeeze small pieces of cloths inside the pocket.
- Sewing the top of the pocket and you have a chalkboard duster.
- Cleaning the chalkboard.

Lesson 2.a: Knitting a neck scarf with multiple loops

a) Objectives

At the end of this lesson, learners should be able to:

- Explain how to make a neck scarf with multiple loops
- Knit a neck scarf with multiple loops

***b)* Teaching and learning materials:**

Thread, knitting needles, crochet hook, scissors and a razor blade.

***c)* Teaching and learning activities:**

- Prepare enough teaching and learning aid materials to help learners know how to knit a neck scarf
- At the beginning of the lesson, request learners to observe pictures showing how to knit a neck scarf, and discussions
- Give learners instructions to follow when observing, imitating and knitting neck scarfs.
- Show the learners how to start knitting.
- Go around to see each learner's work, check if they're not mixing threads.
- Give time each learner to correct where they didn't do well.
- Guide learners in the activity of presenting and showing their production.
- Be around those that need special aid in their studies, and give them activities according to their abilities

For example, knitting on a knitting bed using the mouth to knit

- Give equal opportunities to both male and female learners on various activities that help learners understand and knit
- Guide learners with difficulty knitting the neck scarf as asked so that way, each pupil will be able to knit well and fast

***d)* Conclusion:**

Ask learners questions summarizing all they learnt

Example: How do you knit a neck scarf?

When knitting a neck scarf, you follow these steps:

– Make knots repeated in a line

– Make no more than 50 loops.

- Knit inside outside.
- Finishing
- Fold, making or cutting linings.
- Measure and straighten the linings.
- Wear the neck scarf, you knitted.

e) **Assessment**

Give the learners activities in the Pupil's book about knitting a neck scarf.

Guidance to the question of activity in the Pupil's Book:

Learners will need knitting needles, thread, scissors and crochet hook.

Lesson 2.b: Knitting a neck scarf in single loop lines

a. Objectives

At the end of this lesson, learners should be able to:

- Explain how to make a neck scarf with single loop lines
- Knit a neck scarf with single loop lines

b) Teaching and learning materials:

Thread, knitting needles, crochet hook, scissors and a razor blade.

c) Teaching and learning activities:

- Prepare enough teaching and learning aid materials to help learners know how to knit a neck scarf in single line loops
- At the beginning of the lesson, request learners to observe pictures showing how to knit a neck scarf, and discussions
- Ask the learners to observe pictures showing how to knit a single loop line neck scarf
- Give learners instructions to follow when observing, imitating and knitting neck scarfs.
- Show the learners how to start knitting a single loop as they try to imitate.
- Learners imitate how to knit a single loop neck scarf following steps shown in the pictures and by the teacher.
- Move around to see each learners' work, check if they're not mixing threads.

- Give time for each learner to correct where they didn't do well.
- Guide learners in the activity of presenting and showing their production.
- Be around those that need special help in their studies, and give them activities according to their abilities

For example, knitting on a knitting bed using the mouth or toes to knit

- Give equal chances to both male and female learners on different activities that help them to understand and knit
- Guide learners with difficulty knitting the neck scarf as asked so that way, each pupil will be able to knit well and fast

d) Conclusion:

Ask learners questions summarizing all they learnt

Example: How do you knit a neck scarf in single one-way loop?

When knitting a neck scarf, you follow these steps:

- Make knots repeated in a line
- Make no more than 50 loops.
- Knit inside outside.
- Finishing
- Fold, making or cutting linings.
- Measure and straighten the linings.
- Wear the neck scarf, you knitted.

e) Assessment

Give the learners activities in the Pupil's book about knitting a neck scarf in single loop.

Guidance to the question of the activity in the Pupil's Book:

1. Knitting in multiple loops and in single line loops

2. **a**. Protection in cold weather **b**. Helps them earn money.

Lesson 3.a: Weaving a mat

a. Objectives:

At the end of this lesson, learners should be able to:

- Explain how to weave a mat
- Weave a mat

b) Teaching and learning materials

Grass, dry banana fibre, water, a small mat, a carpet, strings, a knife and razor blade

c) Teaching and learning activities

- Prepare enough teaching and learning materials to help learners know how to weave mats using grass.
- At the beginning of the lesson, request learners to observe pictures showing how to weave a mat and allow discussion.
- Give learners instructions to follow when observing, imitating and weaving mats using grass
- Show learners how to weave a mat and make sure they imitate.
- Give each pupil time to work individually
- Guide learners in the activity of presenting and showing their work
- Be around those that need special help in their studies, and give them activities according to their abilities

For example: weaving using their mouth, one hand, toes…

- Give equal chances to both female and male learners on different activities which enrich the lesson, more so all can weave.
- Guide learners with difficulty weaving mats as asked so that each pupil will be able to weave well and fast by him/herself

d) Conclusion:

Ask the learners questions summarizing all they learnt

Example: How do you weave a mat?

Weaving a mat is done like this;

- Start weaving the first row of the mat.
- Make sure that rows are straight from the start to the top.
- Cut the edges when the mat is complete.

e) Assessment:

Give the learners activities in the Pupil's book about weaving using grass/ banana fibre.

Lesson 3.b: **To weave a bag with dry banana fibres**

a) Objectives:

At the end of this lesson, learners should be able to:

- Explain how to weave a bag with banana fibres/grass
- Weave a bag

b) Teaching and learning materials:

Grass, dry banana fibre, sisal, water, a short mat, a carpet, strings, a knife, scissors, a razor blade

c) **Teaching and learning activities**:

- Prepare enough teaching and learning materials to help learners know how to weave bags in grass.
- At the beginning of the lesson, request learners to observe pictures showing how to weave a bag and allow discussion
- Give learners instructions to follow when observing, imitating and weaving bags in grass
- Show learners how to weave a bag in fibre/grass and make sure they imitate.
- Give each pupil time to work individually
- Guide learners in the activity of presenting and showing their work
- Be around those that need special help in their studies, and give them activities according to their abilities

For example: like weaving using their mouth, one hand, toes…

- Give equal rights to both female and male learners on different activities which enhance the lesson more so all can weave.
- Guide learners with difficulty in weaving bags as asked so that each pupil is able to weave well and fast by him/herself

d) Conclusion :

Ask learners questions summarizing all they have learnt

Example: How do you weave a bag using banana fibres/grass?

Weaving a bag in dry banana fibres, is done like this;

- Prepare enough materials to be used
- Start like how you did when weaving a mat
- Fold it in two parts
- Knit across its rectangular form
- Remove unnecessary parts
- Weave its handle and put it on

e) Assessment:

Give the learners activities in the Pupil's book about weaving bags using dry banana fibres or grass.

Lesson 4: Making shapes and figures using paper and boxes

a) Objectives:

At the end of this lesson, learners should be able to:

Explain how to make shapes

Make shapes using different materials

b) Teaching and learning materials:

Big pieces of paper, cardboards, scissors, razor blade, and a ruler.

c) Teaching and learning activities:

- Prepare enough teaching and learning materials to help learners learn how to make shapes using paper or cardboards.
- At the beginning of the lesson, ask learners to give names of shapes they know and how they are drawn. Then, request them to observe pictures in the book showing how to make shapes in paper and boxes.
- Demonstrate to learners how to make shapes using paper or cardboard.
- Give learners instructions to follow when observing, imitating and making shapes using paper or cardboard.
- Give time to each pupil to correct what they didn't do well.
- Be around those that need special help in their studies, and give them activities according to their abilities; for example, if they can use their feet or toes.

- Guide learners in the activity of presenting and showing their work to others.
- Give equal chances to both female and male learners on different activities which enrich the lesson more.
- Guide learners with a difficulty in making shapes so that each pupil is able to make shapes well and fast.

d) Conclusion:

Ask learners questions summarizing all they have learnt.

Example: How do you make shapes using paper and cardboard?

Making shapes in paper and cardboard is done like this;

- Place a paper or cardboard on a table.
- Draw a square, rectangle, or triangle using a ruler and set square
- Cut well and neatly the shape you have drawn out of the paper or cardboard.

e) Assessment

Give learners activities in the Pupil's book about making shapes in paper and cardboard.

Answers to the exercises in the Pupil's Book.

- Draw a straight angle using a set square and measure 10 cm of each line that makes this angle.
- Draw another straight angle parallel to the first one.
- Check whether the square has 4 equal sizes and 4 right angles.
- Cut out the square I have drawn using scissors.

Lesson 5.a: Modelling pots using clay

a) Objectives:

At the end of this lesson, learners should be able to:

- Explain how to model a pot
- Model a pot

Observe pictures showing how they model a pot, and discuss.

b) Teaching and learning materials:

Clay, sand clay, powder from a piece of broken pot, and water

c) Teaching and learning activities:

- Prepare enough teaching and learning materials to help learners know how to model a pot.
- At the beginning of the lesson, ask among the learners who had already modelled pots with mud or clay and discuss.
- Demonstrate to the learners how to model a pot in so that learners can imitate.
- Guide learners working in groups (preparing clay) and then individually as they model.
- Give each pupil time to work individually.
- Be around those that need special help in their studies, and give them activities according to their abilities.
- Give learners instructions to follow when observing, and imitating how to model a pot.
- Guide learners in the activity of presenting and showing their work to the others.
- Give equal chances to both female and male learners on different activities to enrich the lesson.
- Guide learners with difficulty in modelling pots as asked so that each pupil is able to make a pot well and fast. .

d) Conclusion:

Ask learners questions summarizing all they learnt in this lesson;

Example: How do you model a pot?

Modelling a pot is done like this;

- Get clay from quarry (source)
- Stepping on (stamping) it with the feet.
- Stepping on the piece of the broken pot and make a base or bottom
- Make the swelling/big part of the pot.
- Rub the pot until it is smooth.
- Fix the neck or opening and smoothen it as well
- Dry for five days at least.
- Burn and prepare the pot to be used.

e) Assessment

Give learners activities in the Pupil's book about modelling a pot.

Answers to the exercises in the Pupil's book.

Clay, water, a piece of a pot, sand clay, a scraper, powder from a ground piece of a pot

Lesson 5.b: Making a toy car using wires

a) Objectives:

At the end of this lesson, learners should be able to:

- Explain how to make toy car in wires
- Make a toy car using wires

b) Teaching and learning materials:

Wire, rubber rope, bottle tops, old slippers, razor blade, scissors, screwdriver

c) Teaching and learning activities:

- Prepare enough teaching and learning materials to help learners know how to make a toy car in wires.
- At the beginning of the lesson, request learners to observe pictures showing how to make a toy car in wires and then discuss.
- Demonstrate to learners how to make a toy car using wires as learners observe and imitate
- Give learners instructions to follow when observing, imitating and when making the toy car
- Give each pupil time to work individually
- Be around those that need special help in their studies, and give them activities according to their abilities
- Guide learners in the activity of presenting and showing their work to others.
- Give equal chances to both female and male learners on different activities to enrich the lesson.
- Guide learners with difficulty in making toy cars as asked so that every pupil is able to make a toy car well and fast.

d) Conclusion

Ask learners questions summarizing all they learnt in the lesson.

Example: How do you make a toy car?

Making a toy car with wires is done like this;

To assemble the following parts of the toy car:

a. The bottom parts
b. The top part
c. The doors
d. The part which allows the tires to turn
e. To make tires and fix them on the car
f. To make steering wheel and fix it on the car
g. To push the car which complete.

e) Assessment.

Give learners activities in the Pupil's book about making a toy car.

Answers to the exercises in the Pupil's Book

Learners will need materials like wires, rubber ropes, razor blade, tires, bottle tops, bamboo sticks

1.7. Unit Summary

A summary of content developed in this unit:

- To make a chalkboard duster
- To knit a neck scarf using multiple loops and single line loops.
- To weave a mat with grass
- To weave a bag with dry banana fibre
- To make shapes like triangle, square and rectangle using paper or cardboard
- To mould a pot with clay
- To make a toy car using wires

1.8. Additional information for the teacher

- Making a chalkboard duster, knitting neck scarfs and sweaters with thread, weaving a bag from dry banana (leaves) and a mat and cutting shapes out of paper or cardboard. You should be able to carry out these activities well and quickly.
- Sewing and knitting with fingers, if you do not know how to do this, you can then seek help from people that know from a neighbouring school.

- Know all materials needed to make toys, tools and teaching and learning materials which are in the lesson.
- Guide learners in all the activities and specifically take care of each pupil without leaving anyone behind.
- Give clear explanations and demonstrations to learners so that they can know how to make toys, teaching and learning aid materials and other objects.
- Prepare and use well different teaching and learning materials, so that learners understand more about the lesson
- Master the teaching of SET lessons using the competence-based approach.
- Use crosscutting issues related to the lesson when teaching how to knit, weave, sew, mould pots, make toys and teaching/learning aid materials which learners will work on.

1.9. Answers to the End of Unit Assessment 1

(Questions are in the end unit assessment, in the Pupil's book).

1-4. Answers will vary depending on each pupil's ability to:

- Knit what he/she has been asked following the instructions given.
- Make shapes he/she has been asked and follow the instructions given
- Make a toy car he/she has been asked to make following the instructions given
- Mould a pot he/she has been assigned to do following the instructions given.

5.

Activity	**Materials**
Weaving a mat	Grass, sisal, knife, water, stick
Weaving a bag	Dry banana fibre, water, knife
Making shapes	Scissors, paper, cardboard, colour pencils, table, ruler and square
Moulding a pot	Clay, sand clay, a scraper, water, clay powder from a piece of a pot
Making a toy car	Wire, slippers, rubber strips, bamboo sticks

6.

a. **Neck scarf:** it protects people from the cold

b. **Mat:** people sit on it when doing different activities or put crops on it to dry.

c. **Bag/bag**: learners use it to carry school materials or take it to the shops/ market to carry goods.

d. **Pot**: used to fetch water or to keep water; store crops or seeds, to brew sorghum beer, keep beer such as banana beer.

e. Chalkboard duster: we clean the chalkboard or chairs/desks with it.

7. Answers vary based on what individual learners chose to do:

1.10. Additional activities

1.10.1. Remedial activities

1. List materials used to make a mat

Answer: Grass, sisal, knife, water, stick

2. List materials used to make a car Toy

Answer: Wire, slippers, rubber strips, bamboo sticks

1.10.2. Consolidation activities

1. How do you make a chalkboard duster using pieces of cloth?

Answer: When making a duster with pieces of cloths follow these steps:

- Put the thread in the needle
- Fold a piece of cloth into two.
- Sew and make a pocket.
- Squeeze small pieces of cloths inside the pocket.
- Sewing the top of the pocket and you have a chalkboard duster.

Cleaning the chalkboard

1.10.3. Extended activities

1: Explain how you can weave a straw bag?

Answer:

Weaving a straw bag, one follow these steps:

– Fold it in two parts

– You begin weaving across its circle form

– You remove unnecessary parts

– Then you weave its handle and put it on

Unit

02 USING A TELEPHONE

2.1. Key competence

To be able to use a mobile phone in calling, sending short messages and ICT in general

2.2. Prerequisites

Basic ICT appliances such as telephone, television, radio and computer.

2.3. Introductory activity

- **Guidance for introductory activity**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *Have you seen a telephone? Do you know how to use it?*
  2. *List at least two things the telephone can help you in.*
– In pairs, ask learners to read the scenario of the introductory activity on page 20 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions related to the activity:
  1. *What advise could you give to the people of Kabagari village?*
  2. *What would you do to help these people?*
  3. *Suggest other uses of the telephone.*
– Guide the learners to discover and suggest some of the toys or materials and teaching aids are able to make.

- **Answers to the introductory activity.**

1. To use the telephone to by the electricity without spending time to go a long distance**.**
2. To teach them how to use the telephone to by the electricity, and other services in which it can help us.
3. It can help us to transmit information at long distance in a short time, get the update information using internet, etc.

2.4. Cross-cutting issues to be addressed

- ***Gender:*** When boys and girls share a telephone given by the teacher, they should carry out the following activities: call one another, to send to and receive short messages, save telephone numbers, record sounds and take photos, even use the telephone in ICT.
- ***Inclusive Education:*** *W*hen learners with disability or other special needs study with other learners without facing any sort of problem.
- ***Environment sustainability:*** *W*hen learners do not throw used airtime cards anywhere and also rub them, with simply anything.
- ***Peace and values:*** Learners working together peacefully in cooperation. Not disturbing one another, but rather just pass each other the telephone and have good discussions.
- ***Financial education:*** When learners use the telephone carefully, trying not to carelessly drop it down or into water or using it for illegal activities.
- ***Standardisation culture:*** When learners use the telephone, this should not harm their health or contaminate air. This happens when telephone is old, does not have a cover, those which get too hot easily...
- ***Comprehensive Sexuality Education:*** *W*hen a learner uses a telephone well, avoiding wasting time watching unhealthy, shameful things on different social media.
- ***Genocide studies:*** *B*y not using the phone reading texts and sayings that belittle and deny the 1994 genocide against the Tutsi or advocate extremism.

2.5. Key new vocabularies

1. Telephone: It is an electronic equipment used for calling, answering calls, receiving and sending messages recording and taking sounds or pictures

2. Keypad: It is a part of a telephone which has different keys; numeric keys, letter keys and special keys which help in writing texts.

3. MTN Mobile money: It is a means of sending money using ICT. This is used by the telecommunication company MTN.

4. Tigo cash: It is a means of sending money using ICT. It is used by the telecommunication company Tigo.

5. Airtel money: It is a means of sending money using ICT. It is used by the telecommunication company Airtel

2.6. List of lessons

#	Lesson title	Learning objectives	Number of periods (15)
1	Main Parts of a telephone keypad	– Identify parts of a telephone keypad. – Differentiate the main parts of atelephone's keypad.	1
2	Writing and sending a short message	–Explain how to write and send messages on a telephone. – Write short messages on a telephoneand send them.	2
3	Receiving and responding to a short message	- Explain how to receive(read) andrespond to a short message. - Answer a short message received on atelephone.	2
4	Saving a telephone number	– Explain how to save a number. – Check on the phone the saved number.	1
5	Making a telephone call	– Explain how call a number. – Check on the phone the calls received and calls you made, those who answered and those who did not answer.	1
6	Recording sounds	- Explain how to record sounds. - Record sounds byfollowing the steps involved.	1

7	Taking pictures	- Explain how to take a picture - Take a picture and check where it is saved.	1
8	Checking balance and sending money on MTN mobile money	- Explain how to check balance and send money on MTN mobile money. - Check balance and send money on MTN mobile money.	1
9	Checking balance and sending money on TIGO cash	- Explain how to check balance and send money on TIGO cash. - Check balance and send money on TIGO cash.	1
10	Buying electricity using MTN mobile money or TIGO cash	- Explain how to buy electricity using MTN mobile money or TIGO cash. - Buy electricity using MTN mobile money or TIGO cash.	2
11	Paying TV subscription using MTN mobile money or TIGO cash	- Explain how to Pay TV subscription using MTN mobile money or TIGO cash. - Pay TV subscription using MTN mobile money or TIGO cash.	1
12	End unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	1

2.7. Teaching approach for each lesson

Lesson 1. **Main parts of a telephone keypad**

a) Objectives:

At the end of this lesson, learners should be able to:

- Identify parts of a telephone keypad
- Differentiate the main parts of a telephone's keypad

b) Teaching and learning materials:

Telephone, pictures of different types of telephones.

c) Teaching and learning and activities:

- Prepare sufficient teaching and learning materials to help learners write and send short messages using a telephone.
- At the beginning of the lesson, observe pictures showing how to write and send short messages using a telephone.
- Guide learners when working on activities or group work to identify parts making a keypad of a telephone.
- Give the learners instructions to follow when observing, identifying, and explaining what they have discovered on a telephone's keypad
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that, they can be completely sure and confident when sharing.

d) Conclusion:

Ask learners questions summarizing all they learnt;

Example: What are the main parts of a telephone keypad?

A telephone keypad is made of the following parts:

- Numeric keys that help a person write telephone numbers, money, numerical passwords, the hour and minutes and also dates.
- Letter keys: the keypad of a telephone has 26 letters which help to write messages, names and other things.
- Particular special keys are of many types. There is one for calling, to end the call, punctuation, one for checking money, for loading airtime. Writing uppercase or capital letter keys and lower-case or small letter keys.

e) Assessment;

Give learners activities in the Pupil's book about explaining the parts of a telephone's and the role of each part.

Answers to questions in the Pupil's Book

a. QWERT

b. 12345

c. →, ←|, @, #, +,

Lesson 2. Writing and sending short messages on a telephone

a) Objectives:

At the end of this lesson, learners should be able to:

- Explain how to write and send messages on a telephone.
- Write short messages on a telephone and send them.

b) Teaching and learning materials:

Telephone, pictures of different types of telephones, and more…

c) Teaching and learning activities:

- Prepare enough teaching and learning materials to help each pupil learn how to write and send short messages on the phone.
- At the beginning of the lesson, observe different pictures showing how to write and send short messages on a telephone.

- Check whether the learners are following instructions on observing the pictures showing how to write and send short messages on a telephone.
- Give e each pupil time to write and send short messages on the telephone and check if all the learners do it well.
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that they can be completely sure and confident when sharing.

d) Conclusion :

Ask learners questions summarizing all they learnt;

Example: How do you write and send short messages on a telephone?

When writing and sending a short message, do the following:

- Press the **"menu"** button and choose the icon which shows short message.
- Write the short message you want to send using the keypad.
- Write the telephone number of the person you want to write to.
- Press on the **"send"** button.

e) Assessment:

Give the learners activities indicated in the Pupil's book on how to write and send short messages on a telephone.

Answers to the exercises in the Pupil's Book

Answers are different because every learner writes a different particular message.

Lesson 3: Receiving and replying to a short message on a telephone

a) Objectives:

At the end of this lesson, learners should be able to:

- Explain how to receive(read) and respond to a short message
- Answer a short message received on a telephone

b) Teaching and learning materials:

Telephone, pictures showing different types of telephones...

c) Teaching and learning activities:

- Prepare enough teaching and learning materials to help each pupil explain well how to receive and respond to a short message on the phone.
- At the beginning of the lesson, observe pictures showing how to receive and respond to a short message on a telephone.
- Guide the learners when observing the pictures showing how to receive and answer to short messages using a telephone.
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that they can be completely sure and confident when sharing.

d) Conclusion of the lesson:

Ask learners questions summarizing all they learnt;

Example: How do you read a received short message?

To read a received short message, you do the following:

- Press on the icon SMS/ messages.
- Open and read the message.

To respond to a short message, you do the following:

- Press on the message, so that it opens.
- Press below that message, then write your response.
- Read the message you are going to send and check for any errors.
- Press on "**send**" button.

e) Assessment:

Give the learners activities from the Pupil's book on explaining how to receive and respond to a short message.

Lesson 4: **Saving a telephone number and making a call**

a) **Objectives*:***

At the end of this lesson, learners should be able to:

- Explain how to save and call a number.
- Check on the phone the calls received and calls you made, those who answered and those who did not answer.

b) Teaching and learning materials:

A telephone and pictures of a telephone showing how to save and call a telephone number

c) Revision exercises

How to write, send, receive and reply a short message

d) Teaching and learning activities

- Prepare enough teaching and learning materials to help learners know how to save and call a number using a telephone.
- Give learners instructions to follow when observing, researching and explaining what they have observed on pictures showing how to save and call a number using a telephone.
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that, they can be completely sure and confident when sharing.

e) Conclusion :

Ask learners questions summarizing all they learnt,

Example: How do you save a number in a telephone?

To save a number in the telephone, do as follows:

- Press on the icon with a head of a person.
- Write the name and number in their respective spaces.
- Choose where to save the number e.g. SIM card, Google, telephone...
- Press "**save/done"**

When you call a number, which is not saved in the phone, you do as follow:

- Go to the icon/key for calling
- Write down the number you want to call
- Choose the SIM card you want to use
- Press on call button/key
- Put it on the ear, to hear if it's on.
- Press on the **"end"** button key if you are done talking to the person you called.

When calling a number which is saved in your phone, do as follows:

- Press on the **menu** button of your phone,
- Go to contacts

- Choose the number to call'
- Press on the number
- Choose the SIM card you want to use
- Place the phone on the ear and wait for the person to speak.
- To end the call, you press the **end** button.

f) Assessment:

Give learners activities indicated in the Pupil's book on how to save and call a number using a telephone.

Lesson 5: Taking pictures and recording sounds using a telephone

a) Objectives:

At the end of this lesson, learners should be able to:

- Explain how to record sounds and pictures
- Record sounds and pictures by following the steps involved

b) Teaching and learning aid materials:

A telephone and pictures of a telephone showing how to record sounds and pictures using a telephone.

c) Revision activities

Practising the steps to save and call a number.

Example: -Explain briefly how you can save the number of a friend in your phone.

- Give the steps followed when you want to call a number which you already have in your phone.
- State the steps taken when you want to call a number which is not in your phone.

d) Teaching and learning activities

- Prepare enough teaching and learning materials helping learners to record sounds and pictures using a telephone.
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that, they can be completely sure and confident when sharing.

e) Conclusion:

Ask learners questions summarizing all they have learnt.

Example: How do you take a picture using a telephone?

To take a photograph using a telephone, do as follows:

- Press on **menu** button
- Press on the icon for **Camera**
- Make sure you capture very well the person/object you want to photograph
- Press on the button for taking pictures.
- Look at the photograph you have taken.

To record sound using a telephone, follow these steps:

- Press on **menu** button
- Press on the icon for **sound recorder**
- Put the telephone near the source of the sound you want to record
- To end the recording activity, you press on the same button you used to record the sound.
- Listen to the sound you have recorded from where it is saved.

f) Assessment:

Give learners activities in the Pupil's book explaining how to record sound and pictures using a telephone.

Lesson 6: Transactions on a mobile phone

a) **Objectives*:***

At the end of this lesson, learners should be able to:

- Explain how to send or receive money using a telephone
- Send or receive money by following the required steps when using a telephone

b) Teaching and learning materials

A telephone and pictures of a telephone showing all the steps followed when sending and receiving money, checking balance, buying electricity.

c) Revision exercises

Practicing how to record sound and pictures

d) Teaching and learning activities

- Prepare enough teaching and learning materials to help learners know how to use a telephone with ICT for sending and receiving money, buying electricity, buying television subscription...
- Give learners instructions to follow when observing pictures that help them understand and discover how to use a telephone with ICT.
- Put learners in groups and guide them in activities of sending money and buying different items using a telephone.
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that they can be completely sure and confident when sharing.

e) Conclusion:

Ask learners questions summarizing all they learnt.

Example: How do you use a telephone with ICT like sending and receiving money and buying electricity?

This is done like this:

- Sending and receiving money with "MTN mobile money"
- Checking balance with "MTN mobile money"
- Sending and receiving money with "Tigo cash"
- Checking balance with "Tigo cash"
- Sending and receiving money with "Airtel money"
- Checking balance with "Airtel money"
- Buying electricity with "MTN mobile money"
- Buying StarTimes subscription using "MTN mobile money".

f) Assessment:

Give learners activities in the Pupil's book about explaining how to use a telephone with ICT when sending and receiving money, buying electricity, television subscription using all telecommunication network companies in Rwanda.

2.8. Unit Summary

– Main Parts of a telephone keypad

– Writing, sending and receiving a short message using a telephone

– Saving and calling a telephone number

– Recording sounds and pictures on a telephone

– The telephone with ICT

2.9. Additional knowledge for teacher

Before teaching how to use a telephone know this:

- Look for the types of telephones commonly used in the school area and use them in the lesson.
- When teaching this unit borrow telephones from colleagues and other school workers so that each pupil will have a telephone to use during the lesson.
- When teaching how to send money or buy things using a telephone, make sure ask 10,000 RFW from the school administration to use for at least 10 phones. With one phone per group of at least 5 learners.
- When teaching, calling phone numeric keys buy "**Vuga**" packs of little money to work for at least 10 phones.
- Look for enough SIM cards for all the network companies in Rwanda.

2.10. Answers to the End of Unit Assessment 2

1. Picture 1: The icon is about writing numeric keys or changing from numeric keys to letter keys.

Picture 2: This is the part the telephone's keypad with numeric keys.

2. a. ***** and **#:** to check balance, to recharge airtime from airtime card, to send money or buy things using all the network companies in Rwanda.

- Ending calls
- To space words when writing short messages.

3. a) The parts of letter keys: helps to write words.

b. The parts of special keys help to organize text messages, calling, responding to calls and end calls.

c) The part of numeric keys: for writing numbers

d) To remove the key. To unlock and remove the lock-key.

To check all the programs that are in the phone, letter keys, numeric keys and special keys.

(* # to see or to load money, to write a number of another country, leave space

To check the number:

- Press on **menu**
- Press on the icon for saving a number
- Press on the button for registering a new number
- To send money
- To buy things like electricity, television subscription
- To know bank services
- To check balance

The telephone helps to call, to save money, to send SMS, in business etc.

The answers can differ because different learners may have different answers.

(Open - ended questions)

- Go to call button
- Write the number you want to call
- Choose the SIM card you want to use
- Press the call button
- Listen to see if the number is connected
- End call if you have finished the conversation.

b.

- Press menu button
- Go to where numbers are saved/registered
- Choose the number you want to call
- Press on that number
- Choose the SIM card you want to use
- Press the call button
- List to see if it is connected

c.

- Call *182#
- Choose the language, write 2, and choose English then send
- Choose, buy, write 2, send
- Choose TV subscription, write 1 and send
- Put the number opposite Azam TV, send
- Write the amount of money you want to pay, send
- Write the number of your decoder, send
- Write password and send

- Read the message informing you the outcome
- Press the call button
- Call *500#
- Choose the language, write 2, and choose English then send
- Choose, buy, write 2, send
- Choose TV subscription, write 1 and send
- Put the number opposite Star Times, send
- Write the amount of money you want to pay, send
- Write the number of your decoder, send
- Write your password and send
- Read the message informing you the outcome
- Press end button

To buy different food items, to buy water, to pay taxes etc.

11.

- Press on menu button
- Press on record icon
- Press on the red button to start recording sounds
- Press on menu button
- Press on camera button
- Check whether you captured well what you wanted to capture
- Press on the button to photograph

12-13. The answers will be different since every learner will have an individual choice.

2.11. Additional activities

2.10.1. Remedial activities

1) Show, on a telephone, the key used to make a call

Answer: 

2) Show, on a telephone, the key used to end a call

Answer: 

3) What are the numeric keys found on a telephone keypad?

Answer: The numeric keys are: 1, 2, 3, 4, 5, 6, 7, 8, 9 and 0

4) What are the three parts of a keypad?

Answer: the parts for letter keys, numeric keys and special keys

2.10.2. Consolidation activities

1) Use a telephone to check the airtime balance

Answer: Pupils will do this by dialling *131# and following the steps (prompts) which are also available in the Pupil's Book

2) Use a telephone to check the MTN Mobile money balance

Answer: Pupils will do this by dialling *182# and following the steps (prompts) which are also available in the Pupil's Book

3) Use a telephone and do the following activities:

a) Take a photograph of yourself (selfie)

b) Record your voice

c) Register your teacher's telephone number

d) Call your parents

e) Send money to your parents through MTN mobile money

Answer: The steps for doing what is requested in question 3 are available in the Pupil's book

2.10.3. Extended activities

1) Write one short message and send it to your mother, father and your brother at the same time

Answer: Pupils write the text message using the steps in the Pupil's book. Pupils will make sure not to write three separate messages that they send separately.

2) Send your teacher's telephone number to your parents

Answer: Pupils will attach the telephone number by touching the "**Attach**" icon 📎 and send it. The process to attach a telephone number may vary depending on the telephone model.

3) What is the importance of the password used with MTN Mobile Money, Tigo cash or Airtel Money?

Answer: The importance of a password is to prevent unauthorized people to access to the MTN Mobile Money, Tigo Cash or Airtel money accounts. These people may still money on those accounts.

4) Ask your parent to change the password of his/her Tigo cash account

5) Send your parents' money from their bank account to their telephone

6) Use a telephone to pay the water bill

Answers: For question 1, 2 and 3 pupils will follow the prompts (steps) provided as they do what is requeste

Unit

03 COMPUTER MY FRIEND

3.1. Key unit competence

To be able perform Typing turtle and Write activity, take picture, record videos and sound by using Record activity

3.2. Prerequisites

Learners already know the following:

- Telephone keypad
- Writing short messages using a telephone
- Taking pictures using a telephone
- Recording sound using a telephone

3.3. Introductory activity

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *Have you seen a computer?*
  2. *How is it look like?*
– In pairs, Ask learners to read the scenario of the introductory activity on page 1 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions:
  1. *Hwy John and martha decided to leave their school?*
  2. *Suggest what an XO laptop can be used to do.*
– Guide the learners to discover and suggest some of the uses of XO Laptop.

- **Answers to the introductory activity.**

1. They decided to leave their school because they have finished primary two but they don't know how to open a program of XO laptop.
2. XO laptop can be used to perform Typing turtle and Write activity, take picture, videos and record sound by using Record activity.

3.4. Crosscutting issues to be addressed

- ***Gender*:** This is achieved when pupils carry out activities without gender discrimination.
- ***Inclusive Education*:** This is achieved when pupils with disabilities participate in the lesson equally as other learners and that pupils don't victimize their peers with disabilities
- ***Environment sustainability*:** This is achieved when pupils clean their place of study or properly keep their learning materials.
- ***Peace and values*:** When pupils work together peacefully and cooperate.
- ***Financial education*:** When pupils use responsibly, computers when writing, recording sound, taking pictures and videos.
- ***Standardisation culture*:** When pupils use computers in a way that does not harm their health or pollute the environment.
- ***Comprehensive Sexuality Education*:** When pupils use computers wisely without wasting time watching inappropriate images and videos from different social media.
- ***Genocide studies:*** By not using the computer, reading texts and sayings belittling or denying the 1994 genocide against the Tutsi or promoting extremism.

3.5. Key new vocabularies

Format text: To change the font of a text in order to give it a beautiful look.

Typing Turtle: A writing program which is found in an XO laptop. This program is used to learn how to type properly using all fingers of the two hands.

Write Activity: A writing program which is found in an XO laptop.

Record Activity: Is a sound and picture recording program in an XO laptop.

3.6. List of lessons

SN	Lessons	Objectives	Number of periods:11
1	Keyboard and manipulation of an XO laptop	- List the parts of an XO laptop keyboard - Use the keyboard of an XO laptop in writing numbers, letters and special characters.	2
2	Typing Turtle program	- State different steps to go through in order to open the Typing Turtle Program. - Open the Typing Turtle Program	2
3	Write Activity program	- Identify the parts of "Text Editor" in Write Activity program of an XO laptop - Explain the procedure to change the font size, font colour, font type and to underline a word. - Identify the main special keys of the keyboard of an XO laptop that are used in "Write Activity" Program. - Differentiate the **toolbar** part from the **text area** part of the **Write Activity** program - Change the font size, font colour, font type of text and to underline words.	2

4	Parts of XO laptop for Record activity	- Explain how to record sound, take pictures and videos. - Identify the parts of a computer which are used to record sound, take pictures and videos. - Record sound, take pictures and videos using XO Laptop.	2
5	Rename and delete photo, sound and picture	- Explain how to name, delete photos, audio and videos. - Name, delete photos, audio and videos.	2
6	End unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	1

3.7. Teaching approach for each lesson

Lesson 1: **Keyboard of an XO laptop**

a) Objective:

At the end of this lesson, learners should be able to:

- List the parts of an XO laptop keyboard
- Use the keyboard of an XO laptop in writing numbers, letters and special characters.

b) Teaching and learning materials

An XO laptop and images showing different parts of an XO keyboard.

c) Revision

The parts of a telephone keypad

d) Teaching and learning activities

- Prepare enough teaching and learning aid materials to help pupils know the parts of an XO laptop keyboard.
- Give learners clear instructions to follow when observing the keyboard of an XO laptop.

- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that, they can be completely sure and confident when sharing.

e) Conclusion

Ask learners questions summarizing what they have learnt.

Example: What are the parts of an XO laptop keyboard?

The keyboard of an XO laptop has three parts. These are:

- The part for numeric keys which helps to write numbers while using an XO laptop.
- The part for letter keys which helps to write different letters and words using an XO laptop.
- The part for special keys which help in text editing and also insert different symbols while using an XO laptop.

f) Assessment

Give pupils activities in the Pupil's book on the role of an XO laptop.

Lesson 2: Typing Turtle program

a) Objective:

At the end of this lesson, learners should be able to:

- State different steps to follow in order to open the Typing Turtle Program.
- Open the Typing Turtle Program

b) Teaching and learning materials:

XO laptop and images showing the different parts of an XO laptop.

c) Revision

Revision is done on the parts of an XO laptop keyboard

d) Teaching and learning activities

- Prepare enough teaching and learning materials to help pupils learn how to use **Typing Turtle** program.
- Give learners instructions to follow as they observe and explain how to open the Typing Turtle Program
- Guide learners as they present and explain their group works and the discoveries in their research
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that, they can be completely sure and confident when explaining the proper ways to use Typing Turtle program.

e) Conclusion.

Ask learners questions summarizing what they have learnt.

Example: How to open the "Typing Turtle"?

To open Typing Turtle program of an XO laptop, follow these steps:

- Go to Home View
- Click on the **Typing Turtle** icon
- Click on "**Start Lesson**"
- Start writing.

f) Assessment

Give learners activities in the Pupil's book on how to use the Typing Turtle Program.

Lesson 3: Write Activity program

a) Objective:

At the end of this lesson, learners should be able to:

- Identify the parts of "Text Editor" in Write Activity program of an XO laptop
- Explain the procedure to change the font size, font colour, font type and to underline a word.
- Identify the main special keys of the keyboard of an XO laptop that are used in "Write Activity" Program.

- Differentiate the **toolbar** part from the **text area** part of the **Write Activity** program
- Change the font size, font colour, font type of text and underline words.

b) Teaching and learning materials:

XO laptops and images showing the parts for a keyboard of an XO laptop.

c) Revision

The revision will be done on Typing Turtle Activity program

d) Teaching and learning activities:

- Prepare enough teaching and learning aid materials to help pupils use the **Write Activity** Program.
- Give the learners instructions to follow when observing how to open the Write Activity" program.
- Give individual time to share their ideas or comment on other pupils' ideas.
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that, they can be completely sure and confident when sharing.

e) Conclusion

Ask learners questions summarizing what they have learnt.

***Example*:** What are the parts of the Write Activity program found in an XO laptop?

The following are the parts of Write Activity Program on XO computer:

- Activity names.
- Share with.
- Keep.
- Stop
- Menu with activity, edit, table, format and view.

The tools for formatting text in Write Activity are:

- Bold: **B**
- Italic: *I*
- Underling: **U**
- Coloured: ●
- Tool for changing the size: 12

When using the keyboard, what you type can be seen on the **screen** of the computer.

If you want to type a capital letter, press and hold the **Shift Key** and then type the letter you want.

f) Assessment:

Give pupils activities in the pupil's book on formatting texts using XO computer.

Lesson 4: Record Activity program

a) **Objectives*:***

At the end of this lesson, learners should be able to:

- Explain how to record sound, take pictures and videos.
- Identify the parts of a computer which are used to record sound, take pictures and videos.
- Record sounds, pictures and videos using XO Laptop.
- Explain how to name or delete photos, audio and videos.
- Name or delete photos, audio and videos.

b) **Teaching and learning materials**

XO computer, images showing the parts of an XO laptop keyboard

c) **Revision**

The revision is done on the Write Activity Program.

d) **Teaching and learning activities**

- Provide enough teaching and learning aid materials to help pupils know how the **Record Activity** Program is used
- Give learners instructions to follow when observing how to record sound and take pictures using an XO laptop
- Give to individual time to each pupil to share their ideas or comment others' ideas on how they can delete the pictures taken and recorded sound.
- Complete learner's ideas and explanations if given unfinished or unclear and help them formulate using the right expressions, so that, they can be completely sure and confident when sharing.

e) **Conclusion:**

Ask pupils questions summarizing what they have learnt.

Example: How do you take a picture or record sounds using an XO laptop?

1. To take a photograph with XO computer you do as follow:
   - Click on "**Record Activity**" from **Home View**.
   - Click on **Photo**.
   - Check whether you can see well what you want to capture.
   - Click on **Photo** icon.
2. To record sound using an XO laptop you do as follow:
   - Open the **Record Activity** program
   - Click on **Audio**
   - Click on the button for sound recording
   - Click again on the record button to stop recording.
3. To record sound and take pictures with XO computer you do as follow:
   - Click on the button for record sound and pictures (the video icon)
   - Check from the screen if what you want to record is properly fitted in your screen
   - Record the video.
   - Check the time it takes to record and stop recording when you are done.
   - See what you have recorded.

f) **Assessment**

Give learners activities in the Pupil's book on recording sounds, taking pictures and recording video using an XO laptop.

3.8. Unit Summary

The whole unit focused on the following topics:

- The parts of the keyboard of an XO laptop: the part of numeric keys, the part of letter keys and the part of special keys.
- The Typing Turtle program
- The Write Activity" Program
- The Record Activity" Program

3.9. Additional knowledge for teacher

- It is advised to use an XO laptop and do more practice before delivering lessons on using an XO laptop
- Before delivering a lesson, make sure all the computers are in good working conditions.
- Before starting your lesson, check if there are no programs or any other thing in the computer that can distract the learners. If any, delete it before learners use those computers.

3.10. Answers to the End of Unit Assessment 3

1) A story which is well written using **Write Activity** program,
2) A video of a pupil who is singing the National Anthem "Rwanda Nziza"
3) A folder in the computer which has no photo taken on that day.
4) Words and letters that are well written using Typing Turtle program
5) A video showing how each pupil recorded his/her sounds and took her/ his pictures.
6) Let each pupil save his/her song in the XO laptop.

3.11. Additional activities

3.10.1. Remedial activities

1) Show the keys on an XO laptop that are used :
   a) To increase or decrease screen light
   b) To delete text
2) Use an XO laptop to write the following sentence: My parents love me.
   a. Write in Italic b. Write in bold

Answers: For question 1 and 2 pupils will check for answers in the pupil's book in the appropriate sections of the book

3.10.2. Consolidation activities

1) Take your XO laptop and do the following activities:

   a. Take a photograph of yourself (selfie)

   b. Record your voice

   c. Name your recorded items

   d. Save them in your computer

Answers: Pupils will do what is shown in this question by using the steps shown in the pupil's book.

3.10.3 Extended activities

1) **Using an XO laptop do the following**

   a) Open the Write Activity

   b) Write this text by making sure you use the right hand to type letters:

      I must read books to be intelligent. When I am at home I must do my homework and help my parents in different tasks.

Unit

04 WATER

4.1. Key unit competence

To be able to prepare and keep drinking water safe.

4.2. Prerequisites

- Sources of water and the importance of water in life.
- Home utensils and how to keep them clean.

4.3. Introductory activity

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *What do you use water for?*
  2. *Where can you find water?*
– In pairs, Ask learners to read the scenario of the introductory activity on page 82 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions:
  1. *Where does James' family store the water?*
  2. *Why does James' family go to hospital many times?*
  3. *What should this family do to fight against worms and diarrhea?*
– Guide the learners to discover how water can be cleaned and stored.

- **Answers to the introductory activity.**

1. In a dam.
2. James' family goes to hospital many times because it suffers from worms and diarrhea caused by dirty water it drinks.
3. The family should clean water and store it in a clean container.

4.4. Crosscutting issues to be addressed

- **Gender:** When boys and girls work together in the following activities: to boil water and to disinfect water using chemicals e.g. Sur'eau.
- **Environment sustainability:** When pupils avoid dirt in their place of work as they boil or disinfect drinking water.
- **Peace and values:** When pupils work together peacefully and cooperate.
- **Financial education:** When pupils keep responsibly the materials they use to boil or disinfect water for drinking.
- **Standardization culture:** When pupils check whether Sur'aeu they use to disinfect water is not expired.

4.5. Key new vocabularies

Muddy water: Water mixed with mud.

Clean water: Water with no colour or taste.

Stained water: Water mixed with many small particles of dirt.

To boil: To heat up to 100^{O} C

Decant: To let water settle in a way that it gets separated from dirt which sits at the bottom of the container.

"**Sur' eau":** A water disinfectant

Filter: A tool used to clean water by separating solid particles from water.

4.6. List of lessons

#	Lesson title	Learning objectives	Number of periods: 8
1	Preparation of drinking water by Boiling and filtering	- To explain different ways of boiling water. - To explain different ways of safe keeping drinking water. - Boil/prepare water for drinking - Clean containers in which water is kept.	2
2	Preparation of drinking water by using disinfectant (Sur'Eau)	- Explain ways of cleaning water using chemicals/disinfectants ("Sur'eau"). - Add chemicals to drinking water.	1
3	Store drinking water	- Explain ways of storing drinking water.	2
4	Proper handling of drinking water	- Clean containers in which water is kept. - Clean well the utensils intended forkeeping water	2
5	End unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	1

4.7. Teaching approach for each lesson

Lesson 1: Boiling, filtering and safe keeping of drinkingwater

a) Objectives

At the end of this lesson, learners should be able to:

- Explain different ways of boiling water.
- Explain different ways of keeping drinking water safe.
- Boil/prepare water for drinking
- Clean containers in which water is kept

b) Teaching and learning materials

Materials to be used when boiling water such as a saucepan, filter, charcoal stove, small jerry can, water.

c) Revision exercise

Ask learners questions on different types of water and ways of avoiding the negative effects of drinking unsafe water.

d) Teaching and Learning activities

- Prepare enough teaching materials which help the pupils to know the steps to take when boiling water.
- Guide pupils when they are boiling water in groups to prevent accidents which can be caused by hot water, charcoal...
- Give instructions for the pupils to follow when they are observing pictures showing how to boil drinking water, to search further and explain what they have found out.
- Add information to the pupils' ideas if their explanations are not complete or not clear. Help them to correct themselves and use proper language, speaking with confidence and focus.

Example: Explain the characteristics of boiled water

- Help those with difficulties in boiling drinking water as asked so that every learner is able to do it well and fast

e) Conclusion

Ask the learners questions about what they have studied.

Example: How do you boil drinking water?

Before boiling water for drinking, I need to first wash my hands, clean/ prepare the utensils (the sauce pan, a filter, charcoal stove, a smalljerry can), then boil the water following the steps shown in pictures.

f) Assessment

Ask the learners to do the activities in the Pupil's Book about boiling drinking water.

Lesson 2: Preparing safe drinking water using chemicals/ disinfectant "Sur'eau"

a) Objectives

At the end of this lesson, learners should be able to:

- Explain ways of cleaning water using chemicals/disinfectants.
- Explain ways of storing drinking water.
- Add chemicals to drinking water.
- Clean well the utensils to be used for keeping water

b) Teaching and learning materials

Materials used to prepare drinking water such as a small jerry can, a strainer, untreated water, and a funnel.

c) Revision exercises

Observe the pictures with steps and ways of cleaning drinking water using chemicals and answering questions regarding the pictures.

d) Teaching and learning activities

- Prepare enough teaching and learning materials to enable each learner to practice the steps in treating water with chemicals.

- Guide the learners during their activity of treating water with chemicals. This is done in groups to avoid wastage and drinking the water immediately after treatment before shaking the mixture and waiting for30 minutes.

- Give the learners instructions to follow when doing the activities inthe pictures that show the proper ways of cleaning drinking water using chemicals, medicines and explaining their observations.

- Complete the suggestions of the learners where their thinking is incomplete or unclear; help them to make corrections so that they get used to expressing their thoughts correctly and clearly

- Help those with difficulties in treating drinking water with chemicals according to instructions so that each one is able to do it alone quickly.

e) Conclusion

Ask the learners questions regarding what they have studied in a summary.
Example: How is cleaning drinking water done using chemicals?

Before cleaning drinking water using chemicals, I need to first wash my hands, wash the utensils/materials (a filter, a small jerry can, a funnel…) I shall need and after clean the water following the steps shown in the pictures.

f) Assessment

Ask the learners to do the activities in the Pupil's Book

Including cleaning drinking water using chemicals.

4.8. Unit Summary

Ways/steps of boiling drinking water, cleaning drinking water using chemicals and ways of filtering drinking water using a filter.

Ways to store drinking water well boiled and cleaned using chemicals and that cleaned using a filter.

4.9. Additional knowledge for teacher

Before teaching preparation and storage of drinking water, focus onthe following:

- Visit pharmacies and ask experts the chemicals used to treat or clean water and how those chemicals are used.

- Prepare a school fieldtrip/visit to a water filtration site near the school area.

- Every time you'll be teaching preparations and storage of drinking water, be around the learners to prevent burns, destroying or swallowing the water cleaning chemicals, and avoid getting injured by the materials used in boiling water

4.10. Answers to the End of Unit Assessment 4

1.

a) Measuring the chemical (sur'eau) into the water in a jerry can.

b) Shaking the mixture of chemical and water

c) Covering the small jerry can and waiting for 30 minutes.

d) Drinking water treated with Sur'eau. .

2. Cholera, dysentery, worms, typhoid fever, etc.

3. Sur'eau

4. - Boil the water

- Filtering water

- Keeping drinking water safe

5 -To kill germs

6. e, c, d, f, a, b

1. A saucepan and its cover, a filter, a container for keeping it safe, fuel, a cup.

4.11. Additional activities

4.10.1. Remedial activities

1. List one chemical used to treat water
Answer: Sur'eau

4.10.2. Consolidation activities

1. Give five diseases one can acquire from un boiled or un treated water (dirty water)

Answer: Cholera, dysentery, worms, typhoid fever and diarrhoea.

4.11.3. Extended activities

1. Describe two ways of how you can treat water for drinking at home

Answer:

a) Boil water, filter it and keep it well in a clean container.
b) Treat water with Sur'eau (Siro), filter it and keep in a clean container.

Unit

05 SOIL

5.1. Key unit competence

To be able to differentiate types of soil, types of soil erosion and ways of prevention.

5.2. Prerequisites

Types of soil, Soil damaging factors, Positive and negative effects of water on land.

5.3. Introductory activity

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *What happens to the soil when there is a lot rain?*
  2. *List any type of the soil do you know.*
– In pairs, Ask learners to read the scenario of the introductory activity on page 86 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions:
  1. *What causes the crops of Steve's family to not produce well?*
  2. *Suggest the ways to prevent this cause.*

– Guide the learners to discover the types of soil, types of soil erosion and ways of prevention.

- **Answers to the introductory activity.**

1. Soil erosion.
2. In order to prevent soil erosion, you should:1.Make terraces, 2.Do mulching, 3.Plant grass, 4.Plant trees mostly on hills and mountains.

5.4. Cross-cutting issues to be addressed

- ***Gender:*** *Equality and Team work* between boys and girls is attained from working together without discrimination.

- ***Inclusive Education:*** *W*hen all students study and work together in different activities including those with special problems/disabilities.

- E***nvironment sustainability:*** Is done when learners understand well the types of soil and how they prevent them from erosion.

It is accomplished when the learner collects different types of soil from different places carefully without destroying the vegetation.

- **Financial Education:** When explaining the functions of maintaining/ preserving land because it is a resource with much importance topeople and country at large.

5.5. Key new vocabularies

Whirlwind / dust devil: Heavy blowing wind that blows dust into the air.

Radical terraces: Small parallel terraces on steep ground

Ordinary terraces: Wide terraces separated by water channels **Erosion:** Washing away of soil due to heavy rain or wind

Gullies: Long furrows that develop on hills caused by erosion

5.6. List of lessons

No	Lessons	Objectives	The number of periods:11
1	Definition and types of soil	- Define soil - List the types of soil//land. - Differentiate the types of soil	3
2	Definition and types of erosion	- Define erosion. - List and explain types of erosion. - Differentiate types of erosion	2
3	Causes of erosion	- List and explain causes oferosion.	2
4	Ways to prevent soil erosion	- Explain different ways ofpreventing erosion - Prevent erosion in areas around the school.	3
5	End of Unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	1

5.7. Teaching approach for each lesson

Lesson 1: **Types of soil**

a) Objectives

At the end of this lesson, learners should be able to:

- List the types of soil//land
- Differentiate the types of soil

b) Teaching and learning materials

Different kinds of soil, pictures showing types of soil, gardens with different types of soil.

c) Revision/Introduction

Request learners to observe the pictures showing types of soil, touching soil and identify the types of soil and have discussions.

d) Teaching and learning activities

- Prepare enough teaching and learning materials to enable each learner to identify different types of soil.
- Guide the learners when in group activities of observing and touching different types of soil
- Prepare and give the learners instructions to follow as they are observing, touching and differentiating types of soil
- Give every learner individual time
- Be around those who need special help in studying and give them activities according to their abilities as prepared and given in this book.

e) Conclusion

Ask the learners questions summarizing all they have studied.

Example: What are the main types of soil?

There are three main types of soil: Clay, Sandy and Loam soil

f) Assessment

Give the learners exercises in the Pupil's Book on types of soil.

Lesson 2: Causes and Types of erosion

a) Objectives

At the end of this lesson, learners should be able to:

- List and explain types and causes of erosion.
- Differentiate types of erosion and the causes

b) Teaching and learning materials

Pictures showing types of erosion, pictures of places washed away by erosion or a place near the school washed away by soil erosion learners are able to visit.

c) Revision/Introduction

Ask learners to observe the pictures showing types of erosion; visit areas near the school washed away by erosion and have discussions

d) Teaching and learning activities

– Prepare enough teaching and learning materials to enable each learner to observe and differentiate types of erosion and causes.

– Prepare and give the learners instructions to follow when observing and explaining characteristics of erosion types and causes.

– Give every learner individual time.

– Be around those with special educational needs and give them activities according to their abilities as prepared and given in this book. If they need different teaching and learning materials, prepare them.

e) Conclusion

Ask the learners questions summarizing all they have studied.

Example: What causes erosion?

Erosion can be caused by rain drops, heavy wind or running water.

f) Assessment

Give the learners activities in the Pupil's Book about erosion types and causes.

Answers to exercises

1. Erosion is the washing away of top soil by running water or wind.

2. Animals remove the soil cover leaving the land bare for the agents of erosion.

3. a. Forests/trees

   b. Animals, strong

   c. Bushes

Lesson 3: Ways of preventing soil erosion.

a) Objectives

At the end of this lesson, learners should be able to:

- Explain different ways of preventing erosion.
- Prevent erosion in areas around the school.

b) Teaching and learning materials

Pictures showing different ways of preventing erosion, spades, axes, hoes, grass to plant in terraces, pictures of places to visit.

c) Revision/Introduction

Ask learners to observe and discuss about the pictures showing how to prevent erosion. Where possible show pictures of UMUGANDA showing people fighting against erosion

d) Teaching and learning activities

- Prepare enough teaching and learning materials to enable every learner to differentiate ways of preventing erosion depending on the nature of soil
- Guide the learners in presenting and telling others what they've seen
- Give every learner individual time. Boys and girls should do the same activities.
- Be around those with special educational needs and give them activities according to their abilities as prepared and given in this book. If they need different teaching and learning materials, prepare them.

e) Conclusion

Ask the learners questions summarizing all they have studied

Example: How do we prevent erosion?

A person can fight erosion by digging terraces, mulching, planting grass, planting trees that grow with plants.

f) Assessment

Give the learners activities in the Pupil's Book about differentiating types of erosion and explaining ways of prevention.

5.8. Unit Summary

–Types of soil found in the school area.

–Types of erosion common in the school area

– Different ways of preventing erosion in the school and home area.

5.9. Additional information for teacher

– Before teaching this unit, visit experts in soil and discuss about types of soil found in the school area.

– Be informed about places washed away by erosion in the school area

– Learn all the types of grass and trees used in fighting against erosion,what they look like, how they are planted and where they are found inthe area.

– Learn how they prepare school visits to places they practice ways of preventing erosion and places washed away by erosion.

5.10. Answers to the End of Unit Assessment 5

1.

a.Yes

b. No

c. No

d. Yes

e. Yes

f. Yes

g. No

2. Seteria, elephant grass, vetiver, pennisetumu, terrepsacum, etc.

3. Erosion destroys property on land (Houses, roads, crops)

4. Landslide: The movement of a large amount of land/soil down a mountain or hill.

5. Erosion is caused by rain, wind and flooding

6. Planting trees mixed with crops, zero-grazing

7. Mulching the garden protects the soil from erosion and crops grow well because the soil always has moisture.

8. This includes elephant grass, Star grass, Couch grass and terrepsacum.

9. Answers are different depending on the area where the learners live.

5.11. Additional activities

5.10.1. Remedial activities

1. Mention three types of soil

Answer: Clay soil, Roam soil, Sand soil

5.10.2. Consolidation activities

1. Give three different ways of how you can avoid soil erosion

Answer:

-By practicing mulching
-By practicing terracing
-By planting trees (afforestation)

5.10.3. Extended activities

1. Explain bad effects of soil erosion and how it can affect agriculture

Answer: Soil erosion is washing away of top soil by water or wind. It can affect agriculture because the top soil being washed away soil contains manure (reach in soil nutrients). Therefore, it reduces agriculture production

2. List down the human activities that affect soil

Answer:

- Uncontrolled grazing on hill sides
- Setting forests on fire.
- Cutting down trees without planting any, etc.

Unit

06 ANIMALS

6.1. Key Unit Competence

To be able to differentiate the types of animals basing on the presence of backbone

6.2. Prerequisites

- Insects and their parts
- Wild and domestic animals

6.3. Introductory activity

- **Guidance to the introductory activity.**

- Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *Have you seen animals?*
  2. *List the animals you know.*
- In pairs, Ask learners to read the scenario of the introductory activity on page 86 in Pupil's book.
- Let them brainstorm in five minutes to answer the following questions:
  1. *What causes the crops of Steve's family to not produce well?*
  2. *Suggest the ways to prevent this cause.*
- Guide the learners to discover the types of soil, types of soil erosion and ways of prevention.

- **Answers to the introductory activity.**

1. Soil erosion.
2. In order to prevent soil erosion, you should:1.Make terraces, 2.Do mulching, 3.Plant grass, 4.Plant trees mostly on hills and mountains.

6.4. Cross-cutting issues to be addressed

- ***Environmental sustainability*:** This will be achieved after pupils have well understood the different types of animals and how they can be protected.

6.5. Key new vocabularies

Backbone: The series of vertebrae bones extending from the skull to the pelvis

Vertebrates: Animals with a backbone or vertebral column, including mammals, birds, reptiles, amphibians, and fishes.

Invertebrates: Animals without a backbone, such as insects and worms. The invertebrates comprise 95 per cent of animal species.

Park: An area of countryside protected by the state for the enjoyment of the general public or the preservation of wildlife.

6.6. List of lessons

No	Lessons	Objectives	Number of periods: 8
1	Vertebrates	- Identify animals with backbones (vertebrates) - Explain what animals with backbones look like and their common characteristics.	4
2	Invertebrates	- Identify animals without a backbone (Invertebrates) - Explain how animals without a backbone are structured - Differentiate invertebrates from the vertebrates	2
3	End of unit assessment		2

6.7. Teaching approach for each lesson

Lesson 1: **Vertebrates**

a) Objectives

At the end of this lesson, learners should be able to:

- Identify animals with backbone (vertebrates)
- Explain what animals with backbones look like and their common characteristics.

b) Teaching and learning materials:

Domestic animals, small insects that can be easily found and caught, pictures of animals with a backbone, and models of different animals.

c) Revision/Introduction

Ask the pupils to observe carefully pictures of animals with a backbone and have group discussions on what they observed

d) Teaching and learning activities:

- Prepare enough teaching and learning aid materials to help pupils know and understand about the animals with a backbone.

- Guide the learners while in group discussions
- Give learners instructions to follow in every activity done while observing and touching the teaching and learning aid materials.
- Guide the pupils while they present and explain to others their work.
- Give individual time to every pupil to work on their activities
- Be around those that need special help in their studies, and give them activities according to their abilities.
- Give boys and girls equal chances in carrying out different activities that help learners understand more of the lesson.
- Help those with a difficulty/problem in observing, identifying and listing the animals with a backbone

e) Conclusion:

Ask pupils questions summarizing what they learnt from the unit

For example: What characteristic is common to all vertebrate animals?

f) Assessment:

Giving learners assignments in the Pupil's book on the animals with backbones

Lesson 2: Invertebrates

a) Objectives

At the end of this lesson, learners should be able to:

- Identify animals without a backbone (Invertebrates)
- Explain how animals without a backbone are structured
- Differentiate invertebrates from the vertebrates

b) Teaching and learning materials:

Domestic animals, small insects that can be easily found and caught, pictures of animals with a backbone

c) Revision

Ask questions on animals with a backbone (vertebrates)

d) Learning and teaching activities

- Prepare enough teaching and learning aid materials to help pupils know and understand about the animals without a backbone.
- Guide the learners while in group discussions
- Give learners instructions to follow in every practice and activity done while observing and touching the teaching and learning materials.
- Guide the pupils while they present and explain to others their work.
- Be around those that need special help in their studies, and give them activities according to their abilities.
- Help those with a difficulty/problem in observing, identifying and listing the animals without backbone

e) Conclusion

Ask learners questions summarizing what they learnt from the unit

***Example*:** What differentiates vertebrates from invertebrates?

Animals with a backbone are those with a skull.

Animals without a backbone have no skull

f) Assessment

Give learners assignments in the Pupil's book on animals without a backbone

6.8. Unit Summary

-Animals with a backbone have bones in their bodies whereas animals without a backbone do not have bones within in their bodies

6.9. Additional information for teacher

- Be able to coordinate all activities in the unit and include every learner without leaving any one behind in the lesson.
- Be able to explain deeply to pupils on both vertebrates and invertebrates and their differences
- Preparations and proper use of different teaching and learning materials
- Know all the necessary teaching and learning materials required for proper teaching/learning of this unit, vertebrate animals and invertebrate animals.
- Know different ways of handling and taking care of animals

6.10. Answers to the End of Unit Assessment 6

1. Vertebrates are animals with a backbone while invertebrates are animals without a backbone.

2. A cow, a dog, a goat, etc.

3. All insects, Worms.

Vertebrates	Invertebrates
Cow	Flea
Lion	Mosquito
Dog	Bees
Hen	Wasp
Rabbit	Beetle
Snake	Cockroach

4.

A) Vertebrates: Cow, Lion, Hen, Hyena

B) Invertebrates: Bee, cockroach, fly, mosquito

5.

With backbones		Without backbones	
Worm	X	Fly	✓
Monkey	✓	Millipede	✓
Cheetah	✓	Antelope	X
Wasp	X	Beetle	✓
Ant	X	Dog	X

6.

a. **Wasp**

b Rabbit.

c. **Smelling ant**

d. Fish

e. **Caterpillar**

f. Sheep

g. Mole

h. **Ant**

6.11. Additional activities

6.10.1. Remedial activities

1. From the list of Animals bellow, underline those with a backbone (invertebrates)

Lion, Bees, Dog, Hen, Flea, Rabbit, Snake, Mosquito, Wasp, Beetle, Cockroach

Answer: Lion, Bees, Dog, Hen, Flea, Rabbit, Snake, Mosquito, Wasp, Beetle, Cockroach, cow

6.10.2. Consolidation activities

1. Differentiate between vertebrates and invertebrates and give two examples of each case.

Vertebrates: Animals which have a backbone for **Example:** birds and fish

Invertebrates: Animals without a backbone. **Example**: Insects, worms and snails

6.11.3. Extended activities

1. Group the animals in the list below into vertebrates and invertebrates.

(Cow, Lion, Bees, Dog, Hen, Flea, Rabbit, Snake, Mosquito, Wasp, Beetle, Cockroach)

Answer:

Vertebrate s	Invertebrates
Cow	Flea
Lion	Mosquito
Dog	Bees
Hen	Wasp
Rabbit	Beetle
Snake	Cockroach

2. Draw two animals of your choice, one with a backbone and another without a backbone

Unit

07 BONES, MUSCLES AND JOINT

7.1. Key Unit Competence

To be able to explain the relationship between Joints, Muscles and Bones and maintain their health.

7.2. Prerequisites

Different parts of Human body

7.3. Introductory activity

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *Do you know the parts of your body?*
  2. *Name some of your muscles you know.*
– In pairs, Ask learners to read the scenario of the introductory activity on page 95 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions:
  1. *What caused the legs of Kazungu to bent?*
  2. *What should be done to prevent the legs bent?*
  3. *How do you think muscles and bones work together?*
– Ask them questions above and try to orient their answers to the right ones.
– What topics do they think this unit will include based on the picture?
– Give time for some brainstorming and after share the main sub-units.

– Guide the learners to explain the relationship between Joints, Muscles andBones and maintain their health.

- **Answers to the introductory activity.**

1. It is caused by not eating a balanced diet which leads to bone diseases and can make the bones grow soft.
2. We take care of our muscles, joints and bones by:

•Doing physical exercises.

•Eating a balanced diet.

•Drinking a lot of water.

3. Muscles provide the tug on the bones needed to bend, straighten, and support joints. Muscles can pull on bones, but they can't push them back to their original position, so **the muscles work in pairs of flexors and extensors**. The extensor muscle relaxes and stretches as the flexor muscle contracts to bend the joint.

7.4. Cross-cutting issues to be addressed

- Gender: When boys and girls work together in activities that involve learning how to take care of bones, muscles and Joints

7.5. Key new vocabularies

Shoulder: Joint between the base of neck and upper arm.

Elbow: situated between the upper arm and the forearm.

Hip: Joint between the pelvis and top of femur bone.

Wrist: Joint between arm and hand

Phalanges: Joint between fingers and wrist

Knee: Situated in the middle part of the leg between the thigh and the shin. .

Coccyx (Tailbone): Joint located at the base of back bone

7.5. List of lessons

No	Lessons	Objectives	Number of periods (18)
1	Joints of human body	- Identify Joints that make up a human body - Differentiate the joints that make up a human body	4
2	Bones of human body	- Identify main muscles that makes up a humanbody - Differentiate various muscles of a human body	4
3	Muscles of Human body	- Identify main muscles that makes up a humanbody - Differentiate various muscles of a human body	4
4	The relationship between bones, muscles andjoints of a human body	- Identify the relationship between muscles, bonesand joints of a human body - Differentiate various muscles, joints and bones ofa human body	2
5	Protection of joints, muscles andbones	- Explain proper ways of taking care of muscles,bones and joints of a human body - Differentiate bones, joints and muscles of a humanbody.	2
6	End of unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	2

7.6. Teaching approach for each lesson

Joints of a human body

a) Objectives

At the end of this lesson, learners should be able to:

- Identify Joints that make up a human body
- Differentiate the joints that make up a human body

b) Teaching and learning materials:

Big pictures, toys and pictures showing joints of a human body, A model of a human skeleton.

c) Revision/Introduction

Ask pupils to observe pictures of human body that clearly show joints and ask them to answer the questions on the pictures checking whether they really observed well.

d) Teaching and learning activities:

- Prepare enough teaching and learning aid materials to help learners know and understand the joints of a human body.
- Give learners instructions to follow for every activity done while observing, touching pictures and toys showing joints of human body.
- Help those with a difficulty/problem in identifying and differentiating the human body joints.

e) Conclusion:

Ask learners questions summarizing what they have learnt.

Example; What is a joint?

What joints make up a human body?

A joint is where two or more bones meet.

The following are joints that make up a human body: shoulder, elbow, hip, wrist, phalanges, knee and coccyx

f) Assessment:

Ask pupils to show and touch where different joints are located on their body.

Lesson 2: Bones of a human body

a) Objectives

At the end of this lesson, learners should be able to:

- Identify main bones that makes up human body
- Differentiate bones of a human body

b) Teaching and learning materials:

Big pictures, drawings and Toys clearly showing bones of a human body, a model of a human skeleton.

c) Revision/Introduction

Ask pupils to observe carefully pictures of human body showing the joints and bones of a human body. Let them answer questions on the pictures, checking whether they really observed well.

d) Teaching and learning activities:

- Prepare enough teaching and learning materials to help pupils know and understand bones of a human body.
- Guide learners through group discussions
- Giving learners instructions to follow in every activity done while observing, touching pictures and toys showing bones of human body
- Help those with a difficulty/problems in identifying and differentiating the bones of a human body

e) Conclusion

Ask learners question summarizing what they have learnt.

For example: What are the bones found on each part of a human body?

The following are bones that make up different parts of a human body:

Human Head	**Human Trunk**	**Human Arm**	**Human Leg**
Frontal bone	Clavicle	Humerus	Femur
Temporal bone	Manubrium	Ulna	Patella
Orbit bones	Costal cartilage	Radius	Tibia
Mandible bones	Xiphoid process	Carpals	Fibula
Occipital bone	Hip bone	Metacarpals	Talus
Parietal bone	Clavicle	Phalanges	Cuboid
Nasal bone			
Maxilla bone			

Bones make up the human skeleton giving the body shape

Bones support joints of human body in movement and other activities

Bones protect brain, lungs and the human heart.

f) Assessment:

Give pupils exercises found in the Pupil's book, on mentioning the main bones of a human body.

Lesson 3: Muscles of Human body

a) Objectives

At the end of this lesson, learners should be able to:

- Identify main muscles that makes up a human body
- Differentiate various muscles of a human body

b) Teaching and learning materials:

Big pictures/charts and drawings of muscles of a human body.

c) Revision/Introduction

Ask learners to observe pictures of a human body that clearly show joints, bones and muscles. Let them answer the questions on the pictures to check whether they really observed well.

d) Teaching and learning activities

- Prepare enough teaching and learning aid materials to help pupils know and understand muscles of a human body.
- Guide learners through group discussions
- Giving learners instructions to follow in every activity done while observing, touching pictures and toys intended to show the muscles of human body
- Help those with a difficulty/problems in identifying and differentiating the muscles of a human body

e) Conclusion of the lesson

- Ask learners questions summarizing what they have learnt.

For example: What are the main muscles that makes up a human body?

- What are the uses of muscles in the body?

The following are the muscles that makes up different parts of a human body:

Human Head	Human Trunk	Human Arm	Human Legs
Facial muscles	Trunk muscles	Biceps	Thigh muscles
Mouth muscles	Abdominal muscles	Triceps muscles	Calf muscles
Nasal muscles	Back muscles		Heel muscles
Ear muscles	Bums muscle		Thigh muscles

Muscles cover bones of the human body and helps joints to make movements.

Muscles help body joints in movement and other activities.

f) Assessment

Give pupils exercise in Pupil's book on identifying and mentioning muscles of a human body

Lesson 4: The relationship between bones, muscles and joints of a human body

a) Objectives

At the end of this lesson, learners should be able to:

- Identify the relationship between muscles, bones and joints of a human body
- Differentiate various muscles, joints and bones of a human body

b) Teaching and learning materials:

Big pictures and drawings showing the relationship between bones, joints and muscles of a human body, model of the human skeleton.

c) Revision/Introduction

Ask learners to observe pictures of a human body that clearly show joints, bones and muscles. Let them to answer the questions on the pictures to check whether they really observed well.

d) Teaching and learning activities

- Prepare enough teaching and learning aid materials to help pupils know and understand the relationship between bones, joints and muscles of a human body.
- Giving learners instructions to follow in every activity done while observing, touching pictures and toys intended to show the relationship between muscles, bones and joints of human body
- Help those with a difficulty/problems in identifying and explaining the relationship between bones, joints and muscles of human body

e) Conclusion

- Ask learners questions summarizing what they have learnt.

  For example, what is the relationship between bones, joints and muscles of human body? The relationship between the joints, bones and muscles of a human body is that,

  A **joint** is where two or more **bones** meet and they are all covered and protected by the **muscles** that support movement.

f) Assessment

Give learners exercises in the Pupil's book on identifying and explaining the relationship between bones, joints and muscles of a human body.

Lesson 5: Protection of joints, muscles and bones

a) Objectives

At the end of this lesson, learners should be able to:

- Explain proper ways of taking care of muscles, bones and joints of a human body
- Differentiate bones, joints and muscles of a human body.

b) Teaching and learning materials:

Big pictures/charts and drawings showing how bones, joints and muscles of a human body are kept well and healthy.

c) Revision/Introduction

Asks learners to observe carefully pictures and drawings that clearly show joints, bones and muscles of a human body. Let them to answer the questions on the pictures about how bones, muscles and joints can be taken care of checking whether they really observed well.

d) Teaching and Learning activities:

- Prepare enough teaching and learning aid materials to help pupils know and understand well how to take care of bones, joints and muscles of their human body.
- Giving learners instructions to follow in every activity done while observing, touching pictures and drawings intended to learn ways how muscles, bones and joints are taken care of. .

- Help those with difficulty/problem in identifying and explaining how they can take care of bones, joints and muscles of their human body

e) Conclusion

- Ask learners questions summarizing what they have learnt.

For example: How can we take care of our bones, joints and muscles?

In relation to taking care of our joints, bones and muscles of a human we can do the following;

- Regular doing of physical exercises
- Eating a well-balanced diet. that is, a meal with all food nutrients needed by our bodies

f) Assessment

Give learners exercises found in the Pupil's book on how to care for bones, joints and muscles of a human body.

7.7. Unit Summary

A joint is where two or more bones meet. A human body has the following Joints **shoulder, elbow, hip, wrist, phalanges, knee and coccyx.**

Bones make up a human skeleton thus giving the human body shape and muscles cover and protect them all.

In relation to taking care of our bones, muscles and joints, we are advised to do regular physical exercises and eating a well-balanced diet (a meal with all food nutrients needed by the body).

We should drink a lot of water.

7.8. Additional information for teacher

Before teaching this unit, focus on the following:

- Find pictures and drawings clearly showing bones, muscles and joints of a human body
- Prepare an activity of physical exercises which help to stretch muscles of the human body.
- Ask pupils to bring different foods and group them according to their nutrients like those with vitamin **C,** calcium, proteins, body building food, energy giving food, protective foods and others, also use them while teaching this unit.

7.9. Answers to the End of Unit Assessment 7

1. **a)** Cranial bones

   b) Femur
2. We are advised to do regular physical exercises and eating food with a well-balanced diet daily
3. Hip, knee
4. -Bones makes up human skeleton that gives human body a shape

   -Bones supports joints of human body to move and do different activities

   -Bones protects brain, lungs and the human heart.
5. Frontal bone, Zygomatic bone, Maxillary bone, Sphenoid bone, Ethmoid bone, Palatine bone, Lacrimal bone
6. Frontal bone, Orbit bones, Mandible bones, Occipital bone, Parietal bone
7. **a).** The spine is a column of vertebrae located in the back part of the torso (upper body). It is also called the vertebral column.

   b). Femur bone is found in the thigh.
8. A joint is where two or more bones meet
9. i. Skull (cranium)

   ii. Rib

   iii. Coccyx (tail bone)

   iv. Femur
10. Muscles cover bones of the human body and helps joints to make movements.

7.10. Additional activities

7.10.1. Remedial activities

1. Define the term Joint?

Answer: joint is a place where two or more bones meet

2. List one example of joints

Answer: knee joint

3. Mention main bones that makes up human body

Answer: Bones of human Head, Bones of human Arm, Bones of human Trunk, Bones of human Legs.

7.10.2. Consolidation activities

1. Mention main bones that makes up human body

Answer: Bones of the head, Bones of the arm, Bones of the trunk, Bones of the legs.

1. Name the parts of the body where the following bones are found.

a) Tibia

b) Humerus

c) Femur

d) Vertebral column

e) Fibula

2. Which muscles make up the human trunk?

Answers:

Trunk muscles, abdominal muscles, Back muscles, Bum muscles

7.10.3. Extended activities

1. Suggest ways how one can take care of his/her muscles, Joints and Bones.

Answer: By doing regular physical exercises and by eating a meal containing all food nutrients in the body (balanced diet).

2. What is the relationship between bones and muscles?

Answer: Muscles cover bones of the human body and help joints to make movements.

POWER AND ENERGY

8.1. Key Unit Competence

To be able to explain, identify and differentiate types of energy

8.2. Prerequisites

Light and Heat

8.3. Introductory activity

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *Why do you eat foods?*
  2. *Could you suggest what causes the vehicle to move?*
– In pairs, ask learners to read the scenario of the introductory activity on page 95 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions:
  1. *What helps you to cook food at home?*
  2. *What do you think causes the wet cloth to dry?*
  3. *List some types of energy do you use in everyday life?*
– Ask them questions above and try to orient their answers to the right ones.
– What topics do they think this unit will include based on the picture?
– Give time for some brainstorming and after share the main sub-units.
– Guide the learners to identify and differentiate types of energy.

- **Answers to the introductory activity.**

1. Heat energy from charcoal or wood.
2. Solar energy from the sun.
3. Heat energy, solar energy, sound energy, electric energy, mechanical energy.

8.4. Cross-cutting issues to be addressed

- ***Environment sustainability***: As the learner understands the importance of not polluting the air, destroying the Ozone layer
- **Financial education:** Good use of energy like electricity
- **Standardisation culture:** When using energy generating and electrical appliances of a standard quality, that can't cause accidents.

8.5. Key new vocabularies

Movement: An act of moving or displacement from place to another

Energy: Ability to do work

Magnet: A piece of metal that attracts other metals

Poison: Any substance that may cause harm/danger to our body.

8.6. List of lessons

#	Lesson title	Learning objectives	Number of periods: 20
1	Meaning and sources of energy	- Explain the meaning of energy - Provide examples of energy - Identify various sources of energyused in daily activities	2
2	Types of energy: - Solar energy (Light from Sun)	- Explain the use of sunlight - Differentiate sunlight from other types/forms of energy	2
3	Heat energy	- Explain heat energy. - Identify the sources of heat.	2
4	Sound energy	- Explain sound energy - Identify the materials that produce sound.	2
5	Electric energy	- Explain electric energy. - Identify the importance of electric energy.	2
6	Wind energy	- Explain wind energy. - Identify the importance of wind.	2
7	Chemical energy	- Explain chemical energy. - Identify the importance of chemical energy	2
8	Magnetic energy	– Explain magnetic energy – Identify how magnetic force work.	2
9	Mechanical energy	– Explain mechanical energy. – Differentiate various types of Energyused in our daily life.	2
10	End of unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	2

8.6. Teaching approach for each lesson

Lesson 1: Meaning and sources of energy

a) Objectives

At the end of this lesson, learners should be able to:

- Explain the meaning of energy
- Give examples of energy
- Identify various sources of energy used in daily activities

b) Teaching and learning materials:

Big loudspeaker and Microphone, papers, Fresh tree leaves, stove, Metals made out of Iron, Magnet, Match box, Pictures showing different types of energy, their uses and where they are used.

c) Revision/Introduction

Give pupils revising exercises related to what they studied in the previous class about heat and energy

Example: Ask them about the sources of light and heat.

d) Teaching and learning activities:

- Prepare enough teaching and learning aid materials to help pupils know and understand what is energy, …
- Give learners to follow in every activity done while observing and touching the teaching and learning aid materials.
- Guide pupils in presenting and explaining of their work to the others.
- Give individual time to every pupil to work on their own
- Be around those that need special help in their studies, and give them activities according to their abilities.
- Give equal chances to both boys and girls in class activities that enrich the lesson
- Help those with difficulty in observing and identifying what energy is.

e) Conclusion of the lesson

Ask learners questions summarizing what they learnt from the unit.

For example: What is energy?

Energy: Is ability to do work

f) Assessment:

Give pupils assignment in the Pupil's book on the definition and explanation of energy

Lesson 2: Types of energy and examples of where they are used

a) **Objectives**

At the end of this lesson, learners should be able to:

- Explain the use of sunlight
- Differentiate sunlight from other types/forms of energy
- Identify other different types of energy.
- Outline the use of energy and where energy is used
- Differentiate various types of Energy used in our daily life.

Note: As there are different types of energy which may be taught differently, the teacher will formulate corresponding objectives of each type of energy.

b) Teaching and learning materials:

Big loudspeaker and Microphone, something to carry, papers, leaves of the tree, stove, Metals made out of Iron, Magnet, Match box, Pictures showing different types of energy, pictures showing sun light.

c) Revision/ Introduction

Teacher gives pupils exercise on types of energy

Teacher asks pupils to observe well pictures showing different types of energy and where they are used

d) Teaching and learning activities:

- Teacher prepares enough teaching aids and learning materials that will enable pupils to know and understand different types of energy and where energy is used.
- Teacher gives enough guidelines to pupils in every practice and activity being done while observing and touching on pictures of different energy types and where they are used
- Teacher guides pupils in an activity of presenting and explaining to their fellows what they have done in given assignment
- Teacher gives enough time to every pupil to work on their own and makes sure that every pupil participates in a given activity
- Pupils with disabilities who need special help and attention are facilitated by the teacher and accepted to participate according to their abilities
- Teacher gives equal chances and abilities to both boys and girls to participate in class activities being done
- Teacher helps pupils with difficulty in observation and identifying different energy types and where they are used

e) Conclusion:

Teacher asks questions to pupils summarizing what they learnt from the unit

For example: How many types of energy do we have?

Energy are in different types depending on their sources

Light form sun, Heat from sun, Electricity and power supplied to radios, iron box, computer and others

Wind energy that dries clothes and helps in keeping burning fire or putting it off, energy that ferments milk, energy from match box that lights fire, magnetic energy,

Energy that helps people and other things to move.

f) Assessment:

Giving pupils assignment found in Pupil's book related to types of energy and where they are used **(Answers for questions are in the content in the Pupil's book).**

8.7. Unit Summary

Energy: Is the ability to do work

Types of energy and their uses include:

Heat energy: Helps in cooking, ironing, drying of grasses and others

Sound energy: It enables us to hear.

Electricity: Helps in giving light, powering radios, Television and others

Solar energy: It is used to generate electricity, some devices like calculators work because of solar energy

Wind: Helps wet clothes to get dry, gives out electricity

8.8. Additional information for teacher

As a teacher, you are expected to:

- Know clearly types of energy available in the area where the school is located so that you may use them as examples while delivering this unit.

- Know all required teaching aids that can help pupils to understand more about different types of energy and where they are used.

- Know anything that may lead into accident due to poor use of energy so that you avoid it while teaching this unit.

8.9. Answers to the End of Unit Assessment 8

1. Energy**:** Is the ability to do work.
2. Types of energy are: Light energy, Heat energy, Sound energy, Sun energy, Electric energy, Wind energy, Magnetic energy, Physical energy, Chemical energy.
3. Give 3 examples where the following forms of energy/force work.

a. Magnet
   - In industries, in Mechanics, in Hospitals

b. Chemicals
   - In industries, in laboratories, in schools

c. Wind

- In industries, creativity and innovation, in houses, Hospitals

d. Electricity

- In industries, schools, Roads, Churches

e. Sound

- Churches, Industries, Schools, news reporters

f. Heat

- In industries, agriculture, in hospitals

g. Sun light.

- Drying of clothes, Agriculture, in industries

4. What form of energy is used in the following activities?

a. **Drying wet clothes.** – wind and sunlight

b. **Ironing** - Heat energy

c. **Sorting sorghum or beans.** – wind energy and physical energy

d. **Cooking** – heat energy, electric energy, sun light energy

e. **Riding a bicycle** – physical energy

f. **Biting drum** - physical energy and sound energy

5. State materials you see at school that gives energy.

Answers differ depending to where pupils are, example: electricity, wind and others

6. What are the sources of energy in your home surrounding?

Answers differ depending to where pupils are, example: electricity, wind and others

7. State the importance of energy.

Gives out heat and light and helps in movement of different things

8. List four examples of materials that are sources of energy.

Wind, sunlight, water, different machines and others

9. State the importance of wind energy.

Wind energy helps in drying of wet clothes, source of electricity, sorting of cereals (grains).

8.10. Additional activities

8.10.1. Remedial activities

1. List three types of energy you know

Answer: Heat, Sound, Electricity

8.10.2. Consolidation activities

1. Define energy

Answer: energy is the ability to do work

8.10.3. Extended activities

1. In the table below, tell the uses of each type of energy

Types of energy	Answer (uses)
1. Heat	Cooking, drying clothes, ironing
2. Sound	Delivering message, communicating in general
3. Electricity	Giving light, powering different machines

Unit

09 ELECTRICITY

9.1. Key unit competence

To be able to identify the uses of electricity and different electrical equipment that use electricity

9.2. Prerequisites

Sources of energy and their importance

9.3. Introductory activity

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the following questions:
  1. *What type of energy do you use to charge a telephone or XO laptop?*
  2. *What telephone and laptop stand for in electricity?*
– In pairs, ask learners to read the scenario of the introductory activity on page 95 in Pupil's book.
– Let them brainstorm in five minutes to answer the following questions:
  1. *Suggest what the electricity helps you to do in your life?*
  2. *List some electrical equipment you know.*
– Ask them questions above and try to orient their answers to the right ones.
– What topics do they think this unit will include based on the picture?
– Give time for some brainstorming and after share the main sub-units.
– Guide the learners to identify the uses of electricity and different electricalequipment that use electricity

- **Answers to the introductory activity.**

1. Electricity is used in doing various activities: Cooking food by using cooker, Ironing clothes, Charging mobile phones, computers, torches etc, Shaving hair, to power television, radios, musical instruments etc, lighting our homes and other important places.
2. Telephone, radio, television, shaving machine, computer, electric iron, heater, etc

9.4. Cross-cutting issues to be addressed

– ***A culture / habit of maintaining the resources:*** when using electricity

– ***A habit of using only standard quality:*** when using electrical appliances of standard quality that would not harm the user or cause accidents to other users.

– ***Preserving the environment:*** Understands the importance of conserving and protecting electrical equipment

9.5. Key new vocabularies

Plug in / connect: Connecting an appliance to the socket and switching power on

Disconnect: Switching off power and removing the plug of an appliance from the socket

Cables/wires: Metallic wires/cables that carry electricity and supply it to the users.

9.6. List of lessons

	Lessons	**Objectives**	The number of periods:1 0
1	The meaning of electricity and its uses	- Define electricity - Outline the uses of electricity - Use properly electrical equipment that use electricity	2

2	Electrical equipment that use electricity	- List home and school equipment that uses electricity - Maintain different electrical equipment	4
3	Dangers caused by electricity and ways to prevent them	- List the dangers caused by electricity - Prevent the dangers caused by electricity	2
4	End of unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	2

9.6. Teaching approach for each lesson

Lesson 1: **The meaning of electricity and its uses**

a) Objectives

At the end of this lesson, learners should be able to:

- Define electricity
- Outline the uses of electricity
- Use properly electrical equipment that uses electricity

b) Teaching and learning materials

Electrical equipment: Computer/laptop, Telephone, iron, fridge, torch, Air Conditioner, Television, radio, electric oven, a heater

c) Revision/Introduction

- Revision exercises on types of energy.
- Observing pictures helping learners to explain/define electricity and uses.

d) Teaching and learning activities

- Prepare enough teaching and learning materials to enable each learner to practice and define electricity and uses
- Guide the learners in observation activities
- Be around those that need special help and give them activities in line with their abilities

e) Conclusion of the lesson

Ask the learners questions, summarizing all they studied

Example: What is electricity? What is its importance?

- Electricity is the type of energy that flows in wires, so that the electrical equipment may work.
- Electricity helps us in washing clothes, cooking, ironing, and powering other equipment like telephones, computers/laptops

f) Assessment

Give learners exercises in the P u p i l ' s Book about defining electricity and its uses

Answers to exercises in the Student's Book

1. Electricity gives light, allows electrical equipment to work
2. Radio, Television, computers, cookers

Lesson 2: Electrical equipment

a) Objectives

At the end of this lesson, learners should be able to:

- List home and school equipment that use electricity
- Maintain different electrical equipment

b) Teaching and learning materials

Electrical equipment: Computer/laptop, Telephone, iron, fridge, torch, Air Conditioner, Television, radio, watches/clocks, electric clippers, electric ovens, a household heater

c) Revision/Introduction

Revision exercises on electricity.

d) Teaching and learning activities

- Observing pictures in the Pupil's Book
- Prepare enough teaching and learning materials to enable each learner to practice and differentiate electrical and non-electric equipment
- Follow well how the learners observe and explain what they see and help them in any difficulty

– Give boys and girls equal chances in carrying out different activities that help learners to understand the lesson.

e) Conclusion

Ask the learners questions summarizing all that they learnt

Example: What equipment do you know that uses electricity both athome and school?

There is a lot of electrical equipment at home and school: Radio, computers/laptop, telephones, television, sewing machine, electric clipper, Air conditioner.

f) Assessment

Give learners exercises in the Pupil's Book on electrical equipment

Answers of exercises in the Pupil's Book

Answers will be different depending on the equipment at each learner's home.

Lesson 3: Dangers caused by electricity and their prevention

a) Objectives

At the end of this lesson, learners should be able to:

- List the dangers caused by electricity
- Prevent the dangers caused by electricity

b) Teaching and learning materials

Electrical equipment or electricity generating equipment

c) Revision/ Introduction

Revision exercises on electrical equipment

Observe pictures showing dangers caused by electricity and how to prevent them.

d) Teaching and learning activities

– Prepare enough teaching and learning materials to enable each learner to understand dangers caused by electricity and prevention.

– Guide learners as they observe and discuss on dangers caused by electricity and appropriate ways of prevention.

– Be around those that need special help in their studies, and give them activities according to their abilities.

– Help those with a difficulty/problems in observing the electrical equipment and what they specifically do.

e) Conclusion of the lesson

Ask the learners questions summarizing all they have learnt.

Example: What causes the dangers from electricity?

Dangers from electricity are mainly caused by plugging anything to electricity/power with wet hands, pouring water on a plugged in equipment, playing with the electricity wires, plugging in many appliances at once in one socket. However, most dangers result from disturbing or playing with the wires carrying electricity

f) Assessment

Ask the learners to do the activities in the Pupil's Book on electricity caused dangers and ways of prevention.

Answers to the exercises in the Student's Book

1. Avoid putting fresh sticks in a socket, climbing electricity poles, touching on electric ovens without gloves.
2. Because we could be shocked by electricity.

9.7. Unit Summary

Electricity is a type of energy used in lighting, cooking, doing other activities like ironing, shaving.

Electricity is not water friendly. Playing with bare wires also causes accidents as well as plugging many things at once in one socket.

9.8. Additional information for the teacher

– Know how to explain what happens when a person is shocked by electricity and how to act in that situation.

Example: Do not touch him/her, avoid using fresh sticks or any other wet object, wear gloves and do not walk bare feet around that area.

– Know how to turn down a place catching a fir using a fire extinguisher

– Encourage the learners to maintain and avoid playing with electricity.

9.9. Answers to the End of Unit Assessment 9

1. Electricity is the form of energy that flows in wires.
2. a X b OK c X d OK e OK f OK g X h OK I OK

3. - Do not play with cable wires
   – Do not plug in electrical equipment with wet hands.
   – Do not put a stick or metallic object in the socket
   – Do not touch an electric oven with bare hands.
4. Electricity is energy that allows electric equipment to work.
5. Iron, radio, television, oven, torch
6. Burning property killing people and animals causing fires.

9.10. Additional activities

9.10.1. Remedial activities

1. List four electric equipment used at home

Answer: Computer/laptop Telephone, iron box, fridge, torch, radio.

9.11.2. Consolidation activities

1. Define the term electricity?

Answer: Electricity is energy that flows in wires.

2. Describe one how can avoid dangers of electricity

Answer:

–Do not play with cables/wires

–Do not plug in electrical equipment with wet hands.

–Do not put sticks or metallic objects in the socket

–Do not touch an electric oven with bare hands. .

9.11.3. Extended activities

1. What can you do to a person who has been shocked by electricity?
2. What are the objects that prevent people from electric shock?
3. What usually causes electric shocks?

Answers

1. Pupils give different ideas. Discuss and come up with the best answer.
2. Objects made in plastic, rubber, dry wood.
3. Pupils give different ideas. Discuss and come up with the best answer.

Unit

10 MAGNETISM

10.1. Key unit competence

To be able to discover magnetic forces, characteristics of a magnet and distinguish between magnetic and non-magnetic objects.

10.2. Prerequisites

Magnetism.

10.3. Introductory activity

- **Guidance to the introductory activity.**

– Before starting the unit, ask the probing questions to learners to gain their knowledge about this unit. You may use the question like:

Have you seen a compass? Why does the needle of the compass always point north?

– In pairs, ask learners to read the scenario of the introductory activity on page 95 in Pupil's book.

– Let them brainstorm in five minutes to answer the following questions:

1. *What can you use to separate iron filings from sand and stones?*
2. *List some materials that a magnet can attract or not attract you know.*

– Ask them questions above and try to orient their answers to the right ones.

– What topics do they think this unit will include based on the picture?

– Give time for some brainstorming and after share the main sub-units.

– Guide the learners to discover magnetic forces, characteristics of a magnet and distinguish between magnetic and non-magnetic objects.

- **Answers to the introductory activity.**

1. We must use a magnet to separate them.
2. A magnet attracts all materials made of iron. Examples: needle, safety pin, razor blade. A magnet does not attract materials which are not made of iron or those which do not contain iron. E.g: Plastic materials, wood, paper, glass and other metals which do not contain iron.

10.4. Cross-cutting issues to be addressed

- **G*ender:*** Girls and boys work together in various activities related to magnetic forces.
- ***Financial education:*** Learners keep well magnetic and non-magnetic items used in all activities related to learning and understanding magnetism.
- E***nvironment sustainability:*** Learners leave their working place clean and safe as they found it.

10.5. Key new vocabularies

Magnet: A piece of metal which attracts other metals.

Magnetic objects: Every object made of iron

Non-magnetic objects: Objects not made of iron such as rubber and plastics

Repelling magnets: Two or more magnets with similar poles

Attracting magnets: Magnets with opposite poles

10.5. List of lessons

	Lessons	Objectives	Number of periods: 16
1	The meaning of a magnet	- Explain what a magnet is. - Identify magnetic forces	2
2	Magnetic forces and their characteristics	- Explain the characteristics of a magnet - Recognise the effects of magnetic force	2
3	Magnetic and non-magnetic objects	- List magnetic and non-magnetic objects - Distinguish between magnetic and non-magnetic objects	4
4	Dangers of magnetic energy/ force	- Explain the negative effects of magnetic force - Prevent dangers of magnetic force	4
5	Materials that act as magnets	- List objects that act as magnets - Use properly materials that act as magnet	2
6	End of unit assessment	- Demonstrate the achievement of key unit competence and lessons objectives	2

10.6. Teaching approach for each lesson

Lesson 1: **The meaning of a magnet**

a) Objectives

At the end of this lesson, learners should be able to:

- Explain what a magnet is.
- Identify magnetic forces

b) Teaching and learning aid materials

Different types of magnets.

c) Revision/Introduction

Ask the learners to observe pictures showing various types of magnets; ask them questions relating to the pictures and check whether their observations are correct.

d) Teaching and learning activities

- Prepare enough teaching and learning aid materials to enable each learner to understand what a magnet is.
- Give the learners instructions to be followed while carrying out activities, observing pictures or touching magnets to understand magnetism better.
- Help learners with difficulties in observing and understanding magnetism and its properties

e) Conclusion

Ask the learners questions summarising all they have learnt.

Example: What is magnet?

A magnet is a piece of metal which attracts other metals.

f) Assessment

Ask the learners to do the activities in the Pupil's Book, aimed at understanding and exploring magnetic forces.

Lesson 2: Magnetic forces and their characteristics

a) Objectives

At the end of this lesson, learners should be able to:

- Explain the characteristics of a magnet
- Recognise the effects of magnetic force

b) Teaching and learning materials

Different types of magnets.

c) Revision exercises

To test clear understanding of magnetism

d) Teaching and learning activities

- Prepare enough teaching and learning materials to enable each learner to understand the properties of magnetism
- Give learners instructions to follow while in observing pictures or touching magnets to discover the properties of a magnet

- Help learners with difficulties in observing and understanding magnets and magnetic forces.

e) Conclusion

Ask the learners questions summarising all they have studied.

Example: How do magnets work?

– Show that magnets with similar poles facing each other repel whereas magnets with different poles attract.

– A magnet cannot attract objects made of paper, glass, wood and plastic

f) Assessment

Ask the learners to do activities in the Pupil's Book and identify the properties of magnetic force.

Answers to the questions in the Pupil's Book

a. Coins are metallic objects attracted by a magnet

b Magnets repel

c. Magnets attract

d. Magnetic forces pass through paper

Lesson 3: Magnetic and Non-magnetic objects

a) Objectives

At the end of this lesson, learners should be able to:

- List magnetic and non-magnetic objects
- Distinguish between magnetic and non-magnetic objects

b) Teaching and learning materials

- Various objects made of wood, plastic, glass and stone
- Objects made of iron such as a screwdriver, razor blades and safety pins.

c) Revision/ Introduction

Magnetic force and properties

d) Teaching and learning activities

- Prepare enough teaching and learning materials to help every learner understand magnetic and non-magnetic objects.
- Guide l earners in the activities of observing or touching magnetic and non-magnetic objects such as those made of iron and those that are not. Help the learners with difficulties in observing and differentiating magnetic and non-magnetic objects

e) Conclusion

Ask the learners questions summarising all they have learned

Example: Identify objects that can be attracted to magnet and others that repel. .

- A magnet attracts all objects made of iron such as coins, safety pins, razorblades and nails.
- A magnet does not attract objects made of plastic, rubber, wood, glass and paper.

f) Assessment

Ask the learners to do the activities in the Pupil's Book and identify magnetic and non-magnetic objects.

Answers to the exercise in the Pupil's Book

A magnet attracts coins, nails, keys, needles, razor blades, and paper clips

Lesson 4: Dangers of magnetic force

a) Objectives

At the end of this lesson, learners should be able to:

- Explain the negative effects of magnetic force
- Prevent dangers of magnetic force

b) Teaching and learning materials

Clear pictures and drawings showing the negative effects of magnetic energy/force

c) Revision/ Introduction

Magnetic force; Properties of magnets; magnetic and non-magnetic objects.

d) Teaching and learning activities

- Prepare enough teaching and learning materials to help each learner understand the negative effects of magnetic force.
- Guide learners in activities of observing pictures showing the negative effects of magnetic force
- Help the learners with difficulties in observing and differentiating the negative/positive effects of magnetic force.

e) Conclusion

Ask the learners questions summarising all they have learnt

***Example*:** What can be destroyed by a magnet?

A magnet destroys ATM cards, Identity cards, laptops, radio cassettes and videos, CDs, and DVDs.

A magnet causes illness if the user puts it in the mouth or swallow small magnetic particles.

Strong magnets can cause fractures.

f) Assessment

Ask the learners to do the activities in the Pupil's Book explaining the negative effects of magnetism.

Answers to exercises in the Pupil's Book

a, b and d objects are not attracted by a magnet.

Lesson 5: Materials that act as magnets

a) Objectives

At the end of this lesson, learners should be able to:

- List objects that act as magnets
- Use properly materials that act as magnet

b) Teaching and learning materials

Pictures of objects that act as magnets

c) Revision

Questions on Properties of magnetism; magnetic and non-magnetic objects

d) Teaching and learning activities

- Prepare enough teaching and learning materials to help each learner understand the objects that act as magnets.
- Guide learners in activities of observing pictures showing objects that act as magnets.
- Help the learners with difficulties in observing and differentiating objects that act as magnets.

e) Conclusion

Ask the learners questions summarising all they have learnt

Example: What are the objects that act as magnets?

Objects that act as magnets are screwdrivers, loudspeakers, etc.

f) Assessment

Ask the learners to do the activities in the Pupil's Book listing objects that act as magnets.

10.7. Unit Summary

- A magnet is a piece of metal which attracts other metals.
- Magnetic force/energy properties include:
  - Magnets attract or repel each other.
  - Magnetic force/energy passes through objects made of paper, glass, wood, and plastics.
- Only objects made of metal are attracted by magnets
- Non-magnetic objects are non-metallic objects
- Negative effects of a magnet energy/force:
  - Destroy objects like ATM cards, Identity cards, radio cassettes, laptops/computers, CDs, DVDs, and flash disks.
  - A magnet causes illness if the user puts it in the mouth or swallows it.

Objects that act like magnets:

- Loudspeakers
- Screwdrivers

10.8. Additional information for teacher

– Greater understanding of magnetism and materials with magnetic properties as well as where to find them

– Understand magnets well, magnetic force and how it works plus its properties.

– Practise some of the exercises in this unit on magnets before giving a lesson to learners.

– Borrow magnets from relevant sources e.g. from laboratories and technicians.

10.9. Answers to the End of Unit Assessment 10

1. A magnet is a piece of metal which attracts other metals.

2.

Magnetic objects	Non-magnetic objects
Paper clippers/pins	Pens
Nail	Match box
Keys	Pencils
Cloth pin	Sticks
Razor blade	Paper
Metal scraps	Clothes
Needle	Objects made of clay
	Objects made of plastic
	Objects made of glass
	Objects made of tree/wood
	Beans

3. a) Nails, safety pin, needle, razor-blade, keys and others.

b) Pens, clothes, wood/tree, beans, paper, pencil and rubber.

4. a. Magnet

5. Screwdrivers, Speakers and other…

6. CDs, DVDs, ATM cards, floppy disk, flash disk and others.

7. Machines for scanning and consulting patients in hospitals, radio, television, refrigerator, phones.

10.10. Additional activities

10.10.1. Remedial activities

1. List two things that a magnet can attract

Answer: nail and razorblade

2. Put 2 magnets together and explain what happens.

Answers

Answers are different because they depend on what the learners have done (Position of poles).

10.10.2. Consolidation activities

1. Define the term magnet

Answer: A magnet is a metal that attracts other metals

2. Give two objects that act like a magnet

Answer:

- Loudspeakers
- Screwdrivers

3. Describe the characteristics of a magnet

Answer: Magnets attract or repel between each other. When two magnetic poles face each other, they repel (N and N / S and S) different poles attract (N and S).

10.10.3. Extended activities

1. Mention five objects that can be attracted by a magnet (Magneticobjects) and other five objects that cannot be attracted by the magnet (Non-magnetic objects)

Answer:

Magnetic objects

Nail, Keys, Safety pin, Razor blade, Metal scraps, Needle

Non-magnetic objects

Pens, Match box, Pencils, Sticks, Paper, Beans

2. Put non-magnetic objects like plastics, paper, or objects made of wood between 2 magnets or more magnets and explain what happens.

Answers

Answers are different because they depend on what the learners have done.

ANSWERS To THE END OF YEAR ASSESSMENT

1. Answers are different due to the best duster a learner has made
2. Answers are different due to the best cloth a learner has knit and the ways/ style of loops asked to knit
3. Answers are different due to the best cloth a learner has knit and the ways/ style of loops asked to knit
4. Answers are different due to the best knitting the learner has done
5.
   - Gathering the materials
   - Draw straight angle using a set square
   - Measure 10 cm of each line that makes this angle.
   - Draw another straight angle parallel to the first one.
   - Check whether the square has 4 equal sizes and 4 angles which are straight.
   - Cut out your square using a pair of scissors
   - Show your finished work.
6. Answers are different due to the best triangle and rectangle the learner has made.
7. Answers are different due to the best pot a learner will mould
8. Answers are different due to the best toy car a learner made.
9. Answers are different due to what is included in the short message a learner will send.
10. Answers are different because of the ways every learner will act upon what he/she was asked.
11. Answers are different because of the way a leaner to call and the learner to answer will be able to understand each other and the message given will be put in action.
12. – Press key button “menu”.
    – Press on the icon with the camera program
    – Check if you see clearly what you want to picture then press the key button of “camera”
13.
    – Call *182#
    – Choose the social network line MTN
    – Choosing language press 2 choose Kinyarwanda, and press “send”.
    – To choose send press 1, and press “send”.

– Choose whether the number to send to is registered in “mobile money” press 1 then “send”.

– Write the telephone number of the receiver “send”.

– Amount of money “send”.

– Reason “send”.

– Enter your PIN after checking if the names, number and amount of money match what you want, then press “Send” after you receive a short message (notification) that what you just did was successful.

14.

– Call *182#

– Choose the social network line MTN.

– Choosing language press 2 choose Kinyarwanda, and press “”send”.

– Choosing buy press 2 then “send”.

– choosing buy electricity press 2 then “send”.

– Write the amount of money you want to buy electricity, press “send”.

– Writing the number of your cash power (counter), press “send”.

– Enter your PIN after checking if the number of your cash power (country and amount of money match what you want, then press “Send” after you’ll receive a short message (notification) that what you just did was successful

15.

– **Shift:** Changing key

– **Backspace:** Backward erasing

– **Ctrl:** Creating shortcuts on the keyboard ***Example:*** Press “Ctrl” and letter “S” at the same time saves your work.

– **Alt:** Helps you write signs.

– **Enter:** Entering, accepting or going to the next line of a paragraph.

16. Answers are different due to how the child will follow the instructions given in writing a sentence.

17. Answers are different due to how every learner will act upon what he/she was asked.

18. Dysentery, Cholera, Stomach microbes, Typhoid and others…

19. Clay, Sand and Loam soil.

20. Planting trees, digging terraces, and planting cover crops (grass).

21. a. Vertebrate animals have a backbone.

b. Invertebrate animals have no backbone.

22. Doing physical exercises and eating a balanced diet.

23. a. Sunlight energy

a. Electrical energy

b. Heat energy.

24. Energy provides light and heat, helps to cook food.

25. Electricity allows people cook food, light their homes, allows them to listen to radios and watch televisions, it allows people to do different activities using machines and other electrical appliances.

26. – Magnets attract or repel between each other. When two magnetic poles face each other, they repel (N and N / S and S) different poles attract (N and S). Magnetic energy crosses through objects made in paper, in glass, in wood and in plastics and they attract metal or objects made in metal.

27 a. – Press “button”.” next” on windows of “Home Row” “balloons”.

- Press on “Start Lesson”.
- Press “enter” and then write down the letter given and wait to see your score mark.

b. – Go to “Home View”

– Press on the program “Typing Turtle”

– Press “Start New”

28. Program "Write Activity" includes the typing area and fill-in spaces

29. Burning paper to ash, using yeast in brewing and baking.

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