

SOCIAL STUDIES FOR TTC SCHOOLS

OPTION: (SSE)

YEAR ONE

TUTOR'S GUIDE

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FOREWORD

The Rwanda Education Board is honoured to avail the Social Studies Teacher's Guide for teacher training Colleges (TTCs) in SSE and it serves as official guide to teaching and learning of Social Studies.

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

The ambition to develop a knowledge-based society and the growth of regional and global competition in the job market has necessitated the shift to a competence-based curriculum. After a successful shift from knowledge to a competence-based curriculum in general education, TTC curriculum also was revised to align it to the CBC in general education to prepare teachers who are competent and confident to implement CBC in pre-primary and primary education. The rationale of the changes is to ensure that TTC leavers are qualified for job opportunities and further studies in higher education in different programs under education career advancement.

I wish to sincerely express my appreciation to the people who contributed towards the development of this document, particularly, REB staff, lecturers, TTC Tutors, Teachers from general education and experts from Local and International Organizations for their technical support.

I take this opportunity to call upon all educational stakeholders to bring in their contribution for successful implementation of this textbook.

Dr. NDAYAMBAJE Irénée

Director General REB.

ACKNOWLEDGEMENT

I wish to sincerely express my special appreciation to the people who played a major role in development of Social Studies Teacher's Guide for SSE Option. It would not have been successful without the support from different education stakeholders.

I wish also to thank Rwanda Education Board (REB) leadership who supervised the textbook writing process. I wish to extend my appreciation to REB staff, Lecturers, Tutors, experts from Local and International Organizations and Teachers from General Education for their effort during the writing of this textbook.

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PRESENTATION OF THE TUTOR'S GUIDE

PART I. GENERAL INTRODUCTION

1.0. Introduction

The purpose of this teacher's guide is to help you implement the Social Studies syllabus. It is designed to stimulate you to create exciting and meaningful lessons by enabling you to choose relevant and purposeful activities and teaching strategies. It will encourage you to research and look for new and challenging ways of facilitating students' learning. The tutor guide and the syllabus must be used side by side. The syllabus states the learning objectives for the subject and each unit and outlines the content and skills that students will learn, and the assessment requirements.

The tutor's guide provides direction for you in using the outcomes approach in your classroom using a step by step approach. This tutor's guide provides examples of teaching and learning strategies for Social Studies, elaboration of suggested activities and content, detailed information on how to make assessment tasks and the resources needed to teach Social Studies.

1.1. The structure of the guide

This section presents the overall structure, the unit and sub-heading structure to help tutors 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 learners with special educational needs, active methods and techniques of teaching Social Studies and guidance on assessment.

Part II: Sample lesson plan

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

Part III: Unit development

This is the core part of the tutor's guide. Each unit is developed following

the structure below. The guide ends with references.

Structure of a unit

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; tutors are free to take another crosscutting issue taking into consideration the learning environment.

Guidance on the introductory activity:

Each unit starts with an introductory activity in the learner's book. This section of the tutor's guide provides guidance on how to conduct this activity and related answers.

Note that learners may not be able to find the right solution but they are invited to predict possible solutions or answers. Solutions are provided by learners gradually through discovery activities organized at the beginning of lessons or during the lesson.

List of lessons/sub-heading

This section presents in a table suggestion on the list of lessons, lesson objectives copied or adapted from the syllabus and duration for each lesson. Each lesson /subheading is then developed.

End of each unit

At the end of each unit the tutor's guide provides the following sections:

Summary of the unit which provides the key points of content developed in the student's book.

Additional information which provides additional content compared to the student's book for the tutor to have a deeper understanding of the topic.

End unit assessment which provides the answers to questions of end unit assessment in the textbook 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 (average and gifted) based on end unit assessment results.

Structure of each-sub heading

Each lesson/sub-heading is made of the following sections:

- Lesson /Sub-heading title
- Prerequisites/Revision/Introduction:

This section gives a clear instruction to teacher on how to start the lesson

Teaching resources: This section suggests the teaching aids or other resources needed in line with the activities to achieve the learning objectives.

Tutors are encouraged to replace the suggested teaching aids by the ones available in their respective TTCs and based on learning environment.

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 text book:

Exercises/application activities: This provides questions and answers for exercises/ application activities

1.2. Methodological guidance

1.2.1. Developing competences

Since 2015, Rwanda shifted from a knowledge based to competence based curriculum for pre-primary, primary and general secondary education. This review comes as response to the needs of learners, society and the labour market. With a holistic learner-centered approach, it demands major changes in teaching methodology and the use of a wider range

of assessment techniques focusing more on formative or on-going continuous assessment. This has implications for teacher education and the necessary provision of support and guidance provided to colleges to ensure effective implementation. Since 2016 up to 2018, TTC curriculum have been revised to be competence-based in line with the basic education curriculum. The review was to align the pre-service teacher education programs to the new National Basic Education competence-based curriculum.

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 student's learning achievement and creating safe and supportive learning environment. It implies also that a student has to demonstrate what he/she is able to do using the knowledge, skills, values and attitude acquired in a new or different or 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 learner can do rather than what learners 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 didactic approach. The student 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 the subject of Social Studies.

- **Critical Thinking:** Learners analyse their environment or community for problems or challenges faced and the causes. After, they suggest possible remedies to the identified problem.
- **Research and problem solving:** Learners collect data using interviews, questionnaires and any other tool, analyze the data gathered and suggest solutions to the problems identified.
- **Creativity and Innovation:** Learners analyse resources such as waste materials existing in the community or environment. They develop or come up with new ways of utilizing such resources or how they can be put to use.

- **Communication Skills:** Learners can present themselves and their abilities by writing application letters or CVs to potential employers. Can write different documents such as Memos, Notices in a clear and understandable language to convey information effectively during interpersonal communication.
- **Teamwork, Cooperation, Personal and Interpersonal management and life skills:** Learners in teams complete different tasks where each may take on a different role while complementing each other's strengths and weaknesses in team leadership.
- **Lifelong Learning:** Learners lead a problem solving and decision making process in a team. Does a self-evaluation to identify own areas of strengths, areas of weaknesses and propose strategies for enhancing and improving in a team leadership. Alternatively, learners analyze a scenario involving conflicts at a workplace, identify the causes, suggest solutions and propose how they will apply the learned lessons to similar situations in real situations.

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 to be appropriately addressed. There are eight cross cutting issues identified in the national curriculum framework.
- Some cross-cutting issues may seem specific to particular learning areas/subjects but the teacher needs to address all of them whenever an opportunity arises. In addition, learners should always be given an opportunity during the learning process to address these crosscutting issues both within and out of the classroom.
- Below are examples on how crosscutting issues can be addressed in Social Studies subject:
- **Gender education:** Remind learners that both males and females have similar opportunities, rights and obligations in the workplace, and therefore need to be treated fairly and equally when dealing with contracts or resolving conflicts. People's opinion of gender roles should not deny or hinder one's right or responsibilities to meet his or her contractual obligations while teaching Social Studies
- **Environment and sustainability:** During the teaching of Social Studies, learners need to acknowledge the importance of protecting the environment in which we live in. So, throughout the unit/lesson

there is need to appreciate and take great care for environment as it is paramount.

- **Inclusive education:** Learners all need to realize that universal laws do not discriminate as they apply to all regardless of social, economic, political, physical background. Emphasis should be on how we all have the same rights. During the lessons of Social Studies, learners may discuss and appreciate the need to respect and advocate for employer's and worker's rights and responsibilities at workplace.
- **Peace and Values:** Right before the lesson begins; there are quite a lot of opportunities for tutors to promote peace and values among learners. Being punctual for activities (time management), involvement in various activities (teamwork), keeping their school environment clean (responsibility), greeting one another are among such opportunities (empathy).

In a lesson, encourage learners to greet one another, create a conducive learning environment, clean the chalkboard, arrange the classroom, books, class work, among others. Also in case of conflicts within a lesson, take time to address the conflicts and discuss with learners the need to resolve conflicts amicably. You may also give learners an opportunity to participate in conflict resolution and decision making.

- **Comprehensive sexuality education (HIV/AIDS, STI, Family planning, Gender equality and reproductive health):** During the lessons/activities, learners should be given an opportunity to discuss freely about the various changes they are undergoing, as they are adolescents. They should be aware of how to manage the changes in their bodies, discuss HIV/AIDS without stigmatization, STIs and how to control them, family planning, gender equality and reproductive health. Learners should be encouraged to seek for appropriate help whenever needed. This may not directly fit or come in the lessons but utilize opportunities observed among the learners both in and outside of the class.
- **Financial Education:** For example in setting personal goals, learners may be requested to make a plan of what they plan to save, how much and when they plan to achieve their saving goals. Learners may describe strategies to reduce spending and increase savings to become financially fit. In every lesson, learners can share briefly their progress towards their goals: how much, strategies that worked and what needs to improve on.

- **Standardization Culture:** In every lesson take an opportunity to share with learners that standards should be respected since they are part and parcel of our lives. From school uniform, to class size, to lesson duration, language of instruction, among others. So always create opportunities to have learners discuss where standards apply and when they need to be cautious about standards during their everyday life. Throughout the unit, Standardization will be the opportunity to learn all concepts related to standardization Culture and to see how it can apply in different area.
- **Genocide Studies:** Learners need to become aware that all human beings are equal and have equal rights. At the work place they should avoid and denounce all instances that result into other's rights being violated. Give learners opportunities to share how a Social Studies student can promote the fight against genocide ideologies. During rights and responsibilities session, learners relate the genocide of 1994 against the Tutsi and violation of human rights.

1.2.3 Attention to special educational needs and inclusive education

In the classroom, learners learn in different way depending to their learning pace, needs or any other special problem they might have. However, a tutor has the responsibility to know how to adopt his/her methodologies and approaches in order to meet the learning need of each student in the classroom. Also tutors need to 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 to the unit and the nature of the lesson.

In order to create a well-rounded learning atmosphere, tutors need to:

- Remember that learners learn in different ways so they have to offer a variety of activities. For example 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 instruction 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 long-winded 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. Both learners will benefit from this strategy.
- Use multi-sensory strategies. As all learners learn in different ways, it is important to make every lesson as multi-sensory as possible. Learners with learning disabilities might have difficulty in one area, while they might 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 a learner with developmental impairment:

- 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 a learner with visual impairment:

- 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 difficulties, ask them what they can see.

- Make sure the learner has a group of friends who are helpful and who allow the child to be as independent as possible. Plan activities so that learners work in pairs or groups whenever possible

Strategy to help a learner with hearing impairment:

- Always get the learner's attention before you begin to speak.
- Encourage the learner to look at your face.
- Use gestures, body language and facial expressions.
- Use pictures and objects as much as possible.
- Keep background noise to a minimum.

Strategies to help learners with physical disabilities or mobility difficulties:

- Adapt activities so that learners who use wheelchairs or other mobility aids 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
- Get advice from parents or a health professional about assistive devices

Adaptation of assessment strategies

Each unit in the tutor'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 learners respectively.

1.2.4. Guidance on assessment

Assessment is an ongoing process of identifying, gathering and interpreting information about students' achievement of the learning outcomes and can be integrated into the students' normal learning activities. Assessment is an important part of teaching and learning. It is used to:

- Evaluate and improve teaching and learning

- Report achievement
- Provide feedback to students on their progress.

Types of Assessment

- **Assessment for learning (Continuous/ formative assessment):** Assessment for learning is often called formative assessment and is assessment that gathers data and evidence about student learning during the learning process. It enables you to see where students are having problems and to give immediate feedback, which will help your students learn better. It also helps you plan your lessons to make student learning, and your teaching more effective. Often it is informal and students can mark their own work or their friends. An example is a quick class quiz to see if students remember the important points of the previous lesson.
- **Assessment of learning (Summative assessment):** Assessment of learning is often called summative assessment. It is used to obtain evidence and data that shows how much learning has occurred, usually at the end of the term or unit.

End of year examinations are examples of summative assessment. It is usually done for formal recording and reporting purposes.

Assessing Social Studies units

In the Social Studies syllabus, the key unit competences, which link to the broad learning outcomes, are assessed through specified assessment tasks using a range of assessment methods. Assessment criteria for each unit outcome provide clear indications of how, and to what extent, the achievement of the learning outcomes may be demonstrated. Performance standards, marking guides and assessment criterion help teachers with the marking process and this ensures that assessment is consistent.

across schools.

When you set a task, make sure that:

- The requirements of the task are made as clear as possible to the student
- The assessment criteria and performance standards or marking guides are provided to the student so that they know what it is that they have to do
- Any sources or stimulus material used are clear and appropriate to the task

- Instructions are clear and concise
- The language level is appropriate for the grade
- It does not contain gender, cultural or any other bias
- Materials and equipment needed are available to students
- Adequate time is allowed for completion of the task.

Feedback

- When you assess the task, remember that feedback will help the student understand why he/she received the result and how to do better next time.

Feedback should be:

- Constructive so that students feel encouraged and motivated to improve
- Timely so that students can use it for subsequent learning
- Prompt so that students can remember what they did and thought at the time
- Focused on achievement and effort of the student
- Specific to the unit learning outcomes so that assessment is clearly linked to learning.

Feedback can be:

- **Informal or indirect** – such as verbal feedback in the classroom to the whole class, or person to person
- **Formal or direct** – In writing, such as checklists or written commentary to individual student either in written or verbal form.
- **Formative** – given during the topic with the purpose of helping the student know how to improve for example use of portfolios as a tool of assessment during, after or at end of the lesson.
- **Summative** – Given at the end of the unit with the purpose of letting the students know what they have achieved for example use of portfolios as a form of end of unit assessment.

Tests

A test is a formal and structured assessment of student achievement and progress which the tutor administers to the class. Tests are an important aspect of the teaching and learning process if they are integrated into the regular class routine and not treated merely as a summative strategy.

They allow students to monitor their progress and provide valuable information for you in planning further teaching and learning activities.

Tests assist student learning if they are clearly linked to the outcomes. Evidence has shown that several short tests are more effective for student progress than one long test. It is extremely important that tests are marked and that students are given feedback on their performance.

There are many different types of tests. Tests should be designed to find out what students know and about the development of thinking processes and skills. Open questions provide more detailed information about achievement than a question to which there is only one answer.

Principles of designing classroom tests

Tests allow a wide variety of ways for students to demonstrate what they know and can do. Therefore:

- Students need to understand the purpose and value of the test
- The test must assess intended outcomes
- Clear directions must be given for each section of the test
- The questions should vary from simple to complex
- Marks should be awarded for each section
- The question types (true/false, full-in-the-blank, multiple choice, extended response, short answer, matching) should be varied.

Tests should:

- Be easy to read (and have space between questions to facilitate reading and writing)
- Reflect an appropriate reading level
- Involve a variety of tasks
- Make allowance for students with special needs
- Give students some choice in the questions they select
- Vary the levels of questions to include gathering, processing and applying information
- Provide sufficient time for all students to finish.

Tutor assessment

Assessment is a continuous process. You should:

- Always ask questions that are relevant to the outcomes and content
- Use frequent formative tests or quizzes
- Check understanding of the previous lesson at the beginning of the next lesson through questions or a short quiz
- Constantly mark/check the students' written exercises, class tests, homework activities
- Use appropriate assessment methods to assess the tasks.

Self-assessment and peer assessment

Self and peer assessment helps students to understand more about how to learn.

Students should be provided with opportunities to assess their own learning (self-assessment) and the learning of others (peer assessment) according to set criteria.

1.2.5 Students' learning styles and strategies to conduct teaching and learning process

- How students learn
- What I hear I forget.
- What I hear and see I remember a little.
- What I hear, see and discuss I begin to understand.
- What I hear, see, discuss and do, I acquire knowledge and skills.
- What I teach to another, I master.
- (Active Learning Credo statement by Silberman 1996)
- In support of this are the findings that we remember:
 - 20% of what we hear
 - 40% of what we see
 - 90% of what we see, hear, say and do or what we discover for ourselves.

A student-centered approach to learning

Different students learn in different ways. Some students learn best by writing, others by talking and discussing, others by reading and others by listening. Most students learn by using a combination of those. All students learn skills through

practicing and repetition. You need to use a variety of teaching strategies to cater for the different ways your students learn.

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; instructional materials available; the physical/sitting arrangement of the classroom, individual students' needs, abilities and learning styles.

Teaching and learning strategies

In order to cater for different students' learning styles and to assist and encourage students to learn, teachers need to perform certain tasks. These are teaching strategies.

You need to engage students directly in learning but there are times when you have to take charge of the learning in the class and teach particular concepts or ideas

Teaching strategies include:

- Group work
- Skills lab
- Research/inquiry
- Class discussions/debates
- Problem-solving activities
- Teacher talk, instructions, explanations, lectures or reading aloud
- Directed question and answer sessions
- Audio-visual presentations
- Text books or worksheets
- Directed assignments
- Demonstration and modeling
- Guest speakers
- Classroom displays.

1.2.6. Student Social Studies Club and Skills lab

a) Student Social Studies club.

The student Social Studies club (SSC) is an extra-curricular activity to

enhance student learning of Social Studies competencies.

It is a club in which students work in groups under the supervision of their teacher.

Why – Learning by Doing

Part of Social Studies is practical. For example, Economics, Students must have time to practice what they learn.

Student Social Studies Club:

- Enhance the learner's Social Studies competences.
- Apply the knowledge, skills, and attitudes learned.
- Inspire young people to succeed in the global economy.

Who – The Club is Open to All Students

A' level Social Studies students typically lead the student Social Studies club. The Club runs multiple different business projects managed by small teams (Skills Lab teams). The club has student leaders and recruits club members from the total school population to join them.

How – Students Lead Business Projects

The club is student-led but is supervised by entrepreneurship teacher(s).

The Club should be student run. Students should be actively engaged in idea generation, planning, procurement, sales, record keeping, and decision making. Teachers should only guide them. Clubs should start small with what the students can afford. Clubs should start with or no capital and used recycled materials and seeds only!

Teachers should not ask the administration to give the Club huge sums of money to start operating. The Club experience should reflect the real business world. No one will just give them big capital for free when they graduate, so you should request only what is realistic.

Club funds and profits should be kept in a safe and secure place. The best place is a club account with the school bursar. Students should not keep Club money in their suitcases as cases of theft and misuse of funds will arise.

The patron should organize inter Club competitions / exhibitions at the school to motivate students to work to succeed and to showcase the Club work to the rest of the stakeholders.

Skills Lab Teams meet during extracurricular time to create their projects. The students of Social Studies club hold regular club meetings to plan and coordinate activities.

When – Extra-curricular time

Student Business Clubs meet a time convenient for students, after classes. The Student Business Club is one of the best extra-curricular activities that strengthens both academic and practical competencies.

Where – In-school and back home

Students of Social Studies club activities take place both in school and in the community. Club members can decide on what to do and when? Both boarding and day students can participate in Social Studies club.

b) Skills Lab

i. What is skills lab

Skills lab is a method of teaching where students are required to complete learning activities working in manageable groups. Skills Labs are a no cost, easy method to change teacher's pedagogy from theory-based to competence-based instruction.

The basic characteristics of Skills Lab are:

- It takes place during a double period (80 minutes)
- Students work in small groups (manageable teams)
- Assessment takes place through portfolio activities
- Students talk more than teachers (10% teacher talk time and the rest is for the students)
- Students receive constructive feedback on their work (Teacher gives quality feedback on student presentations.
- Skills lab consists of three components: build, practice and present.

Note

Skills lab as a methodology of teaching can be used at any time within a unit (i.e. at the start, during or at the end of the unit). It can be used as a method of teaching during teaching and learning of a given lesson NOT necessarily only at the end of the week. Skills Lab follows a 3-part format, which helps teachers plan for practical and competency-based lessons. This format includes Build, Practice and Present, described below:

- ii. Steps of skills lab lesson plan
- iii. Use of Present Boards and Portfolios during Skills Lab

Present boards are boards made by learners using locally available resources that contain learners' work/achievements. When learners finish their work from presentations as a group, it's hang on the present board. This can be used by both the teacher and students for reference.

The biggest sign of a successful skills lab is the activities students complete. And how do we know whether students completed their group activity? It's through **Present Boards**. Each team has their own board to display all the work they completed during the Skills Lab. At the end of each Skills lab, each team makes a verbal presentation to the class and shows their Present Board.

	When?	How?	Where?
Present Boards	Last activity of each Skills Lab. Each lab team/group has their own 1 Present Board.	Made by students. Boards have cool designs to showcase the notes and work product of each lab	Boards are hung on the walls of classroom and kept there for others to see

iv. Relationship between Portfolios and Present Boards

What is a Student Portfolio?

A portfolio is a collection of student work for individual assessment. Learners fill their portfolios by completing a series of assignments. These individual assignments are the evidence that students have mastered a learning objective. Each assignment requires learners to apply the skill they learned in that unit practically.

Portfolios are the basis for Skills Lab. First, teachers create the portfolio assessment for students to complete.

Skills Lab is when students will work on group activities to prepare for completing the portfolio assessment individually. Skills Lab is one of your teacher's normal lessons (no extra time is needed) that are especially designated for the purpose of students working in groups to complete their activities. Skills Lab prepares students to complete portfolio assignments on their own after classes. So, the classroom activity should connect directly to the portfolio assignment.

For example, they set goals as a group in class, and set individual goals as portfolio assignment.

	Done by?	When?	Where?
P r e s e n t boards	Groups	During Skills Lab	On present boards
Portfolios	An individual	As an assignment	In portfolio folder

1.2.7. Steps for a lesson in active learning approach

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 part and their small steps.

1) Introduction.

Introduction is a part where the teacher makes connection between the previous and current lesson through appropriate techniques. The teacher opens short 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 sequencings.

Development of the new lesson

The development of a lesson that introduces a new concept will go through the following small steps: discovery activities/prediction, presentation of learners' findings, exploitation,

synthesis/summary and exercises/application activities, explained below:

- Discovery activity/prediction

Step 1

- The teacher discusses with students to take responsibility of their learning
- He/she distributes the task/activity, necessary resources and gives instructions related to the tasks (working in groups, pairs, or individual to instigate collaborative learning, to discover knowledge to be learned)

Step 2

- The teacher let the students work collaboratively on the task.

- During this period the teacher refrains to intervene directly in the working of activity or results/findings of the task
- He/she then monitors how the students are progressing towards the results, output, results, and expectations knowledge to be learned and boost those who are still behind (but without communicating to them the knowledge).

Presentation of learners' productions

- In this period, the teacher invites representatives of groups to share their productions/findings.
- After three/four or an acceptable number of presentations, the teacher decides to engage the class into exploitation of the students' productions.
- Exploitation of learner's productions
- The teacher asks the students to evaluate the productions: which ones are correct, incomplete or false
- Then the teacher judges the logic of the students' products, corrects those, which are false, completes those, which are incomplete, and confirms those, which are correct.

Institutionalization (summary/conclusion/ and examples)

- The teacher summarizes the learned knowledge and gives examples, which illustrate the learned content. Then links the activities to the learning objectives, and guide learners to make notes.

Exercises/Application activities

- Exercises of applying processes and products/objects related to learned 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 learned.

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, or additional activities

1.2.8. Template of a lesson plan in active learning approach

LESSON PLAN

School Name: Teacher's name:

Term	Date	Subject	Class	Unit N°	Lesson N°	Duration	Class size
	... / ... / 20.....				... of ...	...	
Type of Special Educational Needs to be catered for in this lesson and number of learners in each category							
Unit title							
Key Unit Competence							
Title of the lesson							
Instructional Objective							
Plan for this Class (location: in / outside)							
Learning Materials (for all learners)							
References							

Timing for each step	Description of teaching and learning activity		Generic competences and Cross cutting issues to be addressed + a short explanation
	Teacher activities	Learner activities	
Introduction ...min			
Development of the lesson ...min			
Conclusion ... min			
Teacher self-evaluation			

SOCIAL STUDIES LESSON PLAN

School Name: TTC CYAHINDA Teacher's name: MANZI ERIC

Term	Date	Subject	Class	Unit N°	Lesson N°	Duration	Class size
3	2 /09/ 2019	Social studies	Y1 SSE	1	1of 3	40 minutes	32
Type of Special Educational Needs to be catered for in this lesson and number of learners in each category							
Unit title		General introduction to social studies					
Key Unit Competence		The student-teacher should be able to explain the components of social studies and evaluate its importance.					
Title of the lesson		Importance of learning and teaching social studies					
Instructional Objective		With help of extra from the textbook, the student teachers will be able to write the meaning of social studies and the importance of teaching and studying it correctly. The student teachers who have hearing impairment will be repeated loudly the instructions of how to do evaluation.					
Plan for this Class (location: in / outside)		Inside the classroom					
Learning Materials (for all learners)		The internet, the student teacher's textbook of social studies, Braille document					
References		Social studies student teacher's book page...and social studies teacher's guide page.....					

Timing for each step	Description of teaching and learning activity		Generic competences and Cross cutting issues to be addressed +a short explanation
	Teacher activities	Learner activities	
Revision 5 min	To ask the student- teachers anything they know on the term social studies. To ask the student teachers where they have learned that information related to social studies. Tutor announces objectives of the lesson. Attention will be paid to those student teachers with hearing impairment	To answer questions as they are asked by the tutor. To answer questions as they are asked by the tutor. Student teachers listen to the tutor.	<u>Cross cutting issues</u> to be addressed Inclusive education Care will be given to all student teachers including special education needs cases. At this time, all student teachers should be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities. Gender With this cross cutting issue, learners both girls and boys will be enabled to exploit their full potential and talents without any discrimination or prejudice.

			<u>Generic competences</u> Communication: through answering questions the student teachers are developing oral communication skills. Critical thinking: through answering questions and discussing with peers student teachers are developing critical thinking.
Development of the lesson Analysis 1	To take the student teachers in smart classroom and search the meaning of the word social studies -Through question and answer technique, the student teachers will share what they have researched	To go in the smart classroom and search the meaning of the word social studies. To answer questions as they are made by the tutor .To listen the tutor while providing the possible meaning of the term social studies. .To answer questions of synthesis one.	Generic competences to be addressed: Cooperation, interpersonal management and life skills: student teachers share their ideas in groups. Critical thinking – student teachers observe the map and come up with conclusion Communication – student teachers discuss and present their ideas.

Synthesis1 The tutor will provide the true possible meaning of the term social studies. To ask the student teachers to provide the meaning of the word social studies To help the student teachers to make groups of five student teachers and the hearing impaired student will be allocated in different groups.	To make groups in active way. To listen to instructions and the activity. To make presentation by group representatives and answering questions asked by other group members.	Cross cutting issues Inclusive education Care will be given to all student teachers including special education needs cases. At this time, all student teachers should be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities. Gender With this cross cutting issue, student teachers both girls and boys will be enabled to exploit their full potential and talents without any discrimination or prejudice.
Analysis 2 To give them instructions and to assign them the activity to do. To make presentation by the group representatives To make harmonization of the activity. To ask questions on analysis 2 To ask questions on both analysis.	To make harmonization of the work. To answer questions as they are made by the tutor. To answer questions orally on both analysis.	
Synthesis 2		
Global synthesis		

Summary and Conclusion	Tutor involves student teachers in lesson summary through questions.	Involve themselves in the summary through questions and answers.	Generic competences Cooperation, interpersonal management and life skills: student teachers share their ideas in groups.
10 min	To help student teachers to do evaluation activity	Student teachers do evaluation activity in written form	Critical thinking – student teachers observe the map and come up with conclusion
	To guide student teachers to suggest the next lesson	The visually impaired student teachers will answer the evaluation orally.	Communication – student teachers discuss and present their ideas.
	The tutor gives student teachers the homework to make research on the next lesson	Student teachers suggest the next lesson by referring to the current lesson through imagination.	Cross cutting issues Inclusive education Care will be given to all student teachers including special education needs cases. At this time, all student teachers should be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities.
		To write the homework together with receiving instructions.	Gender With this cross cutting issue, student teachers both girls and boys will be enabled to exploit their full potential and talents without any discrimination or prejudice.

**Teacher self-
evaluation**

The objectives were partly achieved being the first lesson of the year after a very long break.
Remedial activities are to be organized at an appropriate time.

● UNIT: 1

GENERAL INTRODUCTION TO SOCIAL

1.1. Key unit competence:

The student-teacher should be able to explain the components of social studies and evaluate its importance.

1.2. Prerequisite

As prerequisites to facilitate the teaching and learning of this unit the following elements should have been learned before: The meaning of history, geography, economics, moral issues or ethics, philosophy, political education, sociology, psychology and anthropology.

The will also use knowledge learned in social studies primary schools.

1.3. Cross cutting issues to be addressed

Inclusive education: care will be given to all learners including special education needs cases. At this time, all learners should be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities.

Gender: with this cross cutting issue, learners both girls and boys will be enabled to exploit their full potential and talents without any discrimination or prejudice.

1.4. Guidance on the introductory activity

At the beginning of this unit one, invite learners to do an introductory activity of the unit one found in student teacher's book. It will help student teachers to be interested, to know what happens or will happen in this unit and help them to be passionate to know by the end of the unit what they thought was not possible at the beginning. This will help them identify some issues and open them to what they didn't know and be inquisitive to know about the importance of social studies.

1.5. List of lessons

#	Lesson title	Learning objectives	Number of periods
1	Importance of learning and teaching social studies	The student –teachers should be able to explain the importance of teaching and learning social studies	1
2	Components of social studies and their relationship	The student –teachers should be able to explain the components of social studies and their importance	1
3	End unit assessment		1

Lesson 1: Importance of learning and teaching social studies

a) Prerequisites/revision/introduction

To start this lesson, the tutor has to use introduction by asking student teachers about the meaning of social studies.

b) Teaching resources

The tutor has to use the internet, the student teacher's textbook of social studies and other reference book related to social studies.

c) Learning activities

Tutor arranges the learners into groups (3 up to 5 student teachers) and ask them to do the first activity in their textbook (see student book page). Student teachers present their work to the whole class and followed by the teacher's harmonisation.

d) Application activities

Questions and suggested answers to assess the lesson learning objective.

Question

1. What is social studies?
2. Explain other importance of learning and teaching social studies in secondary schools.

Answer

1. According to Collins English dictionary, ***social studies*** is the study of how people live and organize themselves in society, embracing geography, history, economics and other subjects.

Social studies are also a study of people in relation to each other and to their world it is an interdisciplinary subject which borrows from many disciplines for example history, geography, and economics. It focuses on peoples' relationship in different environments and help learners to become active and responsible citizens.

2. The study of Social studies provides students with the basic knowledge, skills, attitudes and values to continue to learn, make informed decisions, positively participate in society, and achieve personal goals of interest.

Social studies has the capability to guide students' skills progress, stimulate students' interest and awareness, and enhance their thought processes and decision making.

Some of the major skills social studies will help students to master include critical thinking, writing, reading, analysis, interpretation, independent thinking, and more. If these skills are practiced consistently throughout a school year, students can begin to master them. It is these skills that will build a foundation for the knowledge, ideas, abilities and stimulated interest that social studies can provide for students.

Social studies is also designed to increase historical understanding; turning points, causes and effects, progress and decline, empathy, connecting past and present, and historical agency.

Social studies has the ability to expose students to common biases and multiple perspectives from an early age preparing them for the reality that waits for them after high school, including diversity and dishonesty.

Social studies has the ability to prepare students and adolescents to be productive, successful, and active citizens in a democratic society. All of the skills, ideas, and exposure all funnel into the overall idea of guiding the development of independent, individual, intelligent and informed citizens who can actively participate in society to make necessary changes and improvements.

Lesson 2: Components of social studies and their relationship

a) Prerequisites/revision/introduction

To start this lesson, the tutor has to use revision by asking student teachers questions about the importance of social studies.

b) Teaching resources

The tutor has to use the internet, the student teacher's textbook of social studies and other reference book related to social studies.

c) Learning activities

Tutor arranges the learners into groups (3 up to 5 student teachers) and asks them to do the second and the third activities in their textbook (**see student book page 3**). Student teachers present their work to the whole class and followed by the teacher's harmonisation.

d) Application activities

Questions and suggested answers to assess the lesson learning objective

Questions

1. Explain the components of social studies
2. Describe the relationship between the components of social studies

Answers

1. **Geography** is the study of earth's landscapes, peoples, places, and environment. It is quite simply about the world which we live. Geography is unique in bridging the social sciences with natural sciences.

History is the analysis and interpretation of the human past that enables us to study continuity and change overtime. It is an act of both investigations that seeks to explain how people have changed overtime.

Economic: Is a social science that analyze the production of goods and services, it focuses on how economic agent behave or interact and how economic works. Economics is a social sciences that predicts and studies the human behavior before given economic; situation.

Moral issues or ethics: Moral issues or ethics refers to an issue

concerning how one ought to behave, how other ought to behave or whether a situation proper or unproper, Moral issues are defined a society often called norm however if you claim to be a Christian moral issues can or should be defined by biblical principles the question might what is your moral stand that you use?

Philosophy: is a way of thinking about a world the universal and can help to us to learn how to think more creatively. It offers us path to improve our critical thinking skills far beyond anything else.

Political education: refers to the knowledge regarding politics. Political education provides the science of leadership, national integration, creation of good citizen and preparing adult life

Sociology: it is the study of group living, cooperation and their responsibilities

Psychology: it is the study of the mind, emotions and behavioral process

Anthropology: it is the study of the way people live

2. **Relationship between history and geography:** history and geography are specially closed because there represent to fundamental dimension of the same phenomena. History view human experience from the perspective of **time** and geography view human experience from the perspective of **space**. These dimensions of time and space are constantly affecting the other. Key concept of geography such as location, space, and region are tied inseparably to major idea of history such as time, period and events. Geography and history enable learner to understand how the events and places have affected each other across time.

Relationship between economic and geography:

Location and climate have large effects income levels and income growth, through the effect of transport cost, disease burdens and agricultural productive, among other channels. Furthermore, Geography seems to be a factor in choice of economic policy itself. When we identify geographical regions that are now conducive to modern economic growth, we find that many of these regions have high population density and rapid population increase. This is especially true in populations that are located far from the coast, and thus that face large transport cost for internal trade, as well as population in tropical Regions of high diseases burden.

Relationship between political science and history:

The political science and history are very close, history without political science has no fruits, and political science without history has no roots.

History is essential in political science because it is a record of past events. It provides the raw materials to political science. The study of state as it can be done only with the help history. Historical study is essential for understanding political thoughts, movements and institutions. In general, history is a vast store house of facts and information as from which political science obtains data for all its generation. History has also much to borrow from political science. Our knowledge of history is a meaningless if the political bearings of events and movements are not adequately appreciated. E g: History of 19th Century Europe cannot be fully understood without bring out significance of Movements like Nationalism, Imperialism, Individualism and Socialism.

Relationship between politics/political science and ethics/morals:

Ethics/ morals and political are intimately related, both are normative science.

Ethics aim at supreme good individual well as political aim at public good. Public good can be obtained through individual good and individual goods can be attained through public good. Both ethics and political are concerned with the idea of justice, liberty, right, and duties etc

1.6. Summary of the unit

From the points discussed by learners in their groups, class presentations, activities done in the classroom, the tutor come up with the synthesis of the whole unit.

1.7. Additional Information for tutors

Social Studies: According to Collins English Dictionary Social Studies is the study of how people live and organize themselves in society, embracing geography, history, economics, and other subjects. “Social Studies” is also a study of people in relation to each other and to their world. It is an interdisciplinary subject which borrows from many disciplines for example history, geography, and economics. It focuses on people’s relationships in different environments and helps learners to become active and responsible citizens. The social studies are the study of political, economic, cultural, and environmental aspects of societies in the past, present, and future (National Council for the Social Studies, 1998).

Family: it is a group of individuals living together and related through blood, adoption or marriage. **Community:** a group of families which have a senses of belongingness. According to Cook and Cook (1950) a community

is an organized way of life within a geographical area. Thus, community is a group of families occupying a particular place with common practices.

Society: according to Oxford Dictionary, a society is a system whereby people live together in organized communities. According to Ginsberg (1932) a society is a collection of individuals united by certain relations or modes of behavior which mark them off from others who do not enter into these relations or who differ from them in behavior. According to Cole (1920) a society is the complex of organized associations and institutions within the community.

Socialization: it is the process by which an individual is adapted to his social environment and becomes a recognized, cooperating and efficient member of society. It is the process by which children learn the ways of their society and make the ways part of their personality. It is the process whereby an individual learns the behaviors, values and expectations of others that enable him/her to play his/her roles in society. Thus, socialization is the process of preparing a child to fit in his family, community and society by giving the child the right education (knowledge, skills and attitudes).

Life Skills: according to World Health Organization, life skills are abilities for adaptive and positive behavior that enables individuals to deal effectively with the demands and challenges of everyday life. According to UNICEF, Life Skills refers to a large group of psycho-social and interpersonal skills which can help people make informed decisions, communicate effectively and develop coping and self-management skills that may help them lead a healthy and productive life. According to Dictionary Com's 21st century, life skills refers to the ability to cope with stress and challenges of daily life, especially skills in communication and literacy, decision making, occupational requirement, problem solving, time management and planning.

Attitude: attitudes may be defined as a disposition to respond positively or negatively to cognitive, affective and behavioral responses (Zanna and Rempel, 1988; Fishbein and Ajzen, 1976)

3. Nature and Scope of Social Studies

According to Seefeldt (1977) all of education has a goal of transmitting culture to the young, but social studies seems uniquely suited to helping young children gain the knowledge, skills, attitudes, and values required of them to perpetuate society.

'Social Studies' is concerned with the study of people and their interactions with others and the total environment. Social studies transmit a way

of life while at the same time, building the skills, knowledge, attitudes and the values needed to change and improve that way of life. Children learn social studies as they live, grow, and experience. For example while building houses using sticks, and performing family activities. Social studies curriculum is based on children's experiences and on their discovery of the world around them. Themes are planned beginning with the home and then as children's experiences widen, the neighborhood and the community.

According to Seefeldt (1977) Social Studies embrace all disciplines from social science field. Everything concerning the nature of people and the world, the heritage of the past, and all of the contemporary social living is considered to be social studies. In order for a society to perpetuate itself, children in that society must understand the values and attitudes of that society and possess knowledge and skills required to live in that society. For children to be useful in their society, they need to be knowledgeable, and skilled to help them to solve problems, to analyse their attitudes, and be able to live with other people.

The scope of Social Studies is very wide because:

It is concerned with people and their interactions and the total environment. In social studies children learn how to relate with others, how to work with others, and how to live with others. Social studies equip children with knowledge, skills, values, and positive attitudes which will help them to be useful members of their families, community and society.

Social Studies includes the following social disciplines:

- Sociology: it is the study of group living, cooperation and their responsibilities
- History: it is the study of what has happened in the life of people, nation or society
- Geography: it is the study of the earth surface, resources and concepts of direction, location and distance
- Economics: it is the study of production, distribution and consumption of goods and services
- Psychology: it is the study of the mind, emotions and behavioral process
- Anthropology: it is the study of the way people live. Thus, the scope of social studies is very wide because it includes everything that enables children to understand their world and their place in it.

Role of Social Studies

It includes:

- Social studies develops knowledge, skills and positive attitudes in children which help them to become active and responsible citizens.
- Inculcates values in children. For example, cooperation, honesty, respect, sharing, discipline, and love which makes them useful.
- Social studies helps children to an understanding and appreciation of their family members.
- Social studies help children to understand and appreciate their culture. Culture has two components: Material culture which refers to everything we can see and touch for example houses, chair, food and clothes. Non material culture refers to everything we cannot see and touch for example education, beliefs, laws and religion.
- Social studies develops an understanding of the need for rules and regulations. What are rules? They are limits placed in our environment. Rules protect us from danger or harm. Rules are everywhere for example we have home rules, school rules, and road rules. Caregivers and parents will help children to understand the need for rules and regulations.
- Social studies. develops an understanding, appreciate and preserve the environment. It provides children with opportunities to understand their environment and appreciation of their physical and cultural environments and how human beings depend on the environment.
- Social studies produces people who are creative, caring and courteous citizens. It helps children to adhere to ethical and moral values.
- Social studies equips children with knowledge and understanding of the past which helps them to cope with the present and be able to plan for the future. It provides children with productive problem solving skills
- Social studies helps children to understand institutions within the society and their roles in promoting people's well-being. For example health institutions, banks, schools, etc.
- Social studies connects early childhood curriculum to the family, community and society of the child. This means that in Social studies children learn about their families, community and society or country. Without Social studies, whatever children will be

learning will not be related to their family, community and society of the child. For the society to continue, children need knowledge, skills, and positive attitudes about their society.

4. Objectives of Teaching Social Studies in schools

According to Seefeldt (1977) educators, in order to help children feel competent, to give them self-confidence they need to live in today's world, must plan effective social studies programmes, with clear objectives that are consistent with sound theory and research.

Social studies should be designed to:

- Provide children with experiences that will foster knowledge, build skills, develop attitudes, and clarify values; experiences that will help children to sort out the information they receive from the environment, helping them to be competent, and productive members of their society. Equip them with the knowledge and understanding of the past necessary for coping with the present and planning for the future, enable them to understand and participate effectively in their world, and explain their relationship to other people and to social, economic, and political institutions.
- Provide students with the skills for productive problem solving and decision making, as well as for assessing issues and making thoughtful value judgments.
- Help students to integrate those skills and understandings into a framework for responsible citizen participation, whether in their play group, the school, the community,

1.8. End unit assessment (answers)

Answers to end unit assessment or revision questions

1. The following are the importance of teaching and learning social studies in secondary schools

- Social studies develops knowledge, skills and positive attitudes in children which help them to become active and responsible citizens.
- Inculcates values in children. For example, cooperation, honesty, respect, sharing, discipline, and love which makes them useful.
- Social studies helps children to an understanding and appreciation of their family members.
- Social studies. develops an understanding, appreciate and preserve the environment. It provides children with opportunities to

understand their environment and appreciation of their physical and cultural environments and how human beings depend on the environment.

- Social studies produces people who are creative, caring and courteous citizens. It helps children to adhere to ethical and moral values.
- Social studies equips children with knowledge and understanding of the past which helps them to cope with the present and be able to plan for the future. It provides children with productive problem solving skills
- Social studies helps children to understand institutions within the society and their roles in promoting people's well-being. For example health institutions, banks, schools, etc.

2. The relationship between the components of social studies are described below:

Relationship between history and geography: history and geography are specially closed because they represent two fundamental dimensions of the same phenomena. History views human experience from the perspective of **time** and geography views human experience from the perspective of **space**. These dimensions of time and space are constantly affecting the other. Key concepts of geography such as location, space, and region are tied inseparably to major ideas of history such as time, period and events. Geography and history enable learners to understand how the events and places have affected each other across time.

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1.9. Additional activities

1.9.1. Remedial activities (questions and answers)

Questions

1. What is social studies?
2. List two importances of social studies.

Answers

1. 'Social Studies' is concerned with the study of people and their interactions with others and the total environment. Social studies transmit a way of life while at the same time, building the skills, knowledge, attitudes and the values needed to change and improve that way of life.
2. Two importances of social studies are:
 - Social studies develops knowledge, skills and positive attitudes in children which help them to become active and responsible citizens.
 - Inculcates values in children. For example, cooperation, honesty, respect, sharing, discipline, and love which makes them useful.
 - Social studies helps children to an understanding and appreciation of their family members.

1.9.2. Consolidation activities

1. Why is important to have social studies skills for parents?
2. What are the relationship between:
 - a. Social studies and geography
 - b. Social studies and history

1.9.3. Extended activities

1. What are the skills gained from social studies that will help someone to live in harmony with others?
2. How did social studies help the graduate to have better life?

● UNIT: 2

FORMATION OF RELIEF FEATURES OF RWANDA

2.1 Key unit competence:

The student-teacher should be able to explain the formation major relief regions of Rwanda and evaluate their effects on human activities.

2.2. Prerequisite (knowledge, skills, attitudes and values)

Student-teachers in year one should have knowledge, skills, attitudes and values in what they acquire at school. Student-teachers are not studying this topic for the first time. They have mastered the same content in senior two, unit 4, where they have studied tectonic process and associated features.

What they have learnt in past studies will provide a strong foundation that Student-teachers can understand better the content of this unit 2 of year one.

It's very important to note that, they already have necessary knowledge, skills and attitudes. The difference is that, at this level the content in the Learner's book is more detailed and goes beyond what the ordinary program demanded.

These already acquired knowledge, skills, attitudes and values should be used by the tutor to conduct diagnostic assessment as a way of measuring each Student-teacher's abilities.

2.3. Cross-cutting issues to be addressed

There are many cross-cutting issues that can be applied in this lesson. In the student's book, some cross-cutting issues were used to integrate them with activities. The most highlighted is environment and sustainability.

However, tutor is advised to improve and use other cross-cutting issues by innovating and creating new situations. The activities used were just a sample. This calls for the tutor to take note of the cross-cutting issues that he/she is interested in.

Peace and values education can also be integrated in every situation

where student-teachers themselves are or in community, taught to thank you wherever their peers or any person respond to a given answer.

2.4. Guidance on introductory activity

The introductory activity aims at highlighting the knowledge, skills and attitudes that student-teachers, acquired previously in classes. This activity prepared, requires student-teachers to better use of all the competences, knowledge together with attitudes in understanding the new topic of year one unit 2. Activities in this unit 2 can be answered by most of the student-teachers. The tutor can provide enough time for every student-teacher so that individual participation can be respected. The intention of this activity is to see the ability of each student-teacher so that throughout the unit the tutor plans on how to help his/ her student-teachers.

The ways answers are provided for the introductory activity, some require reviewing the past studies while others require student-teachers to think deeply and read geographical document.

2.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	General presentation of Rwanda and the relief regions of Rwanda.	• Observe the map of Rwanda and write down the geographical coordinates and the neighbouring countries. • Draw a sketch map of Rwanda and locate the political divisions. • Differentiate among the major relief regions of Rwanda on the map. • Describe the formation of different relief features of Rwanda. • Investigate the importance of different relief features of Rwanda. • Evaluate the causes and the effects of weathering in Rwanda. • Carry out a research project on the effects of the running water, river erosion and deposition, wave erosion and deposition, mines and quarries on the relief features of Rwanda.	7

		• Locate Rwanda in Africa. • State the area of Rwanda in terms of land and water surface area. • Describe the population composition and the administrative divisions of Rwanda. • Locate the major relief regions of Rwanda. • Identify the major relief features of Rwanda using a map.	
2	Geomorphological processes	• Outline the endogenic processes leading to the formation of different relief features of Rwanda. • Give the importance of the relief features of Rwanda. • Identify the problems related to the relief features of Rwanda. • Outline the exogenic processes leading to the formation of different relief features of Rwanda. • -Show concern for the causes and the effects of soil erosion, and show continual desire to minimise the dangers of soil erosion.	7
3	Assessment		2

The above table highlights all the lessons that have been created in relation to dividing the unit content into 3 lessons and each having 7 periods except the assessment that have two periods. Below is the guidance on how to go about each lesson or sub heading.

Lesson 1: General presentation of Rwanda and the relief regions of Rwanda

a) Learning objectives

- Observe the map of Rwanda and write down the geographical coordinates and the neighbouring countries.
- Draw a sketch map of Rwanda and locate the political divisions.
- Differentiate among the major relief regions of Rwanda on the map.
- Describe the formation of different relief features of Rwanda.

- Investigate the importance of different relief features of Rwanda.
- Evaluate the causes and the effects of weathering in Rwanda.
- Carry out a research project on the effects of the running water, river erosion and deposition, wave erosion and deposition, mines and quarries on the relief features of Rwanda.
- Locate Rwanda in Africa.
- State the area of Rwanda in terms of land and water surface area.
- Describe the population composition and the administrative divisions of Rwanda.
- Locate the major relief regions of Rwanda.
- Identify the major relief features of Rwanda using a map.

b) Teaching resources

The tutor should prepare the teaching learning resources in advance so that effective teaching-learning exercise can take place. These resources will enable the instructional objectives to be achieved. Some of the materials to be used are the following:

• Text books	• Charts
• Map of Rwanda	• Manila papers
• Video clip	• Etc.

c) Prerequisites/Revision/Introduction

The tutor should engage the student-teachers into a reviewing activity that diagnoses what they may be knowing about four provinces of Rwanda, the origin of mountains in Rwanda and the main physiographic regions of Rwanda. The tutor should know that this is not the first time the student-teachers are studying the concept under his lesson title.

d) Learning activities

The tutor should use various techniques that facilitate the execution or use of student-teacher centred instructional approaches. The learning activity 2.1 has questions that student-teachers need to find appropriate responses to.

The student-teachers are expected to answer the learning activity 2.1 using the following:

1. Tutor is recommended to use either the east Africa map, the world

map or map of Africa to locate Rwanda in relation to its neighbouring countries.

2. Refer to the student's book under location of Rwanda.
3. Refer to the student's book under location of Rwanda.

e) Application activity 2.1.

The suggested answers to the first question are the following:

Landlockedness presents several disadvantages that affect the economic growth negatively:

- Being landlocked cuts a nation off from such activities like fishing.
- It also impedes or prevents direct access to sea trade.
- Landlocked developing countries have significantly higher costs of international cargo transportation compared to coastal developing countries.
- Due to their remoteness, landlocked countries are dependent on neighbouring transit countries for their external trade and suffer from high trade transaction cost.
- Problem of lack of safety during transport.
- Risk of deterioration of perishable products.
- Low competitiveness on export product.

On question number two, the application Activity requires the student-teacher to use the map of Rwanda to locate the provided districts.

Lesson 2: Geomorphological processes

a) Learning objectives

- Outline the endogenic processes leading to the formation of different relief features of Rwanda.
- Give the importance of the relief features of Rwanda.
- Identify the problems related to the relief features of Rwanda.
- Outline the exogenic processes leading to the formation of different relief features of Rwanda.
- Show concern for the causes and the effects of soil erosion and show continual desire to minimise the dangers of soil erosion.

b) Teaching resources:

- Use of text books
- Use of physical map of Rwanda
- Manila papers for group work drawing.

c) Prerequisites/ Revision /Introduction

The tutor should make preview of the previous lesson by asking student-teachers to give a recap of what was covered. Then, he or she introduces the lesson with a couple of questions that can enable student-teachers to connect to the lesson at hand.

d) Learning activities:

Possible answers for learning activity 2.2

1. Refer to the student's book under Endogenic processes.
2. Refer to the student's book under the process of faulting and folding in Rwanda and their associated landforms
3. Refer to the student's book under the process of vulcanicity, earthquakes and the associated landforms.
4. Weathering is the process of breaking of rocks, soils and their minerals by getting directly exposed to the earth's atmosphere while erosion is the process of removal of soil, mud, rock and other particles mainly by the agents of currents such as, wind, water, storm, rain, etc.

The primary difference between two terms is that weathering occurs in place whereas erosion involves movement to a new location.

e) Application activity

Possible answers:

1. Many people don't like settling in mountainous places because it is not easy to reach.
2. Most of the people settle in plain areas where by accessing their places will be easy. Relief affects a population either positively or negatively.
3. Flat areas are likely to be affected by flooding.
4. Gentle slopping areas favour settlement because the place presents less hazard risk.

5. Tutor facilitates student-teachers in their discussion so that they can use knowledge and skills they have acquired in previous classes about side effects of soil erosion.

2.6. Summary of the unit

Unit 2 of year one deals with formation of relief features of Rwanda. The content describes different general presentation of Rwanda in relation to the neighbouring countries and Africa in particular. Emphasis on administrative division of Rwanda, major relief features, their advantages and disadvantages. This unit goes beyond and gives more details about the origin of major features found in Rwanda focusing on endogenic and exogenic processes.

2.7. Additional Information for tutors

The process of formation of the major relief types

Tutor should recognise that the relief of Rwanda is the result of the process of ground uplift followed by breaks, volcanicity and peneplanations due to erosion which has affected the metamorphosed, folded and solidified block since the Precambrian. These movements are responsible for:

- The uprising of the Congo-Nile peak;
- The difference in level between the central plateau and the Eastern lowlands;
- The formation of the depression of Lake Kivu hosted in a graben;
- The formation of volcanic chain.

Moreover, these movements have driven the 4/5 of the rivers towards Lake Victoria and the Nile, thus contributing to resumption of erosion in “the country of a thousand hills”.

2.8. End unit assessment

1. Refer to the student’s book under problems related to the relief features of Rwanda and importance of the relief features to the development of Rwanda
2. Generally, the amount of precipitation in highland depends on the elevation. This means that the land with low elevation is relatively dry, but high amount of rainfall is received in areas with higher elevation such as Congo Nile Crest and volcanic mountains. This happens because high mountains force warm air to rise, where it cools and creates precipitation.
3. Rwanda has made effort and still keep dealing with the situation. Here are some strategies and recommendations adopted:

- Rwanda has made agreements on getting lower transport charges for goods through neighbors' countries.
 - The United Nations has a law that protects landlocked countries from high taxation. The law gives these countries a right of access to and from the sea without taxation of traffic through transit states.
 - The government is improving energy supply and internet access to improve the flow of information.
 - Landlocked countries like Rwanda depend on good political relations with transit countries.
 - Develop and empower home industries, example "Made in Rwanda"
 - Joining possible regional economic blocks
 - Encouraging diaspora to invest in their mother country
 - Develop and extend air transport
 - Give chance to new entrepreneurs
 - Improve on agricultural products so that we get enough yield and surplus for export
 - Promote education and technology
 - Encourage people's hardworking and spirit of competition among youth and adults
4. Refer to the previous notes in senior two under unit five, the external landform processes on how can the effects of erosion and mass movement be minimized.

2.9. Additional activities

2.9.1 Remedial activities

Question: Why is it said that Rwanda is a landlocked country?

Answer: any country is qualified as a landlocked because it doesn't have access to the sea.

2.9.2. Consolidation activities

Question: Explain why Rwanda is called "a country of a thousand hills"

Answer: It is because the country's relief is dominated by a multitude of Hills, which have emerged from the breaks in rocks.

2.9.3. Extended activities

Question: Explain how relief features influenced river reversal in Rwanda

Answer: The following relief features have made rivers of Rwanda to deviate eastwards.

- The rising of the Congo-Nile Crest.
- Faulting of the western part of the country (rising shoulders of the rift valley)
- The eruption of volcanic mountains in North western part of the country
- Down warping of the eastern plain

Skills lab:

There are many different economic activities. Some are suitable in highlands while others are suitable in lowlands, the student-teachers will suggest those ones which are suitable to their areas.

● UNIT: 3

ROCKS IN RWANDA

3.1. Key unit competence:

The student-teacher should be able to compare major types of rocks in Rwanda and evaluate their importance

3.2. Prerequisite (knowledge, skills, attitudes and values)

In S1, unit 4, the student-teachers studied the structure of the earth: Internal structure (crust, the mantle, and core) and external structure of the earth (lithosphere, biosphere, hydrosphere, and atmosphere).

In S1, unit 6 they studied the Rocks: types and characteristics of rocks and the importance of rocks. These units give the student-teacher the prerequisites on rocks. They are introduced on different types of rocks: sedimentary rocks, metamorphic rocks and igneous rocks; the characteristics of rocks: hard rocks and soft rocks. The importance of rocks was also introduced to the student-teacher. The student-teacher is aware of the use of rocks: some rocks are sources of energy, eg: oil, coal; rocks are sites for tourist attractions, others can also be used for food, as building materials, manufacture goods or manufacture of jewellery, etc.

In S2, unit 7, the student-teachers studied weathering and rocks; they are here introduced on the characteristics of different types of rocks.

With help of the knowledge and skills acquired in ordinary level, the student-teacher will be well equipped to study this unit.

3.3. Cross-cutting issues to be addressed:

a) Environment and sustainability

Unit 3 is about rocks, with a key competence of assessing their economic importance. Rocks are extracted from the earth crust and are used for the economic welfare of the society. Construction of houses and other sustainable infrastructures require materials from rocks.

Many ores and minerals are obtained from open-pit mines. When the ore is mined it contains unwanted materials along with the valuable

mineral. The waste rock and material must be removed in order to access the valuable mineral. Extracting rocks or removing the waste rock to access ores can be expensive, and in some cases harmful to people and environment. Also rock wastes may pollute stream water, water bodies and soils. This may require much efforts for their cleaning up for further consumption and uses. The effects may be as well long-term as immediate and can affect marine lives.

For this, the tutor is required to talk about the role of rocks for the economic and social welfare of people, but also negative impacts of their extraction should be discussed with student-teachers, with an emphasis on the environmental impacts.

b) Inclusive education

This unit requires samples during class sessions and a field trip for student-teachers to observe different types of rocks. Learning activities should be within the ability range of all student-learners, including those with learning difficulties or special needs. For instance, if tutors plan field trip, he will consider how student-teachers will access the area to be visited; otherwise he will think about rock samples, DVDs, work group and discussions for student-teachers who cannot access the field study area due to their physical impairment.

c) Financial education

Extraction of rocks is very beneficial because it contributes to the welfare of the society. For this reason, learners need to get introduced with the importance of money saving and investment in the mining and quarrying sector. Wherever extractions of rocks impact on people and natural resources, there is inevitably implication of money expenses. Money for remediation of sites affected by quarrying is needed. Furthermore, impacts of quarrying are extended to surrounding and remote environments. There is a need that student-teachers are introduced with these resulting environmental issues. Notions about financial means for alleviation of these impacts are therefore needed for student-teacher to realize that extraction of rocks requires planning and suitable techniques that minimize the negative effects.

3.4. Guidance on introductory activity

The key inquiries in this unit that will be the guide to the introductory activity are that student-teachers in addition to understand and describe different types of rocks and their distinct characteristics, they should be able to explain their economic importance. For this, student-teacher

should be able to explain the types of rocks which in turn determine their varied economic importance.

3.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Types of rocks in Rwanda and their characteristics	Identify different types of rocks in Rwanda. Give characteristics of rocks in Rwanda. Explain the physical properties of the rocks. Apply knowledge to categorise different types of rocks found in Rwanda and their characteristics.	2
2	Importance of rocks in Rwanda	Identify the importance of rocks. Appreciate the importance of rocks in Rwanda. Appreciate different types of rocks found in Rwanda. Apply knowledge to categorise different types of rocks found in Rwanda and their importance.	2
3	End unit assessment		1

Lesson 1: Types of rocks in Rwanda and their characteristics

a) Learning objectives:

- Identify different types of rocks in Rwanda.
- Give characteristics of rocks in Rwanda.
- Explain the physical properties of rocks.

- Apply knowledge to categorise different types of rocks found in Rwanda and their characteristics

b) Teaching resources:

The tutor should have in possession the print outs of the introductory activity of unit 3 of student's book and distribute it to student-teachers. To achieve the learning objectives of this lesson, the following resources should be used:

- Geographical documents including the learner's book of senior 6.
- Samples of rocks representing the three major groups of rocks.
- Maps, Illustrations.
- Internet/DVDs.
- Manila Paper or flip chart.

c) Prerequisites/Revision/Introduction

- The tutor conducts the revision of the lessons taught in ordinary level by asking learners to briefly recall the definition of rocks, their major groups and distinctive characteristics. Thereafter, the tutor asks learners why rocks are different from each other. In this lesson 3.1. Student-teachers will be able to identify the major types of rocks and to differentiate their characteristics.

d) Learning activity 3.1.

The student-teachers will use observation of rock samples provided and research to identify the types of rocks provided and differentiate their characteristics. The tutor can also provide a handout presenting different types of rocks and ask student-teachers to identify them and to indicate where they are found in Rwanda. He will guide learners to observe it in groups and give answers to activities of lesson 3.1. Thereafter presentation is done. Improvised teaching aids can be used to identify the characteristics of rocks: hard rocks or soft rocks. The tutor will also refer to lesson 3.1 at its subheading: Types of rocks in Rwanda and their characteristics, to identify the types of rocks found in Rwanda and to give their characteristics.

e) Application activities

Refer to the application activity 3.1 in the learner's book, in this lesson, there are two instructional activities which consist of (1) Identify an area in Rwanda where igneous rocks are mostly found, (2) observe rocks found

in your environment and explain their characteristics. Refer to lesson 3.1. Types of rocks in Rwanda and their characteristics. The content given here presents different types of rocks found in Rwanda and where igneous rocks are found. It also provides characteristics of different types of rocks. The student-teachers will identify the types of rocks which are predominant in his local environment and identify their characteristics.

Lesson 2: Importance of rocks in Rwanda

a) Learning objective:

- Identify the importance of rocks.
- Apply knowledge to categorise different types of rocks found in Rwanda and their importance.

b) Teaching resources:

To achieve learning objectives, the following resources should be used:

- Geographical documents.
- Observation of stones used to build foundations of houses and houses roofing tiles.
- Maps.
- Illustrations.
- Internet/DVDs.

c) Prerequisites/Revision/Introduction

In lesson 3.2, student-teachers will learn about the importance of rocks. Student-teachers must have covered the content of lesson 3.1. The knowledge in lesson 3.1. constitute an asset to better understand the lesson 3.2. The tutor shall then engage the student-learners for revision of previous lesson on the types of rocks in Rwanda and their characteristics.

d) Learning activities

Use geographical documents and internet to identify the importance of rocks.

Refer to the learning activity 3.2.in the learner's book.

One learning activity has been prepared for student-teachers. It consists of identifying the importance of rocks. The tutor will guide student-

teachers to identify the advantages of rocks and he will invite them to also discuss the disadvantages of rocks.

The answer to the question can be found in Unit 3, lesson 3.2. Importance of rocks in Rwanda and here some disadvantages of rocks are discussed.

e) Application activities

Refer to the application activity 3.2. in the learner's book, in this lesson, there is only one instructional activity which consist of discussing disadvantages of rocks in Rwanda. Refer to lesson 3.2: Importance of rocks in Rwanda. The content given here explain how Rocks are very important for different human activities. Some disadvantages of rocks are also discussed here. The student-teachers will have to discuss the disadvantages of rocks in their local environment and in Rwanda.

3.6. Summary of the unit

Unit three is about rocks in Rwanda with a key competence which is to be able to compare major types of rocks in Rwanda and evaluate their importance. A **rock** is an aggregate (collection) of various types of minerals or an aggregate of multiple individual pieces (grains) of the same kind of mineral.

Rocks are classified into three major groups: Igneous rocks, sedimentary rocks and metamorphic rocks. This classification was based on the origin and individual processes involved in the formation of rocks constituting each category. The major forming processes of Igneous (magmatic) rocks include **melting** (magma), **crystallization** (intrusive), **consolidation** (extrusive), whereas the formation of metamorphic rocks follows the increase in **pressure** and **temperature**. Processes of the formation of sedimentary rocks include **erosion**, **lithification** (stratification), **cementation** and **compaction**. Igneous rocks are dominated by Feldspars, Plagioclase, Micas (Muscovite, Biotite), Pyroxene, Amphibolite and Olivine; Sedimentary rocks are dominantly made up of the following minerals: Silicates, Clay, Dolomite, Gypsum, Anhydrite, Hematite and Limonite. Metamorphic rocks are constituted by Quartz, Muscovite, Sillimanite, Andalusite, Kynite, Garnet, Sericite and Staurolite minerals.

Some rocks are resistant to weathering and erosion whereas others are not.

Rocks have a wide variety of uses for the welfare of the society. Rocks are used as building materials of houses floor tiles and infrastructures such as roads and rail ways, some such as coal, are used in power plants

to make electricity. Minerals provide the material used to make most of the things of industrial- based society; roads, cars, computers, fertilizers, watches. Some minerals have high economic value because of their uses or they are rare and beautiful. For example, **Gemstones** is a mineral with a distinctive colour which makes it expensive. That is why it is used for jewellery.

3.7. Additional Information

The types of rocks: igneous, metamorphic and sedimentary rocks according to Mihai Andrei in Geology, science ABC: “The three main types of geological rocks”.

- **Igneous** - they form from the cooling of magma deep inside the earth. They often have large crystals (you can see them with the naked eye).
- **Metamorphic**-they are formed through the change (metamorphosis) of igneous and sedimentary rocks. They can form both underground and at the surface.
- **Sedimentary** - they are formed through the solidification of sediment. They can be formed from organic remains (such as limestone), or from the cementing of other rocks.

Igneous Rocks



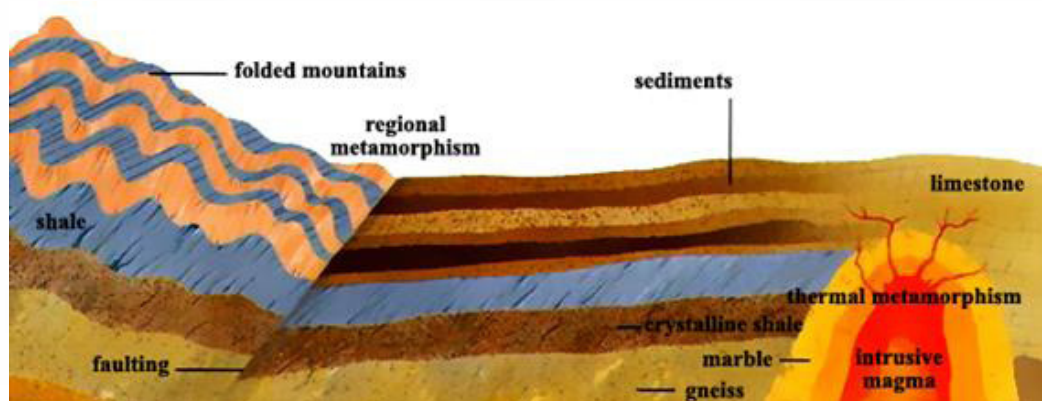
Lava flow on Hawaii.

Lava is the extrusive equivalent of magma. Magma is the heart of any igneous rock. Magma is composed of a mixture of molten or semi-molten rock, along with gases and other volatile elements. As you go deeper underground, the temperature rises; go further and you'll eventually reach the Earth's mantle - a huge layer of magma surrounding the Earth's core.

As you probably know, when magma cools, it turns into rock; if it cools while still underground at high temperatures (but at temperatures still lower than that of the magma), the cooling process will be slow, giving crystals time to develop. That's why you see rocks such as granite with big crystals — the magma had time to cool off.

Metamorphic Rocks

Here, the name says it all. These are rocks that underwent a metamorphosis; they changed. They were either sedimentary or igneous (or even metamorphic), and they changed so much, that they are fundamentally different from the initial rock.



Different types of metamorphism.

Different types of metamorphism

There are two types of metamorphism (change) that can cause this:

- **Contact metamorphism (or thermal metamorphism)** - rocks are so close to magma that they start to partially melt and change their properties. You can have recrystallization, fusing between crystals and a lot of other chemical reactions. Temperature is the main driver here.
- **Regional metamorphism (or dynamic metamorphism)** - this typically happens when rocks are deep underground and they are subjected to massive pressure - so much so that they often become elongated, destroying the original features. Pressure (often times with temperature) is the main driver here.



Folded foliation in a metamorphic rock

Metamorphic rocks can have crystals and minerals from the initial rocks as well as new minerals resulting from the metamorphosis process. However, some minerals are clear indicators of a metamorphic process. Among these, the most usual ones are garnet, chlorite, and kyanite.

Equally as significant are changes in the chemical environment that result in two metamorphic processes: mechanical dislocation (the rock or some minerals are physically altered) and chemical recrystallization (when the temperature and pressure changes, some crystals aren't stable, causing them to change into other crystals).



Marble is a non-foliated metamorphic rock.

Metamorphic rocks can be divided into many categories, but they are typically split into:

- **Foliated metamorphic rocks** - pressure squeezes or elongates the crystals, resulting in a clear preferential alignment.

- **Non-foliated metamorphic rocks** - the crystals have no preferential alignment. Some rocks, such as limestone, are made of minerals that simply don't elongate, no matter how much stress you apply.

The most common metamorphic rocks are: amphibolite, schist, eclogite, gneiss, hornfels, marble, migmatite, phyllite, quartzite, serpentinite and slate.

Sedimentary Rocks

Sedimentary rocks are named as such because they were once sediment. Sediment is a naturally occurring material that is broken down by the processes of weathering and erosion and is subsequently naturally transported (or not). Sedimentary rocks form through the deposition of material at the Earth's surface and within bodies of water.

A conglomerate - a rock made from cemented gravel.

Sedimentary rocks are quite difficult to classify, as they have several different defining qualities (the chemical make-up, the sedimentation process, organic/inorganic material), but the most common classification is the following:

- **Clastic sedimentary rocks** - small rock fragments (many silicates) that were transported and deposited by fluids (water, bed flows). These rocks are further classified by the size and composition of the clastic crystals included in the sedimentary rocks (most often quartz, feldspar, mica and clay).
- **Conglomerates** (and breccias) - conglomerates are predominantly composed of rounded gravel, while breccias are composed of angular (sharper) gravel.



A conglomerate

- **Sandstones:** it's a rock made from many-sand-sized minerals and rock grains. The most dominant mineral in sandstone is quartz because it is the most common mineral in the Earth's surface.



An old, red sandstone

- **Mudrocks:** they're rocks made from solidified mud. They typically contain very fine particles and are transported as suspended particles by turbulent flow in water or air, depositing once the flow settles.
- **Biochemical rocks** — you'll probably be surprised to find out that most limestone on the face of the Earth comes from biological sources. In other words, most limestone you see today comes from the skeletons of organisms such as corals, mollusks, and foraminifera. Coal is another example of biochemical rock.
- **Chemical rocks** — these rocks include gypsum and salt (halite) and are formed mostly through water evaporation



A halite

Some common sedimentary rocks are: argillite, breccia, chalk, chert, claystone, coal, conglomerate, dolomite, limestone, gypsum, greywacke, mudstone, shale, siltstone and turbidite.

3.8. End unit assessment

1. “Rocks are good and bad” discuss this statement in relation to the context of Rwanda.

The student-teachers will discuss this statement basing on their own experience in their local environment and on the advantages and disadvantages of different types of rocks, refer to the Learner’s Book unit 3 under “The importance of rocks in Rwanda”.

2. With detailed explanation, show how the following rocks were formed in Rwanda:
 - a. Igneous rocks
 - b. Sedimentary rocks
 - c. Metamorphic rocks

The explanations of how Igneous rocks, Sedimentary rocks and Metamorphic rocks were formed in Rwanda are given in the learner’s book unit3, under 3.1. Types of rocks in Rwanda and their characteristics.

3.9. Additional activities

a) Remedial activities (for slow learners)

Question 1. Explain the meaning of a rock

A **rock** is a natural aggregate of minerals in the solid state; usually hard and consisting of one, two, or more mineral varieties. Rocks form the solid part of the earth’s crust.

Question 2. Explain the advantages of rocks on human

- Formation of soils. Rocks are broken down into tiny particles through the process of weathering. This leads to the formation of soil that supports plant growth. For example, the igneous rocks around the volcanic mountains in the Northern and Western provinces of Rwanda have been weathered leading to the formation of fertile volcanic soils.
- Tourism development. There are many rocks in Rwanda that attract tourists from all over the world. For example, In Rwanda there are wonderful cliffs and rocks such as “ Ibere rya Bigogwe (Bigogwe Breast), Urutare rwa Ndaba (Ndaba Rock) and Urutare rwa Kamegeri (Kamegeri Rock).

- **Fertilizers:** Rocks are very useful in the manufacturing of fertilizers. For example, phosphate bearing rocks are used to make phosphate fertilizers.
- **Minerals.** Rocks provide humans with valuable minerals that are used in various ways. For example, micro- diamonds in Gicumbi and Tin in Muhanga are Igneous rocks. These are exported hence earning foreign exchange.
- **Sources of energy.** Peat coal is used as a source of energy in some homes in Rwanda. Hot rocks found beneath the Earth's surface are responsible for the generation of geothermal energy. This project is still underway in Rwanda but has already picked up in places like Eburru in Kenya.

b) Consolidation activities

Question 1: Classify igneous rocks based on the mode of occurrence

According to the mode of occurrence, Igneous rocks are classified into intrusive igneous rocks and extrusive igneous rocks.

- **Intrusive igneous rocks:** They are formed when the rising magma, during a volcanic activity, does not reach the earth's surface but rather cools and solidifies below the surface of the earth.
- **Extrusive igneous rocks:** They are formed due to the cooling and solidification of hot and molten lava on the earth's surface (examples are basalt, Gabbro).

Question 2: Differentiate between foliated metamorphic rocks and Non-foliated metamorphic rocks.

- **Foliated metamorphic rocks** such as gneiss, phyllite, schist and slate have a layered or banded appearance that is produced by exposure to the heat and pressure.
- **Non-foliated metamorphic rocks** such as hornfels, marble, quartzite do not have a layered or banded appearance.

c) Extended activities (for gifted and talented learners)

Question 1. Identify the types of intrusive igneous rocks.

- a. **Plutonic igneous rocks:** Are formed due to the cooling of magma very deep inside the earth.

- b. Hypabyssal igneous rocks: Are formed due to the cooling and solidification of rising magma during volcanic activity in cracks, pores, crevices and hollow places just beneath the earth's surface.

Question 2. Describe the types of extrusive igneous rocks.

- c. **Explosive type:** The igneous rocks formed by a mixture of volcanic materials ejected during explosive or violent volcanic eruptions.
- d. **Quiet type:** The appearance of lava through minor cracks and openings on the earth's surface is called 'lava flow'. The lava forms basaltic igneous rocks after cooling and solidifying.

Skills lab

Most of rocks can be used in construction, in their study the student-teachers will have to identify the best ones which can be used.



● UNIT: 4

SOILS IN RWANDA

4.1. Key Unit competence:

The student-teacher should be able to compare major types of soil in Rwanda and assess their importance

4.2. Prerequisite (knowledge, skills, attitudes and values)

The student-teachers are expected to have mastered the content of unit 8 of S2, where they studied the soils in Rwanda. This unit of senior two, greatly provide strong foundation that student-teachers can use to understand better the content of this unit 4 of year one. It's very important to note that, they already have necessary knowledge, skills and attitudes. The difference is that, at this level the content as that in the Learner's book is more detailed and goes beyond what the ordinary level program demanded.

These already acquired knowledge, skills, attitudes and values should be used by the tutor to conduct diagnostic assessment as a way of measuring each student-teacher's abilities.

4.3. Cross-cutting issues to be addressed

There are many cross-cutting issues that can be applied in this lesson. In the student's book, the writers or authors used activities to integrate the crossing-cutting issues. The most highlighted one is that of environment and sustainability and peace and values education.

Even though, the writers used few cross-cutting issues that should not limit the creativity and innovativeness of the tutor. The activities used were just a sample. This calls for the tutor to take note of the cross-cutting issues that he or she is interested in. What is important to note, is that the following list of cross-cutting issues can be applied. Gender, peace and values, financial education. However, all these require planning in advance on how the tutor is to develop them.

Peace and values education can be integrated using the classroom situation where student- teachers themselves are taught to thank you wherever their peers respond to a given answer.

4.4. Guidance on the introductory activity

The answers for this introductory activity are arranged in a hierarchy order from simple to complex. Hence the student-teachers are requested think out of the box. That is, they should relate it with the studied topics in S2 under unit 8. Therefore, student-teachers will be able to define soil, identify different types of soils and the causes of soil erosion in Rwanda.

4.5 List of lessons

#	Lesson title	Learning objectives	Number of periods
1	Definition of soil, types of soils and where they are found	• Research on the different types of soils in Rwanda and where they are located. • Explain the causes and effects of soil erosion and suggest soil conservation measures. • Explain the importance of soils in Rwanda. • Appreciate the value of different types of soils in Rwanda.	2
2	Soil erosion in Rwanda	• Identify the causes and the effects of soil erosion in Rwanda. • Explain the causes and effects of soil erosion and suggest soil conservation measures. • Show concern for the causes and the effects of soil erosion.	1
3	Soil conservation and the management measures in Rwanda	• Outline the appropriate soil conservation measures in Rwanda. • Soil conservation and the management measures in Rwanda.	1

4	Importance of soil in Rwanda	• Explain the importance of soils in Rwanda. • Identify the importance of soils in Rwanda. • Explain the importance of soils in Rwanda.	1
5	Assessment		1

The above table highlights all the lessons that have been created in relation to dividing the unit content into 5 lessons and each having 1 period except the first lesson that should be covered within two periods. Below is the guidance on how to go about each lesson or sub heading.

Lesson 1: Definition of soil, types of soils and where they are found

a) Learning objective

- Research on the different types of soils in Rwanda and where they are located.
- Explain the causes and effects of soil erosion and suggest soil conservation measures.
- Explain the importance of soils in Rwanda.
- Appreciate the value of different types of soils in Rwanda.

b) Teaching resources

- Flip charts
- Text books
- Manila papers
- Internet
- Print outs for the activity
- Etc.

c) Prerequisites/Revision/Introduction:

There is a direct link of Activity 4.1, intended to introduce the lesson with what the student-teachers studied in senior 2. Therefore, the activity supports diagnostic assessment (Formative assessment) to see how much the student-teachers know about the types of soils found in Rwanda. At the same time, preparing the student-teachers for the lesson.

d) Learning activities

1. Refer to the student's book under the types of soils and where they are found.
2. Refer to the student's book under table describing types of soils in Rwanda.

e) Application Activity

The tutor should know that this activity involves integration of the cross-cutting issue of environment and sustainability.

1. The student-teachers are expected to draw a sketch map with reference to the map of Rwanda so that they can easily locate the types of soil in their respective places.
2. The student-teachers are expected to give a wide range of answers. But all should rotate around the soil capacity to produce enough yields. E.g. volcanic soil is highly fertile.

Lesson 2: Soil erosion in Rwanda

This is the second lesson under unit 4 of year one. It is concerned with types of soil erosion in Rwanda, causes and effects.

a) Learning objective

- Identify the causes and the effects of soil erosion in Rwanda.
- Explain the causes and effects of soil erosion and suggest soil conservation measures.
- Show concern for the causes and the effects of soil erosion.

b) Teaching resources

In this lesson of soil erosion, tutor is suggested to use photographs or conduct a short field visit around where soil erosion is seen. This will help student-teachers to discover and share findings and suggest possible solutions to the destruction of soil.

c) Prerequisites/Revision/Introduction:

The present lesson has only one activity 4.2 and one application activity 4.2. These activities intend to assess the level of achievement.

d) Learning activities

1. Answers are found in the student's book under causes of soil erosion in Rwanda.

2. Refer to the learner's book under Effects of soil erosion.

e) Application activities

1. All regions of Rwanda do not enjoy productive soil. Factors vary:
 - Some areas have highly fertile soil enabling growing and yielding more.
 - Areas having many valleys experience alluvial soil the same as areas around rivers and lakes hence surplus food production.
 - Nature of the land also influences the fertility of soil.
 - There is also a crop failure in areas that experience long dry season especially in some districts of eastern province.
 - Creativity and innovation also influence the crop output.
2. Refer to the student's book under Soil conservation and the management measures in Rwanda.

Lesson 3: Soil conservation and the management measures in Rwanda

This is the third lesson under unit 4 of year one. It will be covering all the content concerned with Soil conservation and the management measures in Rwanda.

a) Learning objectives

- Outline the appropriate soil conservation measures in Rwanda.
- Appreciate the importance of soil conservation in Rwanda.

b) Teaching resources

In this lesson of soil conservation and the management measures in Rwanda.

Tutor is recommended to conduct a short field visit around where soil erosion is seen in order to suggest appropriate solutions. Use of internet is also good, textbook, manila paper etc.

c) Prerequisites/Revision/Introduction:

The present lesson has only one activity 4.3 and one application activity 4.3. These activities intend to assess the level of understanding and achievement.

d) Learning activities

1. Refer to the student's book under Soil conservation and the management measures in Rwanda.
2. Refer to the student's book under Soil conservation and the management measures in Rwanda.

e) Application activity**Question 1**

Suggested answers are described as follow:

- To reduce the rate of soil erosion
- Terrace farming restricts the wash away of nutrients from the fertile soil by the rain water.
- Terracing also helps us in reducing the water loss and soil erosion of farm.
- The major and significant advantage of terrace farming is that it makes us able to do farming on the sloppy and hilly region where it is not too easy to cultivate.

Question 2

- Possible answers to the question are the follows:
- Manure can be easily collected for the benefit of fodder crops.
- Little or no time is spent on herding the animals. Therefore, labour for other farm tasks is saved.
- As long as cattle are inside there less wastage of feeds.
- Since herd animals are confined inside, there will be less soil erosion caused by movement of animals.

Lesson 4: Importance of soil in Rwanda**a) Learning objectives**

- Explain the importance of soils in Rwanda.
- Identify the importance of soils in Rwanda.
- Explain the importance of soils in Rwanda.

b) Teaching resources

To achieve successful learning, tutor in year one is suggested to use print

out, Manila paper, textbook and internet. This will help student-teachers in their group discussion to discover different uses of soil.

c) Prerequisites/Revision/Introduction:

In this lesson on importance of soil, activity 4.4 and application activity 4.4 all intend to facilitate the teaching and learning processes by introducing the new topic.

d) Learning activities

Refer to the content in the student's book under Importance of soil in Rwanda

e) Application activity

Refer to the content in the student's book under Importance of soil in Rwanda

4.6. Summary of the unit

Unit 4 of year one deals with soils in Rwanda. The key points of content to be highlighted in the unit are listed as follows: Definition of soil, types of soils and where they are found,

soil erosion in Rwanda, Soil conservation and the management measures in Rwanda, importance of soil in Rwanda.

This unit content gives more details about the above points compared to what student-teachers have learnt in previous classes.

4.7. Additional information for tutor

Student-teachers are expected to give more explanation about the distribution of various types of soils found in Rwanda.

The distribution of different types of soil mentioned above is explained by the nature of the rock from which they are made, the intensity of physico-chemical weathering of the rock, the type of vegetation and special conditions of water flow in the valleys.

4.8. End unit assessment

Possible suggested answers to the end unit assessment are the following:

1. Soil formation occurs with matter originated from erosion,

weathering of the bedrock, and deposition of materials through wind and water.

2. Mulch is effective at reducing dislodgement of soil particles by direct impact of rain drop, keeping the surface of the soil more permeable to water, and slowing the velocity of runoff.
3. Refer to the content in the student's book under causes of soil erosion in Rwanda
4. Soil degradation is defined as a change in the soil health status resulting in a diminished capacity of the ecosystem to provide goods and services for its beneficiaries. Degraded soils have a health status such, that they do not provide the normal goods and services of the particular soil in its ecosystem. Soil erosion is a direct effect of soil degradation.
5. Refer to the content in the student's book under effects of the soil erosion.

4.9. Additional activities

4.9.1 Remedial activities

Questions:

1. Describe the types of soil erosion that exist in Rwanda
2. Identify any three methods of soil conservation in Rwanda

Answers:

1. Refer to the student's book under types of soil erosion in Rwanda
2. Implementing reforestation. Digging anti-erosion ditches, Practising terrace agriculture, Use of manure and chemical fertilizers, Practising mulching etc.

4.9.2. Consolidation activities

Question: Differentiate between Vertisols and histosols

Answer: Vertisols are rich in minerals but poor in organic matter while histosols are only composed of organic matter.

4.9.3. Extended activities

Questions

1. Identify any five areas with severe soil erosion in Rwanda

2. What is the relationship between soil erosion and weathering?

Answers:

1. Erosion is mostly found in all sloppy areas and any bare ground. But it is also happening due to some human activities such as deforestation, mining, poor rain water conservation etc.
2. *Weathering* and *erosion* are processes by which rocks are broken down and moved from their original location. Their difference is based on whether a rock's location is changed: *weathering* disintegrates a rock without moving it, while *erosion* carries rocks and *soil* away from their original locations.

Skills lab

The student-teachers will discuss on different soil erosion measures which can be more effective in their areas.

● UNIT: 5

CLIMATE IN RWANDA

5.1 Key unit competence:

The student-teacher should be able to analyse the climate of Rwanda and its impact on human activities.

5.2. Prerequisite (Knowledge, skills, attitudes and values)

The student-teachers are expected to have mastered the content of unit 8 in S2, where they studied the same unit of climate and climate change in Rwanda. That unit of senior two greatly provides strong foundation that student-teachers can use to understand better the content of this unit 5 of year one. It's very important to note that, they already have necessary knowledge, skills and attitudes. The difference is that, at this level the content in the student's book is more detailed and almost differ from what they learnt previously.

5.3. Cross-cutting issues to be addressed

There are many cross-cutting issues that can be applied in this lesson. In the student-teachers' book, the writers or authors used activities to integrate the crossing-cutting issues. The most highlighted is that of environment and sustainability.

Even though, the writers used few cross-cutting issues, this should not limit to the creativity and innovativeness of the tutor. The activities used were just a sample. This calls for the tutor to take note of the cross-cutting issues that he or she is interested in. What is important to note, is that many cross-cutting issues can be applied where possible depending on occasion, for example:

- a. **Environment and sustainability** can be integrated in some learning activities where the aspects related to the conservation of atmosphere can be referred to.
- b. **Financial Education** can be integrated in learning activities when studying the relationship between climate and human activities. For example, the tutor can remind his /her student-teachers using typical examples on how good climate can help them

to practice small scale livestock farming on small pieces of land. Thus, this can generate income/money.

- c. Inclusive education** can be integrated in classroom situation where tutor pays attention on student-teachers with special needs such as student-teachers with physical disabilities, hearing disabilities or communication difficulties and visual impairment. For the student-teachers with physical disabilities, the tutor will refer to video clip, or bringing some samples in classroom. For student-teachers with hearing disabilities or communication difficulties, in different learning activities the tutor will use enough illustrations, diagrams and sign languages where possible. For student-teachers with visual impairment, the tutor will help children to use their other senses like hearing and touch because these senses can help them to play and carry out some of learning activities thus promoting their learning and development. This cross-cutting issue can be integrated in all lessons.

5.4. Guidance on introductory activity

The tutor has to allow students to read critically the passage provided related to introductory activity and try to give answers to the questions about interpretation of photograph. Answers to questions are supposed to be provided by students. Students may not be able to find the right answers but they are invited to predict possible answers. In case the student-teachers fail to come up with right answers to questions related to the given photograph, the tutor may not immediately provide the possible answers but he/she should allow student-teachers to discover themselves the right answers through the learning and teaching process.

5.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	C l i m a t i c zones, Seasons and factors influencing climate in Rwanda	• Identify various climatic zones and their characteristics in Rwanda. • State the factors influencing the climate in Rwanda.	4

		• Explain the variations of seasons in Rwanda. • Investigate the relationship existing between the climate and human activities.	
2	Climate change and global warming	• Define the concept of climate change and global warming • Explain the causes of climate change • Evaluate the effects of climate change and global warming.	3
3	Assessment		1

Lesson 1: Climatic zones, Seasons and factors influencing climate in Rwanda

a) Learning objective

- Identify various climatic zones and their characteristics in Rwanda.
- State the factors influencing the climate in Rwanda.
- Explain the variations of seasons in Rwanda.
- Investigate the relationship existing between the climate and human activities.

b) Teaching resource

During the teaching and learning process, the tutor will refer to the following teaching resources where possible:

- Diagrams
- Pictures
- Flip charts
- Manila papers
- Print outs for the activity
- Text books
- Internet
- Maps
- Field work to the surrounding area.

c) Prerequisites/Revision/Introduction

The activity 5.1 tends to introduce lesson 1. This activity 5.1 also requests student-teachers to recall the knowledge and skills gained from previous lessons of senior two. This will enable student-teachers to follow the lesson by linking it to what they have learnt in previous classes

d) Learning activities

Here are the suggested responses for activity 5.1

1. The distinction of climatic zones in Rwanda is largely due to differences in altitude in Rwanda.
2. The climate of Rwanda is largely dependent on relief and its position in relation to the equator. The temperatures and rainfall are moderate depending on region and the climatic factors. Generally Rwanda is a mountainous country and as a result it has a sub temperate tropical climate.
3. Refer to the content in student's book under relationship between human activities and climate

e) Application activities

This application activity 5.1 consists of two questions that are associated with critical thinking.

1. Large water bodies such as Lake Kivu can affect the climate of an area. Water heats and cools more slowly than landmasses. Therefore, the surrounding regions will stay cooler in dry season and warmer in wet season, thus creating a more moderate climate with a narrower temperature range.
2. For answers related to question 2, tutor is requested to guide learners think on all program/ projects aiming at environmental conservation. Those activities make climate pattern to occur as they should happen. So those activities influence the climate in a positive way.

Lesson 2: Climate change and global warming

a) Learning objectives

- Define the concept of climate change and global warming
- Explain the causes of climate change
- Evaluate the effects of climate change and global warming

b) Teaching resources

During the teaching and learning process, the tutor will refer to the following teaching resources where possible:

- Pictures
- Flip charts
- Manila papers
- Text books
- Internet

c) Prerequisites/Revision/Introduction

The tutor has to introduce this lesson and link it with the previous lessons by asking some questions. The activity 5.2 intended to introduce the lesson 2 has a link with lesson five studied before. Through observation, the tutor has to help student-teacher to refer to the content of unit 8 of S2 about climate and climate change in Rwanda. The tutor has to help student-teachers to recall the previous knowledge and skills about climate change and global warming in Rwanda

d) Learning activities

The suggested answers for Activity 5.2 in learners' book are set as follows:

1. Refer to the student's book under definition of climate change
2. Refer to the content in learners' book on effects of global warming

e) Application activities

Possible answers for application activity 5.2 are the following:

1. Tutor should guide student-teachers in their group discussion on effects of climate change in eastern and western province respectively, if they don't find correct and appropriate answers, tutor have to give the right answers
2. i) Urban areas experience a different climate compared to the surrounding rural areas. This results in the formation of a heat island over the city due to the following reasons:
 - Surfaces like tar absorb more heat.
 - With a greater area, more heat is absorbed.
 - More factories and cars release more pollution, which traps the heat.
 - Factories, cars and air conditioners release heat into the air.
- i) Refer to the student's book on climate change especially on causes.

3. They should enact new laws that limit carbon emissions and require polluters to pay for the emissions they produce
 - Better to use green power to reduce pollution
 - Reduce water waste or saving water reduces carbon pollution, too.
 - Choosing to live in walkable smart-growth cities and towns with quality public transportation leads to less driving, less money spent on fuel, and less pollution in the air.

5.6. Summary of the unit

Unit 5 of year one deals with climate in Rwanda. It describes/gives more details on major climatic zones of Rwanda, seasons, climate change and global warming as well.

5.7. Additional Information

As we have seen the dangers of climate change and global warming tutor has to be aware of this. And think about what can be done to mitigate those effects. Addressing climate change will require many solutions. This means that there's no magic bullet. Example, The required changes span technologies, behaviors, and policies that encourage less waste and smarter use of our resources, improvements to energy efficiency and vehicle fuel economy, increases in wind and solar power, biofuels from organic waste, setting a price on carbon, and protecting forests are all potent ways to reduce the amount of carbon dioxide and other gases trapping heat on the planet.

5.8. End unit assessment

1. Refer to the content in learners' book on definitions of climate and climate change.
2. The following is a list of various reasons why weather forecasts are important:
 - Helps people prepare how to dress (i.e. warm weather, cold weather, windy weather, rainy weather)
 - Helps businesses plan for transportation, hazards that can result from the weather (i.e. fog, clouds as it relates to driving and flying for example)
 - Helps people with health related issues to plan the day (i.e. allergies, asthma, heat stress)
 - Helps farmers and gardeners plan for crop irrigation and protection

- Helps people involved in certain activities to know if conditions will be good (i.e. sport activities and other recreational events)
 - Helps people plan for when to do certain activities that are influenced by weather (i.e. fertilizing, bug spraying, gardening)
 - Helps people know if they need to leave early for work
1. As we know the climate of Rwanda varies according to altitude. This makes changes in term of amount of rainfall and temperature. For example, from east to west, where altitude is very low, temperature increases and rainfall decreases while where altitude is high, temperature is low and rainfall increases.
 2. Refer to the learner's book on seasons in Rwanda.
 3. Student-teachers will make research on other sources of greenhouse gases and how can we reduce the increase of them in the atmosphere using the internet and other geographical documents.

5.9. Additional activities

5.9.1. Remedial activities

Question: Explain the factors influencing climate of Rwanda.

Answer: refer to the student's book on factors influencing climate of Rwanda

5.9.2. Consolidation activities

Question: Briefly present different climatic regions of Rwanda

Answer: refer to the content in learner's book under major climatic regions of Rwanda

5.9.3. Extended activities

Question:

- Identify the characteristics of the short rain season in Rwanda.
- When does this season take place?

Answer: The short rainy season in Rwanda is characterized by rather strong and frequent downpours, which account for approximately 27% of annual precipitation. It starts in mid-September and ends in mid-December.

Skills lab

For the people who mostly depend on weather patterns, it is better to follow instructions given by forecasting weather agency (Rwanda meteorology agency).

For farmers, they should use glasshouse to ensure all season production.

UNIT: 6

VEGETATION IN RWANDA

6.1. Key unit competence:

The student-teacher should be able to explain the importance of vegetation in Rwanda and evaluate conservation measures.

6.1. Prerequisites (knowledge, skills, attitude and values)

The student-teachers are anticipated to have mastered the content of Unit 10 of S2, where they studied the vegetation in Rwanda. This unit of senior two greatly provides strong foundation that student-teachers can use to understand better the content of this unit 6 of year one. It is very important to note that, they already have necessary knowledge, skills and attitudes.

The tutor to conduct diagnostic assessment as a way of evaluating each student-teacher's abilities. The tutor should refer to knowledge, skills, attitudes and values associated with vegetation student-teachers acquired from the previous classes with the aim of establishing connections between the new learning activities and the previous ones.

6.2. Cross-cutting issues to be addressed

There are some cross-cutting issues, which can be applied in the lesson. In the student-teachers' book, the writers or authors used activities to integrate the crossing-cutting issues. The most emphasized is that of environment and sustainability and inclusive education.

What is important to note, is that many crosscutting issues can be applied where possible depending on occasion. For example:

- a. **Environment and sustainability** can be integrated in some learning activities where the questions related to Why is it important to conserve natural vegetation and how can we preserve our natural vegetation are addressed. Thus, the crosscutting issue known as environment and sustainability is developed
- b. **Inclusive education** can be introduced during the class situation for example if the tutor wants her/his students to make a field study outside classroom.

With the purpose of observing natural vegetation the tutor will consider the student-teachers with physical disabilities and react accordingly by choosing appropriate methodology, which may help those student-teachers with special disabilities to cope with the situation. Nevertheless, tutor can use video containing different images or photographs of different vegetation.

6.3. Guidance on introductory activity

The tutor will ask students to read a set of questions related to introductory activity. The student-teachers will try to answer the questions. Student-teachers may not be able to get the right answer but they are requested to predict possible answers. When the student-teachers fail to come up with right answers to the questions related to introductory activity, the tutor will not immediately provide the required answers rather he /she should let students get the real answers through the course of learning and teaching process. This implies that student-teachers will associate this lesson with the content learnt in the previous lessons of S2.

6.4. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Types of vegetation, importance and factors influencing vegetation in Rwanda	• Give the meaning of vegetation. • Describe the various types of vegetation. • Explain the importance of vegetation and the factors influencing it. • Appreciate the importance of vegetation to human kind.	3
2	Causes of the destruction and conservation measures of vegetation	• Identify the causes of the destruction of vegetation. • - Describe the measures of conserving vegetation. • Show respect for the continual desire to conserve vegetation • Explain the causes of the destruction of vegetation. • Describe the measures of conserving vegetation.	2
3	Assessment		1

Lesson 1: Types of vegetation, importance and factors influencing vegetation in Rwanda

a) Learning objectives

- Give the meaning of vegetation.
- Describe the various types of vegetation.
- Explain the importance of vegetation and the factors influencing it.
- Appreciate the importance of vegetation to human kind.

b) Teaching resources

The tutor should prepare the teaching learning resources in advance so that effective teaching-learning exercise can take place. These resources will enable the instructional objectives to be achieved. Some teaching resources are listed below:

- Maps
- Pictures
- Flip charts
- Manila papers
- Print outs for the activity
- Text books
- Internet

c) Prerequisites/Revision/Introduction

There is a direct link of Activity 6.1, intended to introduce the lesson, with what the lessons studied in Senior two. The activity 6.1 requests student-teachers to recall the knowledge and skills gained from previous lesson of senior two about vegetation in Rwanda, this will be through diagnostic assessment/ evaluation of tutor. This will enable student-teachers to follow the lesson by linking it to world natural vegetation.

d) Learning activities

1. To answer the activity 6.1, Tutor can engage learners into groups of discussion. But for quick answer, tutor refers to the student-teacher's content book under Types of vegetation in Rwanda
2. Refer to the student's book on importance of vegetation
3. Refer to the student's book under the factors favouring vegetation growth in Rwanda

e) Application activities

The appropriate answers for application activity 6.1 include:

1. Tutor should tell student-teachers that most of the materials used at home are products of vegetation. From this hint, student-teachers will be able to describe how much people depend on vegetation.
2. Vegetation can affect climate and weather patterns due to the release of water vapour during photosynthesis. The release of vapour into the air alters the surface energy, fluxes and leads to potential cloud formation. In return, the growth of natural vegetation depends upon climatic conditions existing in the place. For example, evergreen forests grow in the regions which experience heavy rainfall.

Lesson 2: Causes of the destruction and conservation measures of vegetation

a) Learning objective

- Identify the causes of the destruction of vegetation.
- Describe the measures of conserving vegetation.
- Show respect for the continual desire to conserve vegetation
- Explain the causes of the destruction of vegetation.
- Describe the measures of conserving vegetation.

a) Teaching resources

During the teaching and learning process, the tutor will refer to the following teaching resources where possible:

• Pictures	• Internet
• Manila papers	• Maps
• Print outs for the activity	• Field work to the surrounding area
• Text books	

b) Prerequisites/Revision/Introduction

This activity is intended to introduce lesson two and link it with lesson 1 studied before. The activity 6.2 requests student-teachers to recall the knowledge and skills gained from previous lesson in senior two about deforestation in Rwanda.

c) Learning activities

For the activity 6.2, the tutor will give student-teachers an opportunity to read critically the given questions and give them time so that students can give correct answers. The tutor is requested to try to integrate some generic competencies as well as cross-cutting issues but he/she is free to choose a cross-cutting issue or generic competence taking into consideration the learning environment.

Possible answers are provided below:

1. Deforestation is the decrease in forest areas. It can also be defined as the permanent destruction of forests in order to make the land available for other uses.
2. Refer to the student's book on causes of vegetation destruction in Rwanda.
3. Refer to the student's book on the conservation measures of vegetation.

d) Application activities

Possible answers in this application activity 6.2 are as follows:

1. Refer to the student's book on causes of destruction of vegetation.
2. Refer to the student's book under the conservation measures of vegetation.

6.5. Summary of the unit

This unit entirely deals with vegetation in Rwanda. Under this unit there are sub-topics, such as types of vegetation, importance and factors influencing vegetation in Rwanda, Causes of the destruction and conservation measures of vegetation.

6.7. Additional Information for tutors

Even though in the student's book only two types of vegetation are described, it is very important for tutor to know that natural vegetation is classified into forests, savannah and valley vegetation.

i. Forest:

- Nyungwe is the largest tract of land in Rwanda covered by a forest (approximately 1000km²). It is located on the Congo-Nile crest in south western part of the country. Currently it is protected as a national park.

- Mukura forest: This is located in Karongi district of western province.
 - Gishwati forest: This is located in the fringes of Rutsiro and Nyabihu districts in western province.
 - Birunga forests: This is found at the slopes of Birunga in the north western part of the country.
- ii. **Savannah:** This is categorised into; grassland, bushland and woodlands. The main types of trees are acacia, Albizia (*Umusebeya*), sieberiana (*Umunyinya*) and others. It is located mostly in the central and eastern parts of Rwanda.
- iii. **Valley vegetation (swamp vegetation):** The River valleys especially along rivers Akanyaru, Nyabarongo, Akagera and the shores of Lakes are dominated by swamps especially papyrus reeds, water lilies and water hyacinths.

6.8. End unit assessment

Possible answers are the following

1. Refer to the student's book on importance of vegetation.
2. Deforestation leads to many consequences for natural ecosystems and it poses serious problems to the happiness of people.
 - The most known consequence of deforestation is its threat to biodiversity. In turn, this will have a negative impact on: Tourism attraction, Herbal medicine and Rare animal species and vegetation.
 - Deforestation also weakens the soil. This means that the destruction of forest area will probably mean the soil will become increasingly fragile leading to natural disaster such as landslide.
 - Deforestation disrupts the process of water cycle. This results in the formation of low rainfall.
 - Greenhouse gases such as methane and carbon dioxide are gases that trap heat in earth's atmosphere, leading to global climate change. Fortunately, in addition to **releasing oxygen** and **water into the atmosphere**, trees also **absorb carbon dioxide**. While trees are still living, they function as efficient greenhouse filters. **The moment they (trees) are cut down**, the carbon dioxide that was stored in their trunk and leaves is released into the atmosphere, further contributing to the increase over the time of greenhouse gases.

3. It is very important to conserve vegetation because it prevents all side effects that could happen if not protected. But also there are many people depending on forests for survival. If not conserved it will disrupt the local people's lives.
4. Tutor should guide learners on how to draw a sketch map of Rwanda and on it, locate the major natural vegetation of Rwanda.

6.9. Additional activities

6.9.1 Remedial activities

Questions

1. What is the difference between vegetation and a forest?
2. Explain how forested areas in Rwanda are being conserved and protected.

Possible answers

1. Forest is a natural ecosystem characterised by the dominance of trees while vegetation is sum total plant population covering a region.
2. Refer to the learner's book on vegetation conservation measures.

6.9.2. Consolidation activities

Question: Describe any three human activities that lead to deforestation in Rwanda.

Answer: Agricultural expansion: the conversion of forest into agricultural planation is a major cause of deforestation.

Overpopulation: this leads to an increase in needs and wants at national level hence expansion and deforestation.

Mining: mining activities also cause deforestation because for mining activities to take place clearing of vegetation is required.

6.9.3. Extended activities

Question: Assess the contribution of vegetation to the development of tourism sector in Rwanda.

Answer: Tourism in Rwanda mostly relies on vegetation. This is because vegetation is a home of wild animals, birds, snakes and also a source of river source. It is of course all of the ecosystem that attract tourists hence contributing to the development of Rwanda.

Skills lab

No one doubts about the importance of home garden. Student-teachers should think about a productive garden where you grow all kinds of vegetables to hold the soil but also to be consumed.

UNIT: 7

DRAINAGE SYSTEM IN RWANDA

7.1. Key unit competence:

The student-teacher should be able to describe the drainage system of Rwanda and explain its relationship with the human activities

7.2. Prerequisite (knowledge, skills, attitude and values)

The tutor should be aware that student-teachers already have enough information concerning drainage system in Rwanda. He or she should design variety of reviewing what the student-teachers know about this unit. Student-teachers should have properly covered Unit 11 of drainage system in Rwanda in senior two.

The tutor therefore, as he or she is planning for this unit 7, must know that there is already a lot of knowledge, skills and values and attitudes student-teachers have developed previously in favour of drainage system in Rwanda.

7.3. Cross-cutting issues to be addressed

Unit 7 of drainage system in Rwanda, has several cross-cutting issues that can be associated with it. Mostly the one of environment and sustainability. The tutor should therefore, enable the student-teachers to take note of the drainage conservation if it is not monitored and executed in a recommendable way, the environment is affected and eventually the climatic changes associated with global warming will occur. However, the major cross-cutting issues that the tutor can integrate include the following:

- a. Environment and sustainability
- b. Standardization culture
- c. Inclusive education
- d. Gender education
- e. Peace and values education

In this Unit 7, the tutor has the opportunity of addressing other cross-cutting issues such as inclusive education, peace and values education. Such may not be applied using activity but in the process of teaching, look for an opportunity of saying something about the above two CCI (Cross-cutting issues).

7.4. Guidance on introductory activity

The tutor will ask students to read a set of questions related to introductory activity. The student-teachers will try to answer the questions. Student-teachers may not be able to get the right answer but they are requested to predict possible answers. When the student-teachers fail to come up with right answers to the questions related to introductory activity, the tutor will not immediately provide the required answers rather he /she should let students get the real answers through the course of learning and teaching process. This implies that student-teachers will associate this lesson with the content learnt in the previous lessons of S2.

7.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Major rivers and the drainage basins.	• Describe the drainage system of Rwanda. • List the major rivers and lakes in Rwanda. • Describe the drainage system of Rwanda. • Differentiate major water bodies in Rwanda. • Appreciate the importance of water bodies in Rwanda. • Advocate for the need to conserve the water bodies.	1

2	Major lakes and their mode of formation	• Use the acquired knowledge of the drainage system to explain the mode of formation of lakes in Rwanda. • Describe the relationship between the drainage system and the human activities in Rwanda. • Appreciate the importance of water resource management and conservation • Evaluate the importance of water bodies in the development of the human activities in Rwanda.	3
3	Assessment		2

Lesson 1: Major rivers and the drainage basins

a) Learning objective

- Describe the drainage system of Rwanda.
- List the major rivers and lakes in Rwanda.
- Describe the drainage system of Rwanda.
- Differentiate major water bodies in Rwanda.
- Appreciate the importance of water bodies in Rwanda.
- Advocate for the need to conserve the water bodies.

b) Teaching resources

The lesson to be effectively taught, the tutor should ensure that the following teaching resources are in place.

- Map of Rwanda
- Text books
- Photographs of some water bodies conservation measures in Rwanda or elsewhere.
- Manila papers for group work drawing

c) Prerequisites/Revision/Introduction

The tutor should use Activity 7.1 for introductory purposes. This will help the student-teachers to connect the lesson content to be learnt with the real-world experiences.

d) Learning activities

This part of learning activities intends to help tutors to assist student-teachers in their learning process.

Possible answers for activity 7.1 are the following:

1. Refer to the content in the student's book on major rivers and the drainage basins
2. Refer to the content in the student's book under water basins and major rivers

e) Application activities

The suggested answers on application activity 7.1 are the following:

1. The Birunga volcanic area in the North-West is poor in rivers despite heavy rains. This is due to its lithology which allows deep penetration of water which leads to lack of surface flow.
2. The consequence of the uplifting of the Congo –Nile peak is that Rwanda has been divided into 2 basins: The Congo Basin and the Nile Basin.

Lesson 2: Major lakes and their mode of formation

a) Learning objective

- Use the acquired knowledge of the drainage system to explain the mode of formation of lakes in Rwanda.
- Describe the relationship between the drainage system and the human activities in Rwanda.
- Appreciate the importance of water resource management and conservation
- Evaluate the importance of water bodies in the development of the human activities in Rwanda.

b) Teaching resources

During the teaching and learning process, the tutor will refer to the following teaching resources where possible:

- Pictures
- Internet
- Manila papers
- Maps
- Print outs for the activity
- Field work to the surrounding area
- Text books

c) Prerequisites/Revision/Introduction

The tutor should make preview of the previous lesson using/asking student-teachers to give a recap of what was covered. Then, he or she introduces the lesson with a short activity that can enable student-teachers to connect to the lesson at hand.

d) Learning activities

Suggested answers

1. Refer to the learner's book under Major Lakes of Rwanda.
2. The largest lake in Rwanda is Lake Kivu.

e) Application activities

Possible answers to the application activity.

1. Water is an essential component for all beings. All human activities are based on water: agriculture, bathing, washing, mopping, cooking, drinking and more.

Farmers depend on water for irrigation of their crops.

2. The following human activities are responsible for water pollution:
 - Throwing sewage and industrial waste into rivers and lakes,
 - Using harmful fertilizers, and even littering. All of these human activities affect our water sources.
 - Dumping sewage waste and contaminated water into rivers and lakes pollutes the environment and becomes a health problem.
 - When people use fertilizers on their soil, the fertilizers runoff into rivers and lakes whenever it rains, causing water pollution.
 - Humans also have accidents such as oil spills. An oil spill is an instance where oil is accidentally removed from its container, or

what it is in, and is dumped into a water source. Also, motor vehicle engines drop small amounts of oil onto roads and parking lots, and much of this oil makes its way into water supplies.

7.6. Summary of the unit

Unit 7 of year one deals with drainage system in Rwanda. This unit describes/gives more details on major rivers and lakes in Rwanda, the ways they have been formed and finally relationships between the drainage system and the human activities.

7.7. Additional Information

Evolution of Drainage system in Rwanda

Before Pleistocene period and there was a continental divide separating India and Atlantic Ocean drainage. From this divide, the Mozambican belt lay approximately along the present Gregory rift in Kenya. Before the formation of major mountains and rift valley in Rwanda, rivers such as Akagera and its tributaries (Nyabarongo, Akanyaru, Mukungwa, Muvumba and others) flowed northwards to south western Uganda.

During Pliocene and Pleistocene periods, rifting took place in western part of Rwanda. This was followed by volcanic eruptions in the northern part of Rwanda. The shoulders of the rift valley rose, causing up warping of the adjacent land. Afterwards the erection of volcanoes caused river Nyabarongo and Mukungwa to change their directions of flow eastwards. As the rate of uplift exceeded the rate at which they could incise their beds, rivers such as Nyabarongo captured Akanyaru to form river Akagera. With time, river Akagera ponded back and finally reversed its direction of flow eastwards towards Lake Victoria (a down warped basin). Many other lakes such as Cyohoha, Mugesera, Rweru, Ihema, and others were formed due to back ponding by Akagera River.

7.8. End unit assessment

Suggested answers to the end unit assessment are the following:

1. Refer to the student's book on Mode of formation of lakes
2. Most rivers in Rwanda reversed their directions of flow because of the following:
 - The rising of the Congo-Nile crest (folding)

- Faulting in the western part of the country (rising shoulders of the rift valley).
- Volcanic eruptions in North West parts of the country
- Down Warping of the eastern plain

3. a)

- Incredible growth in the human population
- The country is experiencing increased urbanization
- Competition for fresh water
- Global climate change is impacting fresh water supplies everywhere
- Over use in agricultural is a major source of fresh water scarcity.

b)Water, as a resource, can be conserved through the following ways:

1.Avoiding wastage:All people should use water wisely to minimize wastage. All taps should be turned off when they are not used. The used water may be re-used again. For example, water that has been used to rinse clothes can be re-used to mop the floor, soak the dirtiest clothes, rags etc. Do not use water directly from the tap, instead fetch the water in a container and use it wisely.

2. Controlling water pollution: People should neither throw wastes carelessly nor introduce any chemicals into water. Stern laws should be made and enforced to stop industries from dumping toxic wastes into the water bodies. Any industry found polluting the water by any means should be heavily punished or even closed down altogether.

3. Protection of water catchment: Vegetation in water catchment areas should be protected and cared for. People should not carry out agricultural activities close to water sources. Planting of trees that consume a lot of water, such as eucalyptus, near water sources or rivers should also be avoided. Any activity that destroys the water catchment should be banned.

4. Education: People should be educated about the importance of conserving the water resources. This education can be conveyed through mass media and introducing water conservation courses in schools and colleges.

5. Sewage treatment: Sewage is water containing waste matter produced by people. Much industrial sewage contains

harmful chemicals and other waste materials. Sewage must be treated before it flows from sewerage systems into lakes, rivers, and other bodies of water

6. Controlled use of agrochemicals: Farmers should be educated on the correct use of agrochemicals. Also agricultural activities should not be carried out in areas close to water bodies. The use of organic manures and chemicals in place of harmful industrial chemicals for agricultural production should be emphasized.

7. Recycling of products: People should be advised to recycle the waste instead of dumping it in water sources. This will help reduce the problem of water pollution.

7.9. Additional activities

7.9.1 Remedial activities

Question: Differentiate between drainage and drainage system.

Answer: Drainage refers to as the general distribution of surface water. A drainage system is a lay out or actual plan made by a river and its tributaries on the landscape.

7.9.2. Consolidation activities

Question:

1. Explain the term “river reversal” in the context of Rwanda
2. Identify the major cause of river reversal in Rwanda

Answers:

1. River reversal is a process in which rivers change their direction of flow (diversion of river’s direction). Most rivers in Rwanda reversed their direction of flow eastwards
2. The main causes of river reversal are the following:
 - a. The rising of the Congo-Nile Crest.
 - b. Faulting of the western part of the country (rising shoulders of the rift valley)
 - c. The eruption of volcanic mountains in North western part of the country
 - d. Down warping of the eastern plain

7.9.3. Extended activities

Questions:

1. Identify the consequence of the uplifting of the Congo-Nile peak on the hydrography of Rwanda.
2. Describe the effects of river reversal in Rwanda

Answers

1. The division of the waters of Rwanda in 2 basins: the Congo Basin and the Nile Basin.
2. Effects of river reversal in Rwanda are suggested as follows:
 - River capture (Nyabarongo captured Mukungwa)
 - River rejuvenation (river Akagera after Rusumo falls)
 - Formation of alluvial lakes
 - Formation of swamps and marshland along rivers Nyabarongo and Akagera
 - Formation of water falls over resistant rocks such as at Rusumo, Ntaruka, Rusizi I and II, Mukungwa I and II and others.
 - Formation of fault guided valley (Rusizi and parts of Nyabarongo)

Skills lab

First, people have to be aware of that scarcity of water and use the less available water wisely. Recycling of water should be used, Tanks to store water, reduce the amount of used water at home, school, industries, irrigation etc.



● UNIT: 8

POPULATION IN RWANDA

8.1. Key unit competence:

The student-teacher should be able to examine demographic problems in Rwanda and suggest their solutions.

8.2. Prerequisite (knowledge and skills, attitude and values)

The student-teachers are anticipated to have mastered the content of Unit 13 of S2 and Unit 8 of S3, where they studied the population Rwanda and Africa. This unit of senior two greatly provides strong foundation that student-teachers can use to understand better the content of this unit 8 of Year one. It is very significant to note that, they already have necessary knowledge, skills and attitudes. The difference is that, at this level the content is more detailed.

8.3. Cross-cutting issues to be addressed:

There are some cross-cutting issues, which can be applied in the lesson. In the student-teachers' book, the writers or authors used activities to integrate the crossing-cutting issues. The most emphasized is that of environment and sustainability and financial education.

Even though, the writer used few crosscutting issues in his / her activities, there is no limit to the creativity and innovativeness of the tutor. The activities used were just an example. This calls for the tutor to take note of the crosscutting issues that he or she is interested in. What is important to note, is that many crosscutting issues can be applied where possible depending on occasion.

Inclusive education can be introduced during the class situation for example if the tutor wants her/his student-teachers to make a field study outside classroom, with the purpose to observe the local environment the tutor will consider the student-teachers with physical disabilities and react accordingly by choosing appropriate methodology, which may help those student-teachers with special disabilities to cope with the situation. Nevertheless, tutor can use video containing different images or photographs of different vegetation.

8.4. Guidance on the introductory activity

The tutor will ask students to read carefully the passage related to the introductory activity. The student-teachers will try to answer the questions linked to the given passage. Student-teachers may not be able to get the right answer but they are requested to predict possible answers. When the student-teachers fail to come up with right answers to the questions related to introductory activity, the tutor will not immediately provide the required answers rather he /she should let student-teachers get the real answers through the course of learning and teaching process. This implies that student-teachers will associate this lesson with the content learnt in the previous lessons of S2 and S3 on population to answer the questions.

8.5. List of lessons/sub-heading

	Lesson title	Learning objectives	Number of periods
1	Population concepts and Population structure	Give the definition of different concepts of population Show the population structure on a population pyramid Be aware of the current situation of the population concepts in Rwanda.	2
2	Population growth in Rwanda	Identify the causes of the rapid population growth and its effects in Rwanda Adopt necessary control measures for the rapid population growth Analyse the factors for the population growth and its impact on the resource exploitation. Recognise the causes and the consequences of the rapid population growth and suggest population control measures. Create an awareness of the policies of controlling population growth.	3

3	Migration in Rwanda	List the types, causes and consequences of migration Evaluate the causes and the effects of migration.	2
3	End unit assessment		2

Lesson 1:Population concepts and Population structure

a) Learning objectives

- Give the definition of different concepts of population
- Show the population structure on a population pyramid
- Be aware of the current situation of the population concepts in Rwanda.

b) Teaching resources:

During the teaching and learning process, the tutor will refer to the following teaching resources where possible: Maps, Pictures, Flip charts, Text books, Internet.

c) Prerequisite / Revision/ Introduction

The Activity tends to review the lesson 1. The activity also requests student-teachers to recall the knowledge and skills gained from previous lessons of senior two. This will enable student-teachers to follow the lesson by linking it to what they have learnt in previous classes.

d) Learning activities

For this activity, the teacher will give student-teachers an opportunity to read the questions provided and give them time to reflect on the provided questions and then give answers. The tutor is requested to try to integrate some generic competencies as well as cross -cutting issues but he/she is free to choose a cross-cutting issue or generic competence taking into consideration the learning environment.

Possible answers

1. Refer to student's book on definition of population concept.
2. Refer to student's book on population structure in Rwanda.

e) Application activity

The possible answer for application activities are:

1. a) Birth rate = $3244/56211 \times 1000 = 49.6 \approx 50$ new born per 1000
b) Death rate = $467/56211 \times 1000 = 8.3 \approx 9$ died people per 1000
2. This population pyramid is characterised by wide base which means that there is a big number of children in Rwanda and narrow top means the elders are few. For more explanation, refer to student's book on population structure in Rwanda

Lesson 2: Population growth in Rwanda

a) Learning objectives:

- Identify the causes of the rapid population growth and its effects in Rwanda
- Adopt necessary control measures for the rapid population growth
- Analyse the factors for the population growth and its impact on the resource exploitation.
- Recognise the causes and the consequences of the rapid population growth and suggest population control measures.
- Create an awareness of the policies of controlling population growth.

b) Teaching resources

• Pictures	• Print outs for the activity
• Flip charts	• Text books
• Manila papers	• Internet

c) Prerequisite / Revision /introduction

There is a direct link of Activity 8.2, intended to introduce the lesson, with what the lessons studied in Senior two. The activity 8.2 requests student-teachers to recall the knowledge and skills gained from previous lessons of senior two about population and settlement in Rwanda, this will be through diagnostic assessment/ evaluation. This will enable student-teachers to follow the new lesson.

d) Learning activity

For this activity, the tutor will give student-teachers an opportunity to read the passage and give them time to reflect and answer the questions.

The tutor is requested to try to integrate some generic competencies as well as cross-cutting taking into consideration the learning environment

Possible answers to the Learning activity

1. The factors for population growth, refer to student's book on population growth in Rwanda.
2. For consequences of population growth on the environment, let them make discussion and refer them to student's book on population growth in Rwanda.

e) Application activity

Observe the local environment near your home or school;

1. The factors that contribute to the growth of population in the observed area depend on the area to area but refer them to student's book on population growth in Rwanda.
2. Different ways to address the challenge of the rapid growth in their village:
 - Promoting family planning techniques and education, for instance use of contraceptive and other methods of population control.
 - Legislation to emphasize adoption of such health care and services.
 - Legislation against early marriages especially of women. (In Rwanda mandatory, age is 21 years).
 - Improvements in the education facilities for women, which raises their status in society.

Refer them to student's book on population growth in Rwanda.

Lesson 3: Migration in Rwanda

a) Learning objectives:

- List the types, causes and consequences of migration.
- Evaluate the causes and the effects of migration.

b) Teaching resources:

- Photographs
- Text books
- Internet

c) Prerequisite /introduction

There is a direct link of activity intended to introduce the lesson, with what they studied in Senior two. The activity requests student-teachers to recall the knowledge and skills gained from previous lesson of senior two about population in Rwanda, this will be through diagnostic assessment/evaluation. This will enable student-teachers to follow the new lesson.

d) Learning activity

For this activity, the tutor will give student-teachers an opportunity to read carefully passage, give time to reflect and answer the questions. The tutor is requested to try to integrate some generic competencies as well as cross-cutting issues but he/she is free to choose a cross-cutting issue or generic competence taking into consideration the learning environment.

Proposed answers to the learning activities are:

1. The pushing factors: her low income, the high rates of rent charged.
2. The pull factors are: her desire to save some money, a cheap house in a slum area.
3. Other causes of migration refer to the student's book on causes of migration.
4. The effects of migration from the passage are: a better job in her new town, adequate space, the town very clean, clean water and fresh air to breath.

8.6. Summary of the unit

The unit 8 of Year one deals with population in Rwanda. This unit gives more details on population concepts, population structure, population growth and migration.

8.7. Additional Information

There is no considerable additional information the tutor requires. Nevertheless, the writers wish to convey the attention of the tutor to focus on use of maps, photographs and population pyramids to facilitate the student-teacher to be familiar with population growth, population problems and its consequences. The tutor is requested to support and stimulate student-teachers to make additional research via internet, field works and visiting libraries.

8.8. End unit assessment

However, the student-teachers should give his or her opinion/view or self-constructed answers, their answer will rotate to the content in reference to the following possible answers for end unit assessment:

1. Refer to student's book on the Population concepts.
2. Factors that influence population distribution in Rwanda are:
3. Fertile soil, historical factors, government policy, availability of infrastructures, security, relief etc.
4. Refer to student's book on Population growth.
5. Let student-teachers to search and discuss on types, causes and effects of migration. Refer to student's book on migration in Rwanda.

8.9. Additional activities

a) Remedial activities

Distinguish these terms: Over population, under population, optimum population.

Answer: Over population refer to a situation where population is more than the resources.

Under population refers to a situation when resource available is more than population while optimum population is a situation when population is equal to the available resource.

b) Consolidation activities

Examine the negative effects of migration in the area of origin.

Answer: It causes depopulation. Limited labour, insecurity, under population.

c) Extended activities

1. Evaluate the effects of over population in Kigali city

Answers: Shortage of land, insufficient land for expansion, shortage of food, high cost of resource, traffic congestion.

2. Explain the role played by the population census in the development of Rwanda.

Answers:

- It helps in the planning and management of people.
- It helps in the counting of people.

Skills lab

Discuss the advantages of population growth to a country like Rwanda: student-teachers will discuss the possible answers: having a large population helps to increase manpower, income, security, increase market, urbanization, etc.

● UNIT: 9

RURAL AND URBAN SETTLEMENT IN RWANDA

9.1. Key unit competence:

The student-teacher should be able to evaluate the impact of the rural and urban settlements on the sustainable development in Rwanda.

9.2. Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student-teachers towards application of various knowledge, skills, attitudes and values, acquired and developed right away from senior two. It is vital to note that, student-teachers already have a handful of skills that can enable them to understand and master this unit.

There is a connection between the content of year one and senior two. The difference is that, at this level of year one, the content in the learner's book is more detailed to the settlement in Rwanda. The already acquired knowledge, skills, attitudes and values from past studies, should be used by the tutor to conduct diagnostic assessment as a way of evaluating each student-teacher's abilities.

9.3. Cross-cutting issues to be addressed

There is a wide range of cross-cutting that can be integrated into the teaching of this Unit 9 year one. In the learner's book, the writers or authors used activities to integrate crossing-cutting issues. The most highlighted is that of environment and sustainability, Peace and values, and financial education.

Although, the writers might have utilized few cross-cutting issues, this should not be a barrier to the creativity and innovativeness of the tutor. Most of activities used are models.

It is very important to apply all possible cross-cutting issues where possible basing on the occasion. Examples are Genocide studies, gender, peace and values, inclusive education, standardization culture and comprehensive sexuality education. As a tutor, planning is a main preoccupation on how

and when to use and develop the above cross-cutting issues.

Peace and values, gender and financial education can be integrated using the class room situation

Environment and sustainability: the role of a tutor is to clarify the lesson, through all activities related with the topic. The tutor is requested to explain more on relationship between agricultural activities and the environment. Besides, tutor is an adviser to the student-teacher. He/she should help student-teacher to understand and have knowledge and skills on good farming methods which is environmental friendly.

Peace and values: Education could be addressed in the any activity that involves student-teacher to work in group. In any case, working in groups develops positive attitudes of someone who has peace. In any activity where tutor give tasks to the student-teacher he/she should reinforce the need of peace in the society.

Financial education: One of the primordial importance of agriculture is the provision of food. Additionally, agricultural products are sold to generate money to the farmers even to the country. The tutor should explain how agriculture should be respected and how it is beneficiary to many people in terms of money, food, job, skills etc.

Inclusive education: The tutor is advised to cater for special needs of student-teachers with disabilities. For example; the tutor has to use audio materials for students' visual impairments, audio-visual materials to those who have physical impairments so that they can see and hear the samples brought. The tutor should select conducive environment to all students so that students with disabilities can participate in learning activity

9.4. Guidance on introductory activity

The introductory activity in this unit is provided to warm up student-teachers so that they can actively be involved in the lesson. The tutor has to conduct and allow student-teachers to make group discussions and give answers to the questions provided in this part. Student-teachers are supposed to answer all questions. In case they fail to find out correct answers to the questions, tutor should intervene immediately to provide possible right answers, but he/she should allow student-teachers to discover themselves the right answers through the learning and teaching process.

9.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Rural settlement	- Name the various types of rural settlement. - Explain the characteristics of the rural settlement. - Appreciate the types and the characteristics of rural settlement in Rwanda. - Show concern for the importance of the rural settlement schemes in Rwanda.	3
2	Problems and solutions associated with rural settlement in Rwanda	Evaluate and carry out a research on the Government policy towards the rural settlement schemes (Grouped settlement/imidugudu).	3
3	Urban settlement in Rwanda	- Give the characteristics of urban centres in Rwanda. - State the factors favouring the growth of the urban centres in Rwanda. - Identify the major urban centres of Rwanda. - Evaluate the effects of the urban settlements. - Carry out an investigation on the causes and problems of the slums.	2
4	Problems of the urban centres and their solutions	- Identify the effects of the urban settlements - Carry out an investigation on the causes and problems of the slums. - Show the resilience for the problems caused by the urbanisation in Rwanda.	2
5	Assessment		2

Lesson 1: Rural settlement

a) Learning objectives

- Name the various types of rural settlement.
- Explain the characteristics of the rural settlement.
- Appreciate the types and the characteristics of rural settlement in Rwanda.
- Show concern for the importance of the rural settlement schemes in Rwanda.

b) Teaching resources

For effective delivery of the lesson the tutor should avail the following resources:

- Print outs for the activity
- Text books
- Flip charts,
- Internet,
- Manila papers
- Field work to the surrounding area or watching video

c) Prerequisites/Revision/Introduction

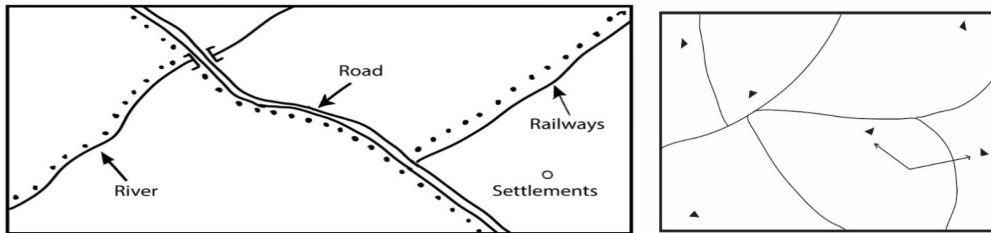
There is a direct connection of Activity 9.1, intended to introduce the lesson, with the lessons studied in senior two. The activity 9.1 requests student-teachers to recall the knowledge and skills gained from previous lessons of senior two about settlement in Rwanda, this will be through diagnostic assessment/ evaluation by tutor.

d) Learning activities

Possible answers to the **activity 9.1** are the following:

1. Place where one live may be in a rural or in urban areas.
2. Refer to the types of settlement.
3. Refer to the types of settlement.

e) Application activities



Lesson 2: Problems and solutions associated with rural settlement in Rwanda

a) Learning objective

- Evaluate and carry out a research on the Government policy towards the rural settlement schemes (Grouped settlement/ Imidugudu).

b) Teaching resources

In order to achieve learning objectives of this lesson, the following resources should be used:

- Geographical documents
- Maps, Illustration
- Internet
- Manila Paper or flip chart.

c) Prerequisites/Revision/Introduction

In lesson 9.2 students will learn about the Problems and solutions associated with rural settlement in Rwanda. The tutor should engage learners in revision of previous lesson, and will establish the link between today's lesson and the previous lesson.

d) Learning activities

Possible answers to the **activity 9.2** are the following:

1. Refer to the learner's book on Some of the problems associated with rural settlements
2. Refer to the learner's book on Rwanda's government policy towards rural settlement schemes
3. Refer to the learner's book under Reasons for establishment of imidugudu settlement schemes in Rwanda

e) Application activities

Suggested answer to the **application activity 9.2** is the following:

Tutor should guide learners in deep discussion about the advantages and disadvantages of living in Imidugudu.

Lesson 3: Urban settlement in Rwanda

a) Learning objectives

- Give the characteristics of urban centres in Rwanda.
- State the factors favouring the growth of the urban centres in Rwanda.
- Identify the major urban centres of Rwanda.
- Evaluate the effects of the urban settlements.
- Carry out an investigation on the causes and problems of the slums.

b) Teaching resources

During the teaching and learning process, the tutor will refer to the following teaching resources where possible:

• Pictures	• Internet
• Manila papers	• Maps
• Print outs for the activity	• Field work to the surrounding area.
• Text books	

c) Prerequisites/Revision/Introduction

The tutor has to introduce this lesson and link it with the previous lessons by asking some questions. The activity 9.3 intended to introduce lesson 3 has a link with the previous lesson studied before. The tutor has to help student-teachers to recall the previous knowledge and skills about Imidugudu scheme in Rwanda

d) Learning activities

Possible answers to the **activity 9.3** are the following:

1. Tutor should provide student-teachers with the photograph and ask them to identify it by saying that the place is urban or not
2. Many answers provided by learners will be probably correct

3. Refer to the learner's book under Characteristics of urban centres in Rwanda.

e) Application activities

The possible answers to the **application activity 9.3** are suggested as follows:

1. Refer to the learner's book on factors favouring the growth of urban centres in Rwanda
2. Refer to the learner's book on the characteristics of urban centres in Rwanda.
3. Refer to the learner's book on functions of urban centres in Rwanda

Lesson 4: Problems of the urban centres and their solutions

a) Learning objectives

- Identify the effects of the urban settlements
- Carry out an investigation on the causes and problems of the slums.
- Show the resilience for the problems caused by the urbanisation in Rwanda.

b) Teaching resources

During the teaching and learning process, the tutor will refer to the following teaching resources where possible:

• Pictures	• Internet
• Manila papers	• Maps
• Print outs for the activity	• Field work to the surrounding area
• Text books	

c) Prerequisites/Revision/Introduction

The tutor should make use of the skills the student-teachers gained when they studied Unit 14 of rural and urban settlement in Rwanda in senior two. The only difference is that, in year one they will deeply look at this unit than they did in the previous class. Therefore, this gives an allowance to the tutor to design various recap reviewing activities. He or she introduces the actual content of the lesson.

d) Learning activities

Possible answers to the **activity 9.4** are the following:

1. Refer to the learner's book under Problems of the urban centres of Rwanda
2. Refer to the learner's book on Solutions to the problems of urban centres

e) Application activities

Suggested answers to the **application activity 9.4** are the following:

1. Advantages
 - The process of urbanization contributes to an increase in labor productivity, allows solving many social problems of society.
 - People who live in urban area tend to earn due to the availability of many jobs
 - As the economy increases, the whole society benefits from internal improvements, either through a richer tax base or through competition between private organizations.
 - Urbanization offers real economic opportunities to people who would otherwise be destined to subsistence without hope of economic improvement.
 - Another advantage of urbanisation is that it improves technology at a faster rate.

Disadvantages

- Urbanisation has a direct greater impact on the environment and quality of life, pollution due to traffic, congestion of vehicles and poor collection of wastes;
 - Price of the home: the price of homes is one of the main elements that are affected by the agglomeration in cities. Thus, living in a big city is always more expensive than in small urban centres.
 - Cost of mobility, this is greater in large cities, a factor that in fact decisively influences the first point (the price of housing), since the price you are willing to pay for a house depends largely on the displacement cost.
 - There is high crime rate in urban centres than rural ones.
2. Refer to the learner's book on Solutions to the problems of urban centres

9.6. Summary of the unit

This unit 9, deals with settlement in Rwanda and more precisely types of settlement in Rwanda, characteristics of rural settlement, problems and solution of rural settlement, urban settlement, characteristics, functions of urban centres, major secondary cities, problems and solution of urban centres in Rwanda.

9.7. Additional Information

The teacher is supposed to guide the learners on the case studies of secondary cities. Most of the case studies are Muhanga, Rusizi, Nyagatare, Musanze, Huye, and Rubavu, discuss the reasons for their establishment, their motivation and challenges. Therefore, the learners should be guided on how to execute transfer of knowledge and skills to find responses to any associated learning activity or any other assessment task subjected to them.

9.8. End unit assessment

Possible answers to the end unit assessment are suggested as follows:

Question 1

- a. Refer to the learner's book on types of rural settlements
- b. Refer to the learner's book on characteristics of rural settlements in Rwanda

Question 2

- a. Refer to the learner's book on factors that influence rural settlements in Rwanda
- b. Refer to the learner's book on problems of rural settlements in Rwanda and give their solutions.

Question 3

- a. Refer to the learner's book on characteristics of urban centres in Rwanda
- b. Refer to the learner's book under factors that have favoured urbanization in Rwanda

Question 4

Positive effects of urban centres	Negative effects of urban centres
• People who live in urban areas tend to earn due to the availability of many jobs. • Urbanization offers real economic opportunities to people who would otherwise be destined to subsistence without hope of economic improvement. • Another advantage of urbanisation is that it improves technology at a faster rate.	• Urbanisation has a direct greater impact on the environment and quality of life, pollution due to traffic, congestion of vehicles and poor collection of wastes; • Price of the home: the price of homes is one of the main elements that are affected by the agglomeration in cities. Thus, living in a big city is always more expensive than in small urban centres. • There is high crime rate in urban centres than rural ones.

Question 5: Refer to the learner's book under major secondary cities in Rwanda and their location

9.9. Additional activities (Questions and answers)

9.9.1. Remedial activities

Question: Explain what urbanization is.

Answer: Urbanization refers to the concentration of population and its activities such as social, cultural and economic in different cities.

9.9.2. Consolidation activities

Question: Describe the major functions of cities in Rwanda

Answer: City functions can include:

- Serving as administration centre for the area around it
- Commercial centre: it sells expensive or rare commodities or services
- Entertainment centre: it offers sporting attractions, shopping areas, restaurant etc.

Extended activities

Question: Assess the contribution of city growth in the development of the country

Answer: The question requires both positive and negative contributions. Student-teachers are requested to discuss and discover the opportunities that cities provide and challenges it faces or causes.

Skills lab

The student-teachers should be aware of the problems of urban centres, the advantages and disadvantages of urban areas in Rwanda.



UNIT: 10.1

AGRICULTURE IN RWANDA

10.1.1. Key unit competence:

The student-teacher should be able to investigate the impact of various agricultural activities on the sustainable development in Rwanda.

10.1.2. Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student-teachers towards application of various knowledge, skills, attitudes and values, acquired and developed right away from senior one to year one. It is vital to note that, student-teachers already have a handful of skills that can enable them to understand and master this unit.

There is a connection between the content of year one and senior two. The difference is that, at this level of year one, the content in the student's book is more detailed to agriculture in Rwanda. The already acquired knowledge, skills, attitudes and values from past studies, should be used by the tutor to conduct diagnostic assessment as a way of evaluating each student-teacher's abilities.

10.1.3. Cross-cutting issues to be addressed:

there is a wide range of the cross-cutting that can be integrated into the teaching of this unit 10.1 year one. In the student-teacher's book, the writers or authors used activities to integrate the crossing-cutting issues. The most highlighted is that of environment and sustainability, Peace and values, and financial education.

Although, the writers might have utilized few cross-cutting issues, this should not be a barrier to the creativity and innovativeness of the tutor. Most of activities used are models.

It is very important to apply all possible cross-cutting issues where possible basing on the occasion. Examples are Genocides studies, gender, peace and values, inclusive education, standardization culture and comprehensive sexuality education. As a tutor, planning is a main

preoccupation on how and when to use and develop the above cross-cutting issues.

Peace and values, gender and financial education can be integrated using the class room situation

Environment and sustainability: the role of a tutor is to clarify the lesson, through all activities related with the topic. The tutor is requested to explain more on relationship between agricultural activities and the environment. Besides, tutor is an adviser to the student-teacher. He/she should help student-teacher to understand and have knowledge and skills on good farming methods which is environmental friendly.

Peace and values: Education could be addressed in the any activity that involves student-teacher to work in group. In any case, working in groups develops positive attitudes of someone who has peace. In any activity where tutor give tasks to the student-teacher he/she should reinforce the need of peace in the society.

Financial education: One of the primordial importance of agriculture is the provision of food. Additionally, agricultural products are sold to generate money to the farmers even to the country. The tutor should explain how agriculture should be respected and how it is beneficiary to many people in terms of money, food, job, skills etc.

Inclusive education: The tutor is advised to cater for special needs of student-teachers with disabilities. For example; the tutor has to use audio materials for students' visual impairments, audio-visual materials to those who have physical impairments so that they can see and hear the samples brought. The tutor should select conducive environment to all students so that students with disabilities can participate in learning activity

10.1.4. Guidance on the introductory activity

The introductory activity in this unit is provided to warm up student-teachers so that they can actively be involved in the lesson. The tutor has to conduct and allow student-teachers to observe critically the photographs provided. Student-teachers are supposed to answer all questions. In case they fail to find out correct answers to the questions, tutor should not intervene immediately to provide possible right answers, but he/she should allow student-teacher to discover themselves the right answers through the learning and teaching process.

10.1.5. List of lessons/sub-heading

	Lesson title	Learning objectives	Number of periods
1	C r o p cultivation in Rwanda	• Identify the different crops grown in Rwanda. • Outline the advantages and disadvantages of crop farming in Rwanda. • Identify the ways of improving crop production in Rwanda. • Describe the advantages and disadvantages of crop farming in Rwanda. • Do research on ways of improving agriculture in Rwanda. • Appreciate the importance of agriculture to the economy of Rwanda. • Show continual desire to improve the agriculture system in Rwanda.	9
2	L i v e s t o c k farming in Rwanda	• Describe the advantages and disadvantages of crop farming in Rwanda. • Do research on ways of improving agriculture in Rwanda. • Describe the different systems of rearing animals in Rwanda, and their characteristics. • Analyse the contributions and problems associated with the livestock farming in Rwanda. • Carry out a research on ways of improving livestock farming in Rwanda.	8

		• Carry out a research on the importance of keeping smaller animals in Rwanda. • Investigate the importance of agriculture to the economy of Rwanda Show respect for keeping smaller animals in Rwanda. • Show concern for the importance of agriculture to the economy of Rwanda.	
3	End of unit assessment		2
	Total		19

Lesson 1: Crop Cultivation in Rwanda

a) Learning objective:

- Identify the different crops grown in Rwanda.
- Outline the advantages and disadvantages of crop farming in Rwanda.
- Identify the ways of improving crop production in Rwanda.
- Describe the advantages and disadvantages of crop farming in Rwanda.
- Do research on ways of improving agriculture in Rwanda.
- Appreciate the importance of agriculture to the economy of Rwanda.
- Show continual desire to improve the agriculture system in Rwanda.

b) Teaching resources

For effective delivery of the lesson the tutor should avail the following resources: - Diagrams - Pictures - Flip charts - Manila papers - Print outs for the activity - Text books - Internet - Field work to the surrounding area or watching video

c) Prerequisite/introduction:

There is a direct link of Activity 10.1.1, intended to introduce the lesson, with the lessons studied in Senior two. The activity 10.1.1 requests student-teachers to recall the knowledge and skills gained from previous lessons of senior two about Agriculture systems in Rwanda, this will be through diagnostic assessment/ evaluation by tutor. This will

enable student-teachers to follow the lessons by linking it to Rwandan agricultural systems.

d) Learning activity

Guide and facilitate student-teachers to work in groups and discuss a set of questions in relation to agriculture, especially crop cultivation. Student-teachers should use the knowledge, skills acquired in their past studies in their discussion to answer questions.

The student-teachers will be engaged in activities like discussions, asking and answering questions by referring to the student's book

Possible answers for learning activity 10.1.1 include:

Possible answers:

1. The subsistence crop cultivation refers to the growing of crops on a small scale for domestic purposes and the surplus for sale.
2. The subsistence crops that are grown in your region maize, irish patato, beans etc
3. The characteristics of subsistence farming refers to student's book on point 10.1.1.1
4. Climate change may influence negatively and positively depending on the kind of crops.

e) Application activity

1. Suggest measures that should be taken to address the challenges facing crop growing in swamps of Rwanda

Possible solutions:

- Avoid soil erosion
 - Terracing steep slop
 - Good management of swamps and marshes
2. Analyse ways in which plantation agriculture can be improved in Rwanda

Possible solutions:

- Land use Consolidation
- Mechanization
- Improve the transportation facilities Provide loans for agriculture

- Attract foreign investors

Lesson 2: Livestock farming in Rwanda

a) Learning objectives:

- Describe the advantages and disadvantages of crop farming in Rwanda.
- Do research on ways of improving agriculture in Rwanda.
- Describe the different systems of rearing animals in Rwanda, and their characteristics.
- Analyse the contributions and problems associated with the livestock farming in Rwanda.
- Carry out a research on ways of improving livestock farming in Rwanda.
- Carry out a research on the importance of keeping smaller animals in Rwanda.
- Investigate the importance of agriculture to the economy of Rwanda
Show respect for keeping smaller animals in Rwanda
- Show concern for the importance of agriculture to the economy of Rwanda.

b) Teaching resources

For effective delivery of the lesson the tutor should avail the following resources: - Diagrams - Pictures - Flip charts - Print outs for the activity - Text books - Internet - Field work

c) Prerequisite/introduction:

There is a direct link of Activity 10.1.2, intended to introduce the lesson, with the lessons studied in Senior two. The activity 10.1.2 requests student-teachers to recall the knowledge and skills gained from previous lesson of senior two about Agriculture systems in Rwanda, this will be through diagnostic assessment/ evaluation by tutor. This will enable student-teachers to follow the lessons by linking it to Rwandan agricultural systems.

d) Learning Activity

Possible answers:

1. Refer to the student's book under the problem of livestock.
2. Refer to the student's book on the characteristics of small animals.
3. People get manure, money, receive visitors, etc

e) Application activity

1. Identify the key factors influencing ranching in Rwanda.

Possible answers:

- Availability of land
 - Availability of capital
 - Availability of man power
 - Good climate.
2. Describe challenges facing nomadic pastoralism in Rwanda

Possible answers:

Refer to the student's book on problems of pastoralism.

3. Suggest different ways of improving livestock farming in your region.

Possible answers:

- Provide loans to pastoralists in order to improve the quality of animals reared
- Educating the livestock farmers on the importance of quality
- Fencing and paddocking to ensure controlled grazing
- Establishment of livestock processing industries.
- Introducing nutritious and drought resistant grasses (such as Alfalfa, elephant grass, Nandi grass, etc) into pastures to ensure constant supply of pasture.
- Establishing markets in pastoral areas for easy marketing of animals and animal products.

10.1.6. Summary of the unit

Unit 10.1 of year one deals with agriculture in general. The content describes different crops methods used in Rwandan agriculture. Emphasis

on factors, challenges in agriculture, and suggest solution. Agriculture as one of the ancient activity, deals also with small animals, livestock farming.

10.1.7. Additional information

The types of agriculture change from time to time due to many factors like population pressure and climate change where pastoralism change into Zero grazing and type of crops depends on the climate.

10.1.8. End unit assessment

Tutor guides student-teachers to answer all questions in relation to the passage that reflect on the entire unit.

Below are suggested answers:

1. The impact of population pressure on the agriculture:
 - a. Reduce land for cultivation
 - b. Destroy crops
 - c. Are used as manpower
 - d. Increase production
 - e. Protect crops
2. To improve agricultural productivity:
 - a. The farmers should be organised into cooperatives.
 - b. Transport facilities should be established and the existing ones rehabilitated.
 - c. Cross breeding of traditional breeds with improved hybrids.
 - d. Training farmers in the keeping of different kinds of smaller animals for industries.
 - e. Introduction of modern facilities for different animals.
3. a) The economic benefits: development of infrastructure, provide income,

b) The social benefits: provide food, increase life standard
4. The role played by agriculture: Are raw materials.
5. The relationship between livestock and crop cultivation: they interdepend on one another.

10.1.9. Additional activities

a) Remedial Activities

1. Define the term agriculture

Answer: refer to the student's book on introduction of agriculture.

2. Distinguish Zero farming from small animal farming

Answer: refer to the student's book under livestock agriculture

3. Identify at least 3 advantages and disadvantages of crop cultivation.

Answer: refer to the student's book under crop cultivation.

b) Consolidation activities

1. Agriculture is classified into two broad categories. Identify them.

Answer: These are **crop cultivation and livestock** farming

2. How does commercial farming is differ from subsistence farming

Answer:

1. Commercial farming involves farming for profit. The farmer intends to grow crops or rear animals to sell for as much money as possible. These farms can be arable, (Just growing crops), pastoral (just rearing animals) or mixed (both arable and pastoral)
2. Subsistence farming is a farming whose products are intended to provide basic needs of the farmer, with little surplus for marketing.

c) Extended activities:

1. What is food insecurity?

Answer: is lack of basic food. This occurs when a person is unable to obtain a sufficient amount of healthy food on a day-to-day basis. Because of food insecurity, people suffer from chronic hunger and poor nutrition, and are, therefore, less likely to have healthy and productive lives

2. Suggest measures to control famine in a sustainable way

Answers:

- Providing aid and relief to people or countries that are suffering
- Making sure that domestic agriculture continues to produce what is needed

- Importing foods that cannot be produced cost effectively
- Eradicating inequality and poverty by introducing rural development schemes that include skills training and the funding of farms
- Exporting food excesses at decent prices
- Genetically modified (GM) food produced from genetically modified plants or animals.

Skills lab

Student-teachers already have necessary skills of doing a business plan. Therefore, they should use it to create a business based on agricultural products either small animal or crop growing business. But to be more profitable, innovation and creativity should be added.

UNIT: 10.2

FORESTRY IN RWANDA

10.2.1. Key unit competence:

The student-teacher should be able to investigate the impact of forestry on the sustainable development in Rwanda.

10.2.2. Prerequisite (knowledge and skills, attitude and values)

The tutor should be aware that student-teachers already have enough information concerning forests, forestry exploitation/lumbering. He or she should design a variety of reviewing what the student-teachers know about this unit. Student-teachers should have properly covered Unit 9 of vegetation in senior one, unit 16 of forestry in Rwanda in Senior 2, unit 5 of vegetation in Africa and the world and unit 11 of forestry in Africa in senior 3.

The tutor therefore, as he or she is planning for this unit 10.2, must know that there is already a lot of knowledge, skills, values and attitudes student-teachers have developed previously in favour of forests and forest exploitation.

10.2.3. Cross-cutting issues to be addressed

Unit 10.2 Forest in Rwanda has several cross-cutting issues that can be associated with it. Mostly is the one of environment and sustainability. The tutor should therefore enable the student-teachers to take note of the lumbering operations if are not monitored and executed in a recommendable way, the environment is affected and eventually the climatic changes associated with global warming will occur. However, the major cross-cutting issues that the tutor can integrate include the following:

- Environment and sustainability
- Inclusive education
- Gender education

In this Unit 10.2, the tutor has the opportunity of addressing other cross-

cutting issues such as inclusive education, peace and values education. Such may not be applied using activity but in the process of teaching, look for an opportunity of saying something about the two Cross-cutting issues. The tutor should also incorporate in the cross-cutting issue of standardization culture when handling the concept of products from forest exploitation. He or she must ensure that student-teachers realize the importance of producing products of good quality that meet the recommendable standards.

10.2.4. Guidance on introductory activity

The introductory Activity aims at highlighting the knowledge, skills and attitudes that Student-teachers, acquired previously in classes. This activity prepared, requires Student-teachers to put to better use all the competences, knowledge together with attitudes in understanding the new topic of year one unit 10.2. Activities in this unit 10.2 can be answered by most of the Student-teachers. The tutor can provide enough time for every student-teacher so that individual participation can be respected. The intention of this activity is see the ability of each Student-tutor so that throughout the unit the tutor plans on how to aid his/ her Student-teachers.

The way answers are provided for the introductory activity, some require reviewing the past studies while others require Student- teachers to think deeply and read geographical documents.

10.2.5. List of lessons/sub-heading

	Lesson title	Learning objectives	Number of periods
1	Major forested areas in Rwanda, their characteristics and Importance of forestry in Rwanda.	• Define forest and forestry. • Identify the major forested areas of Rwanda. • Give the importance of forests and forestry in Rwanda. • Differentiate forest from forestry. • Describe the characteristics of the major forests in Rwanda.	4

		• Apply the knowledge of forestry to discuss the importance of forests and forestry in Rwanda. • Examine the causes and the effects of deforestation in Rwanda and suggest the conservation measures. • Appreciate the importance of conserving forests in Rwanda. • Appreciate the importance of forest and forestry in Rwanda. • Show respect for the forest conservation and the management in Rwanda.	
2	Deforestation and forest exploitation measures in Rwanda	• State the causes and the effects of deforestation in Rwanda. • State the measures for forest conservation in Rwanda. • Examine the causes and the effects of deforestation in Rwanda and suggest the conservation measures.	3
		• Explain the impact of forests and forestry on sustainable development	
3	End of unit assessment		2

Lesson 1: Major forested areas in Rwanda, their characteristics and Importance of forestry in Rwanda.

a) Learning objectives

- Define forest and forestry.
- Identify the major forested areas of Rwanda.
- Give the importance of forests and forestry in Rwanda.
- Differentiate forest from forestry.

- Describe the characteristics of the major forests in Rwanda.
- Apply the knowledge of forestry to discuss the importance of forests and forestry in Rwanda.
- Examine the causes and the effects of deforestation in Rwanda, and suggest the conservation measures.
- Appreciate the importance of conserving forests in Rwanda.
- Appreciate the importance of forest and forestry in Rwanda.
- Show respect for the forest conservation and the management in Rwanda.

b) Teaching resources:

The lesson to be effectively taught, the tutor should ensure that the following teaching resources are in place.

- Text books
- The Rwandan maps
- Drawing materials such as pencils, coloured markers and flip papers.
- Photographs of some lumbering activities taking place in various districts of Rwanda.
- Manila papers for group work drawing

c) Prerequisites / Revision / Introduction

The tutor should make use of the skills the student-teachers gained when they studied Unit 9 of vegetation in senior one, unit 16 of forestry in Rwanda in Senior 2 and unit 11 of forestry in the Africa in senior 3. The only difference is that, in year one they will look at forestry in Rwanda. This gives an allowance to the tutor to design various recap reviewing activities. He or she introduces the actual content of the lesson.

d) Learning activities

1. Draw the map of Rwanda showing the major forest areas Possible answers: Refer to student's book showing major forest of Rwanda
2. Assess the contribution of trees in our day life

The tutor should guide student-teachers to realize that when a question is asked using the verb “assess”, one requires to go into detailed analytical approach of the phenomenon being dealt with. However, this question

does not need however-side like other questions. The possible answers, refer to the student's book under **10.2.1.2.:** importance of forests.

e) Application activities

The tutor should guide the student-teacher to interpret the demands of the question. Therefore, the answers for this question are: The products from timber are desks, chairs, doors, windows, tables etc.

1. The contribution of Gishwati forest to the people around it, refer to student's book on **10.2.1.2.:** the importance of forest
2. Difference between Akagera forest and Nyungwe forest, refer to student's book on **10.2.1** the characteristics of forests in Rwanda

Lesson 2: Deforestation and forest exploitation measures in Rwanda

a) Learning objectives

- State the causes and the effects of deforestation in Rwanda.
- State the measures for forest conservation in Rwanda.
- Examine the causes and the effects of deforestation in Rwanda, and suggest the conservation measures.

b) Teaching resources:

- Text books
- The Rwandan maps
- Drawing materials such as pencils, coloured markers and flip papers.
- Photographs of some measures for forest conservation.

c) Prerequisites/ Revision /Introduction

The tutor should review the previous lesson using various techniques at his or her disposal.

d) Learning activities:

Learning Activity

Tutor guide student-teachers in their groups to make discussion on the photograph and answer related questions using generic competences like critical thinking, problem solving, cooperation and team work.

1. The picture shows the nursery / preparation of trees and cutting of trees
2. People cut down trees in Rwanda; refer to student's book on 10.2.2.1. causes of deforestation

e) Application activity.

Possible answers

1. Refer to the student's book under 10.2.2.3: Forest conservation and the management (policy measures) in Rwanda
2. Shortage of rainfall is an effect of deforestation in Eastern part of Rwanda because there is insufficiency of trees to attract rainfall

10.2.6 Summary of the unit

Unit 10.2. Forestry deals with the major types of forestry in Rwanda, their characteristics, importance of forest in Rwanda, deforestation and forest conservation measures.

10.2.7. Additional information

When tutor is talking about characteristics of forests, he/she is requested to guide student-teachers by referring them to another forest closely related and similar. A field trip is needed

10.2.8. End of Unit Assessment

Possible answers:

- a. Refer to the student's book under 10.2.1. Map showing major forested areas
- b. The answers for this question are embedded in the forest conservation measures, refer to the student's book under 10.2.2: Forest conservation measures.
- c. The role played by forests at schools: is to provide fire wood, desks, trees for building, tables, fruits etc
- d. The ways of promoting sustainable utilization of forest resources are:
 - Use of other source of energy
 - Agroforestry
 - Forest reserve
 - Over grazing

10.2.9. Additional activities

a) Remedial activities:

1. Distinguish between forest and forestry:

Possible answers:

Forest refers to a community of trees growing in a given area either artificially or naturally. Forestry: Refer to any activity related to trees or forest.

2. Explain how forested areas in your sector are being conserved and protected.

Possible answers:

Refer to the conservation measures 10.2.2 in the student's book.

b) Consolidation activities

To what extent is agro-forestry a solution to depletion of forests in Rwanda.

Possible answers:

Agro-forestry:

- Increases the number of trees existing
- Reduces the increased population pressure on forested areas
- Provides raw materials to human beings, which would otherwise be attained from forests.
- Enables mankind to get income hence addressing the challenge of poverty that pushes people to cut down trees from the forests for charcoal or fire wood.

However, agro-forestry is not the only single solution to depletion of forests in the world, there are other forest conservation measures. Possible answers refer the student's book under 10.2.2 Forest conservation measures.

c) Extended activities

The effective exploitation of forest has been majorly hindered by human factors. Discuss.

Possible answers:

This question requires the student-teachers to first agree with the statement by showing how human factors have hindered effective exploitation of forest. Therefore, look at physical factors on the however-side.

Human factors:

- poor transport
- Shortage of enough market
- Poor methods of forest exploitation
- Inadequate capital
- Political instabilities
- Limited research and studies in relation to forest exploitation/ lumbering
- Stiff competition
- Lack of improved technology
- Fire out breaks caused by man
- Inadequate labour supply.
- Etc.

Physical factors:

- Trees do not appear in pure stands
- Trees take long to mature
- Harsh climatic conditions such excessive rainfall
- The bulky hardwood that can hardly float on water
- The existence of buttress roots
- Fire-out breaks caused by lightening
- Prolonged drought in some seasons
- Diseases and pests
- Land slides
- Stand risk of not getting another source of energy

Mention the problems limiting forest exploitation in Rwanda.

Possible answers: Problems limiting forest exploitation include the following:

- Constructing better feed roads and improving the already existing ones
- Selecting and marking the trees that are suitable for felling
- Planting quick maturing tree species
- Production of high quality products from lumbering
- Intensive and extensive advertisement
- Soliciting funds from financial institutions
- Strict laws should be enacted against improper and non-sustainable methods of forest exploitation.

Lab skills

For the sustainable use of forests, student-teachers should think about the use of advanced methods of forest exploitation, the use of substitution products (tools) instead of using forests and plant more trees, etc.

● UNIT: 10.3

FISHING IN RWANDA

10.3.1. Key unit competence:

The student-teacher should be able to analyze the impact of fishing on the sustainable development of Rwanda.

10.3.2. Prerequisite (knowledge and skills, attitude and values)

Units such as unit 17 of Senior two dealt with fishing in Rwanda at a broader basis, Unit 12 of Senior three introduced fishing in Africa. In both classes student-teachers studied the definition of key concepts involved in the study of fishing as the sector of the economy.

Even though the two units (Unit 17 of S2 and Unit 12 of Senior 3) only dealt with Rwanda and Africa, still this provides a solid foundation upon which student-teachers can base on to understand clearly the fishing of Rwanda. Furthermore, the student-teachers should have covered all the aspects of fishing such as: types of fish and fishing, factors influencing the development of fishing, importance of fish and fishing, problems or challenges affecting fishing, fish and fish-product conservation measures.

In the student's book under this Unit 10.3, there is an introductory activity that almost covers most of the concepts to be dealt with in the entire unit.

10.3.3: Cross-cutting issues to be addressed

There are several cross-cutting issues that can be emphasized while guiding student-teachers to understand/or studying the unit of fishing in Rwanda. The most looked at cross-cutting issues are: Environment and sustainability, Financial education, Inclusive education, Gender education, Standardization culture

In this Unit, the tutor should be able to realize that the fishing operations affect the environment if it is not used well in a sustainable manner. Therefore, student-teachers should be assisted to take note of, use of better and recommendable fishing methods. The afforestation and

reforestation are also needed to replace the cut trees used in the making of boats.

The fishing industry produces fish and fish-products that need to be sold. The tutor can use this as a chance of creating activities that can help the student-teachers realize the importance of financial education. The products produced from the fishing industry must be of excellent quality and meeting the international standards. These stresses the cross-cutting issue of Standardization culture. Inclusive education must also be taken care of by the tutor as he or she is teaching and guiding student-teachers throughout Unit 10.3.

10.3.4: Guidance on introductory activity

There is an introductory activity at the beginning of this Unit 10.3. This activity is a short story used for fishing. The activity has questions that require answers from the student-teachers.

The important aspect of this story is that, the tutor uses it to guide student-teachers to think, work, or do the activity in partial form, however, in line with the content supposed to be covered.

10.3.5: List of lessons/sub-heading

	Lesson title	Learning objectives	N u m b e r of periods
1	Definition of fishing, major fishing grounds and importance of fishing	Define fishing and fish farming. Identify the major fishing grounds of Rwanda. Locate the major fishing grounds of Rwanda. Explain the importance of fishing Appreciate the importance of fish and fishing in Rwanda.	4

2	Problems affecting fishing and their possible solutions.	Identify different ways of improving fishing and fish farming in Rwanda. Do research on ways of improving fishing and fish farming in Rwanda. Show concern for the problems affecting fishing in Rwanda. show continual desire to promote fishing and fish farming in Rwanda.	4
3	End of Unit Assessment	The tutor should know that the main object for end unit assessment is to determine or evaluate whether the key unit competence was achieved.	2
	Total		10

Lesson 1: Definition of fishing, major fishing grounds and importance of fishing

a) Learning objectives

- Define fishing and fish farming.
- Identify the major fishing grounds of Rwanda.
- Locate the major fishing grounds of Rwanda.
- Explain the importance of fishing.
- Appreciate the importance of fish and fishing in Rwanda.

b) Teaching resources:

The lesson to be effectively taught, the tutor should ensure that the following teaching resources are in place.

- Text books.
- Photographs of some fishing activities taking place in various major fishing grounds.
- Manila papers for group work drawing.

c) Prerequisites/ Revision /Introduction

The lesson title; Definition of fishing, major fishing grounds and importance of fishing

entails some aspects that are directly related to what the student-teachers studied in senior 2 and 3. Therefore, student-teachers should be guided on how they can exercise the transfer of learning or knowledge and skills developed, to expand their learning experience to include the major fishing grounds of Rwanda.

The tutor is therefore, entrusted with the responsibility of designing prior activities that is vital to guide the student-teachers to revise or review both unit 17 of fishing in Rwanda and unit 12 of fishing in Africa of Senior 3.

d) Learning activities:

The tutor should use various techniques that facilitate the execution or use of learner centered instructional approaches. The learning activity 10.3.1. has questions that student-teachers need to find appropriate responses to. The possible answers include:

- Fishing as the chief activity.
- Major fishing ground of Rwanda are rivers, lakes, ponds.
- Refer to the student's book under 10.3.1 on the importance of fishing.

e) Application activities

1. Benefits from the fishing, it provides food to people, provide job, provide income after selling fish.
2. The impacts of fishing on sustainable development of Rwanda, refer to the student's book under 10.3.1 on the importance of fishing.

Lesson 2: Problems affecting fishing and their possible solutions.

a) Learning objectives

- Identify different ways of improving fishing and fish farming in Rwanda.
- Do research on ways of improving fishing and fish farming in Rwanda.
- Show concern for the problems affecting fishing in Rwanda.
- show continual desire to promote fishing and fish farming in Rwanda

b) Teaching resources:

- Text books
- Video clip
- Charts

c) Prerequisites/ Revision /Introduction

The tutor should ask student-teachers to talk about the methods of fishing and types of fish in relation to the topic of fishing they studied in senior 2 and senior 3.

d) Learning activities:

The student-teachers are expected to answer the learning activity **10.3.2** using the following:

1. Refer to the student's book under 10.3.1 problems hindering fishing in Rwanda.
2. Refer to the student's book under 10.3.1 on solution to problems of fishing.

e) Application activity

Possible solutions are:

1. Problems not studied: indiscrimination of fish, no school on fishing, predators, Ignorance of people.
2. The methods of fish preservation and conservation in Rwanda, refer to the student's book under 10.3.2.

10.3.6: Summary of the unit

This unit entirely deals with fishing in Rwanda. Under this concept there are sub topics, such as the major fishing grounds of Rwanda, the importance of fishing, problems and their solution.

10.3.7: Additional Information

The student-teachers should be reminded of the connectivity between Unit 10.3 of fishing year one with fishing unit of senior 2 and 3.

The student-teachers should again be helped to realize that the factors, methods of fishing, methods of conservation and challenges related to fishing in Rwanda cut across several case studies. Therefore, the tutor

should create activities that may evoke the student-teacher's transfer of learning/knowledge and skills.

10.3.8: End of unit assessment

1. The contribution of fishing to the economic development of Rwanda is to provide raw material used in industries, provide salaries to fisherman and they pay taxes to government, fishing attract tourists then favour interrelationship between countries.
2. This question needs the student-teachers to examine the problems facing fishing industry in Rwanda and suggest some possible solutions to these problems. The possible answers: refer to the student-teachers book 10.3.2.
3. Refer to the student's book 10.3.3. Ways of improving fishing and fish farming in Rwanda (future prospects).

10.3.9: Additional Activities

10.3.9.1: Remedial activities.

1. (a) Define fishing.

Possible answer:

- Fishing refers to the harvesting of aquatic animals from seas, oceans, lakes and other water bodies for either subsistence or commercial purposes.
- (b) Giving examples, identify the major fishing grounds of Rwanda.

Possible answers:

- Refer to the student's book 10.3.1: The major fishing grounds of Rwanda.
2. Identify any two lakes and three rivers of Rwanda as fishing grounds.

Possible answers: Rivers: Nyabarongo, Akanyaru, Mukungwa, Akagera and Lakes: Rweru, Mugesera, Ruhondo, Cyohoha.

10.3.9.2: Consolidation activities

1. Evaluate the environmental implications of fishing operations on man's surrounding.

Possible answers:

- Refer to the student's book under 10.3.1: Importance of fish and fishing. However, this question requires the student-teachers to look at the negative contributions of fishing such as:
- Deforestation as fishermen are looking for timber, firewood etc.
- Pollution
- Over fishing
- Destabilizing the ecosystem
- Reduction of biodiversity
- Etc.

10.3.9.3: Extended activities

1. To what extent is climate responsible for the development of fishing in Rwanda.

Possible answers:

This question requires to first showing how climate is responsible for the development of fishing in Rwanda. Thereafter, the student-teachers have to talk about other factors.

Influence of climate on the development of fishing in Rwanda:

- It provides rainfall that enables the formation of water bodies.
- Regulated temperatures that are favourable to fish metabolism.
- It supports forest growth which provides timber and fire wood needed by fishermen.
- The sunlight that penetrates to the water bed supports the growth of planktons needed by fish.
- Ideal temperatures that are warm make the fishing grounds open throughout the year which favours fishing operations.

Skills lab

Let student-teachers conduct a research on better ways of preserving and conserving fish and make conclusions.

UNIT: 10.4

MINING IN RWANDA

10.4.1. Key unit competence:

The student-teacher should be able to investigate the impact of mining on the sustainable development in Rwanda.

10.4.2. Prerequisite (knowledge and skills, attitude and values)

Unit 10.4 of Mining year one requires the student-teachers to have at least covered the content under Senior 2, unit 18, senior 3 and unit 13. Therefore, the tutor should realize that the two units provide the prerequisite knowledge to the student-teachers. This implies that student-teachers can participate conveniently in the teaching and learning of this unit.

10.4.3. Cross-cutting issues to be addressed

Unit 10.4 of mining in Rwanda, is directly connected to the cross-cutting issue of environment and sustainability. The tutor should therefore, enable the student-teachers to realize that if mining operations are not monitored and executed in a recommendable way, the environment is affected and eventually the climatic changes associated with global warming will set in. However, the major cross-cutting issues that the tutor can integrate include the following: Environment and sustainability, Standardization culture, Inclusive education, Gender education, Peace and values education

In this Unit, the tutor has the mandate of emphasizing other cross-cutting issues such as inclusive education, peace and values education. Such may not be applied using activity but in the process of teaching, look for an opportunity of saying something about the two Cross-cutting issues.

10.4.4. Guidance on introductory activity

The tutor will ask students to read a set of questions related to introductory activity. The student-teachers will try to answer the questions. Student-teachers may not be able to get the right answer but they are requested to predict possible answers. When the student-teachers fail to come up

with right answers to the questions related to introductory activity, the tutor will not immediately provide the required answers rather he /she should let students get the real answers through the course of learning and teaching process. This implies that student-teachers will associate this lesson with the content learnt in the previous lessons of S2.

10.4.5. List of lessons /Sub-heading

	Lesson title	Learning objectives	Number of periods
1	T y p e s , distribution of the major minerals in Rwanda and methods of mining	• Create a sketch map of Rwanda to identify and locate the major minerals in Rwanda. • Analyse the methods used in mining in Rwanda. • Identify the major minerals in Rwanda. • State the methods used in mining in Rwanda.	3
2	Factors affecting the exploitation, importance and problems of minerals in Rwanda.	• Identify the importance of mining to the economy of Rwanda. • Show concern for the use of environmental friendly methods of mining. • Do research on the factors affecting the exploitation of minerals in Rwanda. • Evaluate the importance of mining to the economy of Rwanda. • State the factors affecting the exploitation of minerals in Rwanda. • Identify the importance of mining to the economy of Rwanda. • State the problems affecting mining. • Analyse the problems affecting mining in Rwanda and suggest the solutions.	3
3	End unit assessment		1

Lesson 1: Types, distribution of the major minerals in Rwanda and methods of mining

a) Learning objectives

- Create a sketch map of Rwanda to identify and locate the major minerals in Rwanda.
- Analyse the methods used in mining in Rwanda.
- Identify the major minerals in Rwanda.
- State the methods used in mining in Rwanda.

b) Teaching resources

The lesson to be effectively taught, the tutor should ensure that the following teaching resources are in place.

- Internet
- Text books
- The map of Rwanda
- Drawing materials such as pencils, coloured markers and flip papers.
- Photographs of some mining activities taking place in different district.
- Manila papers for group work drawing.

c) Prerequisites/ Revision /Introduction

The tutor should take note of the skills the student-teachers must have acquired from the two levels (Senior 2, unit 18, senior 3, unit 13). where they covered a lot in relation to the mining sector.

This provides the tutor the chance of creating various activities, where the student-teachers can be engaged in the introductory session, using the past studies. Here the tutor can design activities using methods of recap such as, Mind mapping, run to your friend, speed betting, throw the ball game, cabbage Game and many others.

Thereafter, the tutor introduces the actual content of the lesson. This will have enabled the student-teachers to review and remember the information about mining. Therefore, when well executed the instructional objectives of the lesson are achieved.

The tutor should be observant to identify students that may have not covered the appropriate information concerning mining in their previous school/levels.

d) Learning activities:

1. 1. The leaning activity needs the student-teachers to use an atlas book to know the major areas where minerals are located. The answers therefore, can be in line with the lesson 10.4.1. on the major mining areas in Rwanda in student's book.
2. 2. Refer to the student's book lesson 10.4.1. on major mineral areas and internet, they draw the sketch map of Rwanda showing the various mining areas and the types of minerals found in these areas.

e) Application activities

1. Using internet and atlas books to draw the map of Rwanda showing the major mineral areas
 2. There are positive and negative impacts for each methods
- i) Destroy the earth crust, destroy crops, pollute the atmosphere, remove fertile soil for agriculture.
- ii) This method pollute water, land and air when the pipes used are destroyed, they are barriers to transport.

Lesson 2: Factors affecting the exploitation, importance and problems of minerals in Rwanda.

a) Learning objectives

- Identify the importance of mining to the economy of Rwanda.
- Show concern for the use of environmental friendly methods of mining.
- Do research on the factors affecting the exploitation of minerals in Rwanda.
- Evaluate the importance of mining to the economy of Rwanda.
- State the factors affecting the exploitation of minerals in Rwanda.
- Identify the importance of mining to the economy of Rwanda.

- State the problems affecting mining.
- Analyse the problems affecting mining in Rwanda and suggest the solutions.

b) Teaching resources:

- Photographs of mining
- Text books
- Video clip
- Charts
- Etc.

c) Prerequisites/ Revision /Introduction

The tutor should ask student-teachers to talk about factors affecting the exploitation, importance and problems of minerals in Rwanda in relation to the topic of mining they studied in senior 2 and 3. The tutor can use various techniques of enabling or evoking student-teachers to think harder about the topic of the day.

d) Learning activity

The student-teachers are expected to answer the learning activity 10.4.2 using the following

1. Other effects Mr Kamali may found in mining, refer to student's book on the problems of mining in Rwanda, lesson 10.4.2.
2. Refer to student's book under 10.4.2 importance of mining activity.
3. The advises to give to mining companies to solve the mining problems, refer to student's book under 10.4.2 solution to problems of mining.

e) Application activities

1. The negative effects of mining on the physical environment of Rwanda are:
 - Shortage of clean and safe water for domestic use.
 - Non-productive soils.
 - Spread of diseases.
 - Increased number of deaths.
 - Loss of well-balanced eco-system.
 - Lack of biodiversity.
 - Degradation of the environment.

2. Ways of protecting the environment from the damage caused by mineral exploration and exploitation are:
 - Used advanced technology.
 - Use skilled labours.
 - Planting trees after mining.
 - Use better methods of mining.
3. The low levels of mineral exploitation in Rwanda is due to shortage of skilled labor, no appropriate methods of mining, the size of ore mineral, shortage of transport facilities, remote areas, Shortage of enough capital, Shortage of enough power and energy, most of the large deposits occur deep underground, Etc.

10.4.6. Summary of the unit

This unit 10.4, deals with the factors affecting the exploitation of mineral, importance of mining to the economy, products from the minerals in Rwanda, Problems affecting the development of mining industry in Rwanda and their solutions.

10.4.7. Additional information

The student-teachers should be guided on how to execute transfer of knowledge and skills to find responses to any associated learning activity or any other assessment task subjected to them.

10.4.8. End of unit assessment

Proposed answers

1. Refer to the student's book under 10.4.2.2. Importance of mining to the economy of Rwanda.
2. Impacts of mining on the environment:
 - Shortage of clean and safe water for domestic use.
 - Non-productive soils.
 - Spread of diseases.
 - Increased number of deaths.
 - Loss of well-balanced eco-system.
 - Lack of biodiversity.
 - Degradation of the environment.
3. Refer to the student's book under 10.4.2.2 possible solutions to the problems of mining in Rwanda.

The program can include also the following:

- Registration of all mining companies.
- Afforestation reforestation of areas around the mines.
- Mass education.
- Environmental impact assessment reports be made..
- Exploit minerals that require underground methods of mining.

10.4.9. Additional activities

10.4.9.1. Remedial activities:

1. Describe the distribution of minerals in Rwanda.

Possible answers refer to the student's book.

2. Give the suitable methods of mining the following minerals;

- Gold
- Methane gas
- Coltan

Possible answers:

- Panning
- Drilling
- Panning/placer mining

10.4.9.2. Consolidation activities

1. Identify the products from minerals.

Possible answers:

Refer to the student's book under 10.4.2.2 products from minerals.

2. Give five factors that favour the development of mining in Rwanda.

Possible answers:

Availability of capital, size of mineral, market of mineral, cheap labour, method of mining.

10.4.9.3. Extended activities

1. Evaluate the effects of the overdependence on the Middle East countries on oil and natural gas.

- Possible answers:

- Loss of revenue
 - Over exploitation
 - stand a risk of not getting another source of fuel.
2. Assess the contribution of petroleum to the people of Rwanda.

Possible answers

Petroleum contributes in:

- construction of roads
- transport of people
- industries
- Medicine

Skills lab

Let student-teachers think on a career they can do on mineral production after finishing their studies.

UNIT: 10.5

POWER AND ENERGY IN RWANDA

10.5.1. Key Unit competence:

The student-teacher should be able to investigate the impact of Power and Energy production on the sustainable development in Rwanda.

10.5.2. Pre-requisite (knowledge, Skills, attitudes and values)

Unit 19 of senior two and unit 14 of senior three introduced the study of power and energy and discusses about major sources and forms energy sources, different problems associated with the physical, human and economic environment and suggest solutions used in Rwanda. This unit greatly constitutes a strong prerequisite that student-teachers can use to understand better the content of this unit 10.5 of Year one. It's very important to note that, they already have necessary knowledge, skills and attitudes. The difference is that, at this level the content in the student's book is more detailed and almost differ from what they learnt previously.

The already acquired knowledge, skills, attitudes and values from previous classes, should be used by the tutor to conduct diagnostic assessment as a way of evaluating each student-teacher's abilities and establishing connections between the new learning activities and the previous ones.

In unit 10.5 of Year one entitled the —Power and Energy in Rwanda, the introductory activity presented in the student's book intends to remind student-teachers that the power and energy sources are used and exploited in different ways. This enables student-teachers evaluate the success of the sustainable development projects in the power and energy production in different parts of Rwanda. It was compulsory to integrate in this unit a crosscutting issue of environment and sustainability, inclusive education, peace and values which are briefly developed in the following paragraphs.

10.5.3. Cross-cutting issues to be addressed

There are many cross-cutting issues that can be highlighted in this lesson. The following list of cross-cutting issues can be applied where possible depending on occasion, for example:

- a. **Environment and sustainability:** The issue of environment and sustainability will be integrated through all learning activities to address the problems related to power and energy. Thus, the tutor is required to explain to students about the alternative sources of power and energy that are friendly to the environment, for the use of natural gas for cooking and heating purposes in their local environment.
- b. **Peace and Values Education:** Education on peace and values will constitute a component that will be addressed during the class situation whereby a tutor can refer to learning activities like the public lighting which strengthens security.
- c. **Financial Education:** On one side it can be addressed during the class situation whereby a tutor explains to the student-teachers the most appropriate use of power and energy either at school or at home. For instance, student-teachers should not waste power and energy. They should remember to switch off lights especially during the day or other power tunnels when they are not in use.
- d. **Inclusive education:** The tutor should ensure that the student-teachers with impairments or special needs like physical disability to cope with the situation. In this context the tutor can use a video or film containing different power and energy samples collected from outside the school compound or the tutor can even bring different power and energy samples in classroom setting for those who will not be able to reach the place. For student-teacher with hearing disabilities or communication difficulties, in different learning activities the tutor will help them using enough illustrations, diagrams and sign languages where possible. For student-teachers with visual impairment, the tutor helps children to use their other senses like hearing and touch because these senses can help them to play and carry out some of learning activities thus promoting their learning and development. In this context the tutor is supposed to provide sufficient explanations related to different learning activities so that student-teachers with visual impairment can carry out the designed learning activities using their hearing.

10.5.4. Guidance on the introductory activity

The tutor should let his /her student-teachers read carefully the introductory activity and answer the questions linked to the given activity.

When the student-teachers fail to come up with right answers to the questions related to the introductory activity, the tutor will not

immediately provide the required answers rather he /she should let student-teachers get the real answers through the whole learning and teaching process.

10.5.5. List of lessons /Sub-heading

	Lesson title	Learning objectives (from the syllabus including knowledge, skills and attitudes):	Number of periods
1	Major sources and forms of energy, factors influencing and importance of energy in Rwanda	Recall the forms of energy used in Rwanda and the difference between the renewable and non-renewable energy. State the factors favouring power production in Rwanda. Distinguish between different sources of energy used in Rwanda. Analyse the factors that hinder the potential exploitation of rivers in Rwanda in the production of power and energy. Evaluate the importance of power and energy in Rwanda.	4
2	Problems hindering the development of energy, their possible solutions and case studies in Rwanda.	Identify the factors that hinder the potential exploitation of rivers in Rwanda in production of power and energy Investigate the problems hindering the development of energy and suggest possible solutions. Show respect for the efforts in the development of power and energy in the country.	3
3	End unit assessment		2
	Total		9

Lesson 1: Major sources and forms of energy, factors influencing and importance of energy in Rwanda.

a) Learning objectives

- Recall the forms of energy used in Rwanda and the difference between the renewable and non-renewable energy.
- State the factors favouring power production in Rwanda.
- Distinguish between different sources of energy used in Rwanda.
- Analyse the factors that hinder the potential exploitation of rivers in Rwanda in the production of power and energy.
- Evaluate the importance of power and energy in Rwanda.

b) Teaching resources:

During the teaching and learning process, the tutor should refer to the following teaching resources where possible:

• Pictures	• Text books
• Flip charts	• Internet
• Manila papers	• Maps
• Print outs for the activity	• Field work to the surrounding area.

c) Prerequisites /Revision/ Introduction

Tell the student-teacher to observe critically the pictures in the student's book on different forms of power and energy. Student-teacher should identify the different types of power and energy. Ask student-teacher to research on other types of energy and describe their contribution to sustainable development.

d) Learning activity

After reading the passage the student-teacher guided by the tutor respond to learning activity.

1. Other source of energy not mentioned in the passage are Solar energy, Hydro Electric Energy, petroleum, Wind energy.
2. The importance of power and energy in Mahirwe's family is to facilitate cooking and watch television.

e) Application activities

1. Hydroelectric power is mostly used than other sources of energy in Rwanda.

Because of a big number of rivers, waterfalls, manpower, capital etc.

2. The advantages of oil fuel over solar energy:

- It facilitates Transport.
- It facilitates industrial activity.
- It facilitates working of generators.
- It facilitates electrification.

Lesson 2: Problems hindering the development of energy, their possible solutions and case studies in Rwanda.

a) Learning objectives

- Identify the factors that hinder the potential exploitation of rivers in Rwanda in production of the power and energy.
- Investigate the problems hindering the development of energy and suggest possible solutions.
- Show respect for the efforts in the development of power and energy in the country.

b) Teaching resources

- Manila papers
- Print outs for the activity
- Text books
- Internet
- Maps
- Field work to the surrounding areas.

c) Prerequisites /Revision/ Introduction

Based on the acquired knowledge in the past and the research made student-teacher outline the problems of energy and their solutions.

d) Learning activities

Refer to student's book under 10.5.2 Problems hindering the development of energy, their possible solutions and case studies in Rwanda.

e) Application activities

The presence of waterfalls is responsible for the development of power

and energy production in Rwanda in different ways as a source of energy and as the major factor in hydro-electric power production. For more answers refers to student's book under 10.5.1 The factors favouring the power production in Rwanda.

10.5.6. Summary of the unit

Unit 10.5 of Year one deals with power and energy in Rwanda. The key points of content to be highlighted in the unit are sources and forms of energy, importance of power and energy, problems and possible solutions to power and energy in Rwanda.

10.5.7. Additional Information

There are many projects concerning energy and power production like Nyabarongo II, Rusumo, Geothermal and different project on rivers.

10.5.8. End unit assessment

However, the student-teachers should give their own opinion/view or self-constructed answers, their answers will rotate on the content in reference with the following possible answers for end unit assessment:

1. Even if it is known that it is a non-renewable, if the oil supply gets exhausted one day this would affect our life style in different domains by limiting transport, by causing shortage of product from oil and by stopping generators using oil.
2. The government of Rwanda advocates for transmission and distribution of power and energy to rural areas in order to develop these areas, to attract investors towards rural areas and to limit rural urban migration.
3. The effects of power generating stations and operation on the environment, they cause pollution (land, water, air, sound), destruction of vegetation, destroy infrastructure
4. Ways in which the government will cope with the increasing demand for power with the increasing population. Refer to student's book under 10.5.2 Possible solutions to the problems affecting power and energy production in Rwanda.
5. The factors affecting oil fuel production in Rwanda are low technology, unskilled labour, the size of deposited oil. For further factors refer to student's book under 10.5.2 Possible solutions to the problems affecting power and energy production in Rwanda.

10.5.9. Additional activities

a) Remedial Activities:

The following are questions that the tutor can use for remedial activities (activities for slow student-teacher). They are rephrased in a way that the slow student-teacher can also be assisted to raise their self-confidence and at the same time learn in the simplest possible way.

1. Identify the main sources of power and energy in Rwanda.

Answer: hydropower, solar energy, thermal energy.

2. Give 2 examples of renewable energy sources.

Answer: wood fuel, hydroelectricity, solar energy.

3. Give the importance of power and energy.

Answer: for cooking, lighting and heating.

b) Consolidation activities:

Establish the link between power and energy.

Answer: Power is the capacity of energy, which is being used, while energy is 'joules', power is 'joules per second'. In other words, Power is 'watt' and Energy is 'watt-hour'. Another difference is that energy can be stored whereas power cannot be stored.

c) Extended activities

The following is a suggested question for gifted and talented students.

Describe the following energy sources.

(i) Non-renewable energy sources.

(ii) Renewable energy sources.

Possible answers: Before coming up with answers to this question, student-teachers should first define each sources of energy. The definitions associated with the key terms are very important. The student-teachers may say that Non-renewable resources are those when exhausted they cannot be re-used, whereas renewable resources are inexhaustible.

Skills lab

Let student-teachers think deeply on a source of energy that will provide light or heat but at the same time not deteriorating the environment.



● UNIT: 10.6

INDUSTRIALISATION IN RWANDA

10.6.1. Key Unit competence:

The student-teacher should be able to explain the impact of industrialization on the sustainable development in Rwanda.

10.6.2. Pre-requisite (knowledge and skills, attitude and values)

Unit 10.6 of Year one introduces the study of industry in Rwanda. They studied types of industries, factors, importance, problems of industrial development in Rwanda. They also studied solutions to mitigate the problems of industries as well as case studies related to industries in Rwanda. This will help student-teachers to understand appropriate measures to be taken in conserving the environment.

10.6.3. Cross-cutting issues to be addressed

A citizen has to conserve his environment, by using it appropriately. The management of the environment must be emphasized and various methods should be adopted. In this unit, emphasis must be put on the need for environment and sustainability based on knowledge to mitigate the problems caused by industry; the student-teachers should know how to protect their environment. Financial education is another cross-cutting issue that is linked to the study of the economic importance of industries. This economic activity has helped people to earn a living and national income for sustainable development.

Standardization culture is another cross-cutting issue that is linked to the study of various industrial products produced by major industries. These products must have a measurable standard for people's health.

10.6.4. Guidance on introductory activity

The introductory activity aims at highlighting the knowledge, skills and attitudes that Student-teachers, acquired previously in classes. This activity prepared, requires Student-teachers to put to better use all the competences, knowledge together with attitudes in understanding the new topic of year one unit 10.6. Activities in this unit 10.6 can be

answered by most of the Student-teachers. The tutor can provide enough time for every student-teacher so that individual participation can be respected. The intention of this activity is to see the ability of each Student- teacher so that throughout the unit the tutor plans on how to aid his/ her Student-teachers.

The way answers are provided for the introductory activity, some require reviewing the past studies while others require Student- teachers to think deeply and read geographical documents.

10.6.5. List of lessons /Sub-heading

	Lesson title	Learning objectives	Number of periods
1	Industry and factors affecting industries in Rwanda	- Recall the definition of industry. - State the factors influencing industrial development in Rwanda. - Explain the factors influencing industrial development in Rwanda. - Show concern for the factors affecting the development of industries in Rwanda.	2
2	The importance, Problems affecting industrial development and their solutions in Rwanda	- Identify the importance of industries in Rwanda. - Identify the problems affecting industrial development in Rwanda. - Appreciate the importance of industrial development to the economic growth of the country. - Investigate the problems affecting industrial development in Rwanda.	2

3	Environmental and health issues associated with industrialization and ways to mitigate them	• Outline the environment and health issues associated with industrialisation. • Show resilience for the environmental and health problems resulting from industrialization. • Investigate the environment and health issues associated with industrialisation.	2
4	End unit assessment		1

Lesson1: Industry and factors affecting industries in Rwanda

a) Learning objectives

- Recall the definition of industry.
- State the factors influencing industrial development in Rwanda.
- Explain the factors influencing industrial development in Rwanda.
- Show concern for the factors affecting the development of industries in Rwanda.

b) Teaching resources:

For effective delivery of the lesson, you should ensure that you have the following resources and other appropriate teaching aids:

- Text books
- Internet
- Sample maps

c) Pre-requisites/ Revision /Introduction

This topic on industrialization was discussed in senior 2 and 3. It is important to link the content studied with what is going to be learnt in year one.

Facilitate the student-teachers to review senior 2 and 3 contents by asking them to explain the types and factors influencing industrial development in Rwanda. After this review, using the photograph provided in the

student's book, student-teachers should be able to answer the learning activity.

d) Learning activities:

Refer to the learning activities 10.6.1.in the student's book

Help student-teachers to work in groups, they should be able to identify types of industries and find out the factors that influence their location and development. Their answers should involve the integration of generic competences such as critical thinking, cooperation, communication, research and problem-solving skills.

Engage student-teachers in activities like discussion, asking and answering questions and for more answers they are referred to the student's book.

e) Application activities

Refer to the application activities 10.6.1 in the student's book .

Student-teachers are asked to differentiate industry from industrialization, explain factors influencing industrial development and factors leading to its location. They will use the content given in the student's book on 10.6.1. Industry and factors affecting industries in Rwanda to answer these questions.

Lesson 2: The importance, Problems affecting industrial development and their solutions in Rwanda

a) Learning objectives:

- Identify the importance of industries in Rwanda.
- Identify the problems affecting industrial development in Rwanda.
- Appreciate the importance of industrial development to the economic growth of the country.
- Investigate the problems affecting industrial development in Rwanda.

b) Teaching resources:

- Text books
- Internet

- Other geographical documents.

c) Pre-requisites/ Revision /Introduction.

Student-teachers should briefly explain importance, problems and their solutions for industrial development in Rwanda. Supplement the answers given by student-teachers.

d) Learning activities

Refer to the learning activities 10.6.2 in the student's book

Student-teachers are asked to explain the importance of industries in a country. Guide them to get the answers in the passage which are providing job, to get out of poverty and to be proud of their job. The problems facing and their solutions refer to the student's book under 10.6.2. The importance, Problems affecting industrial development and their solutions in Rwanda; the answers should involve the integration of generic competences such as critical thinking, cooperation, communication, research and problem solving skills.

Engage student-teachers in activities like discussion, asking and answering questions and for more answers they are referred to the student's book.

e) Application activities

Refer to the application activities 10.6.2 in the student's book.

Student-teachers are asked to explain with supporting evidences how Made in Rwanda policy is one of the solutions to the problems that affect industrial development of Rwanda. They will use the content given in the student's book and other geographical documents.

Lesson 3: Environmental and health issues associated with industrialization and ways to mitigate them

a) Learning objectives

- Outline the environment and health issues associated with industrialisation.
- Show resilience for the environmental and health problems resulting from industrialisation

- Investigate the environment and health issues associated with industrialisation.

b) Teaching resources:

- Text books
- Other geographical documents
- Internet

c) Pre-requisites/ Revision /Introduction.

Student-teachers are asked to find out the impacts of industrialization and to suggest solutions to the impacts of industries. Supplement the answers given by student-teachers and introduce the content related to problems resulting to the effects of industrialization and ways to mitigate them.

d) Learning activities

Refer to the learning activities 11.3 in the student's book

Guide them in discussion about the impact of industrialization on the environment and on human life and ways in which the effects of industrialization can be addressed and their negative impacts lessened. Afterwards refer them to the student's book for problems resulting from industrial development and ways to mitigate them. They should present their findings in class. Their answers should involve the integration of generic competences such as critical thinking, cooperation, communication, research and problem-solving skills.

Engage student-teachers in activities like discussion, asking and answering questions and for more answers they are referred to the student's book on 10.6.3. Environmental and health issues associated with industrialization and ways to mitigate them.

e) Application activities

Refer to the application activities 10.6.3 in the student's book.

Student-teachers are asked to visit an industry. They will use the content given in the Student's book and other geographical documents to explain the effects of the industry on the environment and on human health and Suggest ways to mitigate the impacts.

10.6.6. Summary of the unit

This unit covers definitions, factors influencing location and development of industries, importance of industries and problems affecting industrial development, problems resulting from industrial development and ways to mitigate them. This helps the student-teachers to internalize financial education as a cross cutting issue and know how man has utilized the available resources for industrial development. The common phenomena like industrial pollution which requires control measures creates awareness for environmental protection hence integration of environment and sustainability as a cross cutting issue.

10.6.7. Additional Information

It is very important for student-teachers to link the prior knowledge acquired in senior 2 and 3 to what is contained in this unit. When you are teaching this unit, you should use local examples of industries in your districts. Make comparison between different regions in relation to industrial development. It is therefore necessary that where possible methodology can be changed and activities adjusted to achieve learning objectives.

10.6.8. End unit assessment

Guidance to answers

1. Reasons why industries are important in Rwanda.

Facilitate student-teachers to share the answers by using experience in their community; and refer to the student's book on importance of industries.

2. The problems that affect industrial development in Rwanda and their solutions.

Guide student-teachers to describe the problems of industrial development and their solutions in Rwanda and refer to the student's book on the problems of industries and their solutions in Rwanda.

3. Explain three environmental issues associated with industrialization in Rwanda.

In groups let student-teachers brainstorm on environmental issues associated with industrialization in Rwanda. They should use local examples from developing countries and get references in student's book on the Environmental and health issues associated with industrialization and ways to mitigate them.

10.6.9. Additional activities

Remedial activities (for slow student-teacher)

- i) Define an industry.
- ii) Outline five examples of industries in Rwanda.
- iii) Explain the meaning of industrialization.

These are questions that require low order thinking and are answered as follows:

- i. An industry is an establishment that involves production of goods and offering of services or an industry is commonly used to describe factories that process or transform raw materials into finished goods.
- ii. Examples of industries in Rwanda are: Tolirwa, Cimerwa, Azam, Sulfo, Rwandafoam.
- iii. Industrialization refers to the concentration of industries within an area. It is a process whereby countries increasingly get involved in the production of manufactured goods.

a) Consolidation activities:

- i) Evaluate the effects of industrial pollution in your area.
- ii) Give an example of an industry in your area and describe the factors for its location. Guide student-teachers on how to answer the above questions using local examples.
- i) For example, the effects of industrial pollution include: destruction of Ozone layer, Acidic rain, creation of barren land, global warming, etc.
- ii) Example of industries: agro-based industries such as Inyange industry, Utexrwa. The factors for their location include: availability of power, availability of raw materials, market, land, favorable climate, etc.

b) Extended activities (for gifted and talented student-teacher)

Account for the high level of industrialization in Kigali city.

Answer: Availability of capital, market, raw materials, labour, Etc.

Guide student-teachers to make research on the factors for industrial development in Kigali city. Their findings should be presented in class.

Lab skills:

Student-teachers should propose a small project for making any industrial product by using local materials as a raw material. To make it more appreciated, they should add value to their products



UNIT: 10.7

TRANSPORT, COMMUNICATION AND TRADE IN RWANDA

10.7.1. Key Unit competence:

The student- teacher should be able to investigate the impact of Transport, Communication and Trade on the sustainable development of Rwanda.

10.7.2. Pre-requisite (knowledge and skills, attitude and values)

Unit 21 of Senior 2 introduced the study of transport and communication in Rwanda. Learners studied the types of transport, their advantages and disadvantages, factors, importance, problems and solutions of transport. Different means of communication, factors, importance, problems and solutions of communication were also learned.

In the student's book there is an introductory activity; it is intended to read the passage and answer the questions related to it. Therefore, a teacher should emphasize the cross cutting issue of financial education.

10.7.3. Cross-cutting issues to be addressed

A citizen must understand the importance of transport as a source of income and government revenue and to know how that income should be used appropriately to enhance economic sustainability. Financial education therefore should be emphasized.

10.7.4. Guidance on introductory activity

The tutor will ask students to read a set of questions related to introductory activity. The student-teachers will try to answer the questions. Student-teachers may not be able to get the right answer but they are requested to predict possible answers. When the student-teachers fail to come up with right answers to the questions related to introductory activity, the tutor will not immediately provide the required answers rather he /she should let students get the real answers through the course of learning and teaching process. This implies that student-teachers will associate this lesson with the content learnt in the previous lessons of S2.

10.7.5. List of lessons /Sub-heading

	Lesson title	Learning objectives	Number of periods
1	Major types of transport, their distribution, advantages and disadvantages and factors influencing the development of transport.	- State different types of transport in Rwanda. - Identify the factors influencing the development of the transport. - Evaluate the advantages and disadvantages of the different types of transport in Rwanda - Appreciate the importance of transport in Rwanda. - Show resilience for the perspectives of transport development in Rwanda.	2
2	Importance of transport on the sustainable development of Rwanda, Problems affecting the transport and possible solutions and the future prospects of transport in Rwanda.	- Show respect for the development of transport in Rwanda. - Appreciate the importance of communication in Rwanda. - Identify the problems affecting transport in Rwanda. - Describe the problems of transport in Rwanda and the future prospects. - Give the importance of transport in Rwanda.	2

3	Different means of communication and factors influencing the development of communication in Rwanda.	• Differentiate the means of communication used in Rwanda. • Identify the factors influencing the development of communication in Rwanda • Show continual desire to use different means of communication for development.	1
4	Types of trade in Rwanda and factors affecting the trade in Rwanda.	- Define internal and external trade; importation and exportation in Rwanda. - Describe and explain the problems affecting trade in Rwanda and propose the possible solutions. - Appreciate the importance of trade in Rwanda. - Show resilience for the perspectives of development of trade in Rwanda.	1
5	End Unit Assessment		1

Lesson 1: Major types of transport, their distribution, advantages and disadvantages and factors influencing the development of transport.

a) Learning objectives:

- State different types of transport in Rwanda.
- Identify the factors influencing the development of transport.
- Evaluate the advantages and disadvantages of the different types of transport in Rwanda.
- Appreciate the importance of transport in Rwanda.
- Show resilience for the perspectives of transport development in Rwanda.

b) Teaching resources:

For effective delivery of the lesson, you should ensure that you have the following resources and other appropriate teaching aids:

- Text books
- Internet
- Photographs
- Other geographical documents.

c) Prerequisites/ Revision /Introduction

This topic on meaning of transport and types of transport was discussed in senior 2. It is important to link the content studied with what is going to be learnt in Year one. In senior 2 learners discussed about the types of transport, their advantages and disadvantages, factors, importance, problems and solutions of transport,

Guide the learners to review senior 2 content by asking them to give the meaning of transport and types of transport in Rwanda. After this review, learners should be able to analyse the means of transport and types of transport in Rwanda.

d) Learning activities

Refer to the learning activities 10.7.1.1 in the student's book.

Guide learners to work in groups using photographs in student's book to differentiate the types of transport and identify the best and show also the advantages and disadvantages of water transport. Answers should involve the integration of generic competences such as critical thinking, cooperation, communication, research and problem-solving skills.

Engage learners in activities like discussion, asking and answering questions and for more answers they are referred to the student's book on the types of transport.

e) Application activities

Refer to the application activities 10.7.1.1 in the student's book

1. Student-teachers are asked to explain the shortage of air transport in Rwanda and is due to Low income, Low export, Shortage of airport, unskilled manpower
2. Water transport is the cheapest means of transport in Rwanda because it doesn't need roads, it is better for bulk products.
3. The influence of job opportunity in the transport of Rwanda is to improve life standards of people, to provide taxes to the government.

4. They will use the content given in the student's book on the meaning and types of transport and other geographical documents to answer these questions.

Lesson 2: Importance of transport on the sustainable development of Rwanda, Problems affecting the transport and possible solutions and the future prospects of transport in Rwanda

a) Learning objectives

- Show respect for the development of transport in Rwanda.
- Appreciate the importance of communication in Rwanda.
- Identify the problems affecting transport in Rwanda.
- Describe the problems of transport in Rwanda and the future prospects.
- Give the importance of transport in Rwanda.

b) Teaching resources:

To achieve learning objectives, the following resources should be used:

- Text books
- Other geographical documents'
- Internet

c) Pre-requisites/ Revision /Introduction

Briefly review the previous lesson by asking student-teachers to show the importance, problems related to transport and their solutions. Thereafter guide learners to make research.

d) Learning activities

Refer to the learning activities 10.7.1.2 in the student's book

Help student-teachers to work in pairs and observe the challenges related to the transport sector with reference to a Tax Park on the photograph. Their answers should involve the integration of generic competences such as critical thinking, cooperation, communication and research skills.

Let student-teachers discuss, ask and answer questions and refer them to the learner's book for more information about problems affecting types of transport and ways to mitigate them.

e) Application activities

Refer to the application activities 107.1.2. in the student's book

1. The Rural Rwanda is still highly inaccessible. To answer this question, it will depend on the district to district because all are not developed in the same way.
2. The challenges affecting transport in Rwanda refers to Student's book on problems affecting transport in Rwanda
3. Ways Rwanda as a landlocked country can use to improve its international transport: it can improve its region and international integration. For more information, refer to student's book on possible solutions and future prospects of transport in Rwanda.

Lesson 3: Different means of communication and factors influencing the development of communication in Rwanda.

a) Learning objectives

- Differentiate the means of communication used in Rwanda.
- Identify the factors influencing the development of communication in Rwanda
- Show continual desire to use different means of communication for the development.

b) Teaching resources:

- Text books
- Internet
- Photographs

c) Pre-requisites/ Revision /Introduction

Review the previous content learnt in Senior 2 by asking learners to highlight the means of communication used and factors influencing communication in Rwanda. Later the tutor will supplement the student-teachers' ideas.

d) Learning activities

Refer to the learning activities 10.7.2.1. in the student's book

Help student-teachers to work in groups and answer questions. They should explain the different means of communication business people use and factors influencing communication. Their answers should

involve the integration of generic competences such as critical thinking, creativity, cooperation, communication and problem-solving skills.

Engage learners in activities like discussion, asking and answering questions and for more answers they are referred to the student's book about types of communication.

e) Application activities

Refer to the application activities 10.7.2.1 in the student's book

1. Student-teachers are asked to explain the importance of telecommunication companies in the development. They should use the content given in the student's book on the importance of communication and other geographical documents.
2. The big number of radios in Rwanda is due to the development of infrastructures, availability of capital to invest, large income from them and the large audience
3. The negatives effects of Social media include transmission of rumors, change of culture, no secret, waste of time etc.

Lesson 4: Types of trade in Rwanda and factors affecting the trade in Rwanda

a) Learning objectives:

- Define the internal and external trade; importation and exportation in Rwanda.
- Describe and explain the problems affecting the trade in Rwanda and propose the possible
- Appreciate the importance of trade in Rwanda.
- Show resilience for the perspectives of development of trade in Rwanda.

b) Teaching resources:

- Text books
- Field trip
- Internet
- Other geographical documents.

c) Pre-requisites/ Revision /Introduction

Review the previous lesson on trade as seen in senior 2 on unit 21. Thereafter the teacher should introduce the new lesson to be studied.

d) Learning activities

Refer to the learning activities 10.7.3.1 in the student's book

Let learners work in pairs on the types of trade, importance of trade and to identify the factors influencing trade in Rwanda. Their answers should involve the integration of generic competences such as critical thinking, creativity, cooperation, communication and problem-solving skills.

Engage learners in activities like discussion, asking and answering questions and for more answers they are referred to the student's book on the importance of trade and factors influencing trade.

e) Application activities

Refer to the application activities 10.7.3.1 in the student's book

Ask the learners to explain the role played by regional integration like COMESA in the trade of Rwanda.

The possible answers are:

1. The member states have the benefit of free movement of labor, services, persons, Attraction of investors and the right of residence within the COMESA region.
2. Facilitates the production of goods and services and movement of people
3. Member states have the advantage of providing high quality goods and services.
4. COMESA treaty recommends elimination of rigidities in manufacturing and production.
5. Additionally, the member states can harmonize their macroeconomic activities and remove the obstacles to the free movement of capital and services.

10.7.6. Summary of the Unit:

This unit covers types of transport, their advantages and disadvantages, factors influencing transport, importance, challenges and ways of improving transport. It covers forms of communication, importance, problems and ways to improve communication. It also covers importance, problems affecting trade, their possible solutions and prospects of trade to the economy of Rwanda.

10.7.7. Additional Information

This unit is linked to unit 21 in senior 2 on transport, communication and Trade in Rwanda. It is therefore necessary for student-teachers to link the prior knowledge acquired in senior 2 to what is covered in this unit. When teaching this content, you should use local examples on forms of transport and communication in Rwanda.

The student's book has some activities where group discussion is emphasized. Therefore, it is important to adjust teaching methods where possible for successful learning.

10.7.8. End Unit Assessment

Guidance to answers:

- a. The relationship between Trade and transport. Facilitate student-teachers in groups to share the answers by using experience in their community; and refer to the teacher's book on transport and trade.
- b. The contribution of the Rwandan government in ensuring effective communication is shown by allowing foreigners to invest in communication like MTN, Airtel, by providing Laptop to students etc.

Guide student-teachers to work in pairs to show how the government has tried to ensure effective communication in different parts of the country.

- c. The factors that have influenced the development of transport in urban centres than rural areas are: availability of industries, availability of capital, availability of infrastructure

Refer to the student's book on factors influencing the development of transport. Where necessary use other geographical documents to get the answers.

- d. The level of trade and the improvement of technology in communication in Rwanda and describe how this process can support the sustainable development of the country.

Make a comment on the level of technological development in Rwanda by using group discussions and class presentations.

10.7.9. Additional activities

a) Remedial activities (for slow learners)

i) Define the term transport and communication.

Answers: The term transport means the process whereby passengers and goods move from one place to another while communication is the transmission of information in form of news and messages.

ii) Mention any three types of Trade used in your country.

Answers: Domestic trade and international trade

b) Consolidation activities:

Describe how the following factors influence transport:

a) Relief b) Capital c) Government policy

Guide student-teachers on how to answer the above questions using the student-teachers book, research and group discussion to brainstorm on how relief, capital and government policy have influenced the development of transport.

c) Extended activities (for gifted and talented learners)

Discuss the advantages and disadvantages of air transport.

Guidance to answer: Facilitate student-teachers to answer the above question using the student's book by discussion about the advantages and disadvantages of air transport.



UNIT: 10.8

ENVIRONMENTAL CONSERVATION IN RWANDA AND TOURISM

10.8.1. Key unit competence:

The student- teacher should be able to investigate the impact of environmental conservation and tourism on the sustainable development of Rwanda.

10.8.2. Prerequisite (knowledge, Skills, attitudes and values)

The tutor should guide the learners towards application of various knowledge, skills, attitudes and values, acquired and developed right way from senior two. It is vital to note that, learners already have a handful of skills that can enable them to understand and master this unit.

Throughout the subject of geography, under the units 12 and 22 of senior two, students studied environmental conservation and tourism in Rwanda respectively.

10.8.3. Cross-cutting issues to be addressed

This book is written in the way that many cross- cutting issues are easily applicable with the content. Writers have created useful activities for students. One of the most utilized cross-cutting issues in this unit is Environment and Sustainability. Introductory activity, Activity 10.8.1, Application activity 10.8.1. Activity 10.8.2.1. and application activity 10.8.2.2 are used to highlight the cross-cutting issues of environment and sustainability.

In this unit, there is use of few cross-cutting issues, but this does not mean that it's enough to use one cross-cutting issue. Tutor is free to set other cross-cutting issues that are related to the lessons being covered in this unit. It is very important for tutor to create new scenario that support the integration of other cross-cutting issues. This will be favourable to the tutor when he/she plans it in advance.

10.8.4. Guidance on introductory activity

One way to hold learner's attention and keep them learning actively is to incorporate activities in the teaching. So, in our case, every lesson starts with an activity. The objective of introductory activity is to open up learners' possibilities of knowledge, skills and attitudes that they have acquired or expected to learn directly in their class.

All activities in this unit, year one are prepared for student-teacher to help her or him to get a deep understanding of environmental conservation and tourism in Rwanda. Activities are prepared and organized in a way that all learners will be able to respond to them. They can be answered individually or in pairs. The role of tutor is to guide and facilitate the accomplishment of all activities.

Some activities have their answers in their correspondent passages, others require a high critical thinking and analysis while others necessitate experiment.

10.8.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	N u m b e r of periods
1	Environmental conservation	• Give the definition of environmental conservation. • Name the different natural resources of Rwanda. • State the reasons and ways for the conservation of environment in Rwanda. • Evaluate the impact of conservation on the environment and development. • Explain the problems affecting the conservation of environment. • Explain the importance of environmental conservation.	2

2	Tourism	• Define tourism and eco-tourism. • State the major tourist attractions in Rwanda. • Explain the factors affecting the development of tourism in Rwanda. • Evaluate the impact of tourism on the environment and development in Rwanda. • Explain the problems affecting tourism. • Justify the importance of tourism in the development of the economy.	2
3	Importance and prospects of tourism in Rwanda, Problems affecting tourism in Rwanda and solutions.	• Give the importance of tourism in Rwanda. • Identify the problems of tourism in Rwanda. • State the impact of tourism on the environment of the country. • Explain the factors affecting the development of tourism in Rwanda. • Evaluate the impact of tourism on the environment and development in Rwanda. • Explain the problems affecting tourism. • Justify the importance of tourism in the development of the economy.	1

		• Importance and prospects of tourism in Rwanda. • Problems affecting tourism in Rwanda and the solutions. • Impact of tourism on the environment and the development in Rwanda	
	End unit assessment		

Lesson 1: Environmental conservation

a) Learning objectives

- Give the definition of environmental conservation.
- Name the different natural resources of Rwanda.
- State the reasons and ways for the conservation of environment in Rwanda.
- Evaluate the impact of conservation on the environment and development.
- Explain the problems affecting the conservation of environment.
- Explain the importance of environmental conservation.

b) Teaching resources

Teaching resources in this lesson varies depending on whether there are easy to find or the way to apply it in a certain situation. Many resources are now available in Learner's book where there are many photographs. In case where relevant resources are not available, tutor can improvise sketches by using manila papers, maps, flip chart to be used in prepared activities, field visit etc.

c) Prerequisites/Revision/Introduction

The Activity 10.8.1. Provided in lesson 10.8.1. is given for the purpose of assessing the level of understanding of learners about environmental conservation. This is also provided in order to prepare learners for the new lesson.

d) Learning activities

As said in guidance on introductory activity, a good learning strategy is to incorporate activities in teaching. Activity 10.8.1 was prepared for learners to introduce the lesson in the learners' book.

Possible answers are suggested as follows:

1. Environment consists of all living and non-living things which surround us. Therefore, the basic components of the environment are: Atmosphere or the air, Hydrosphere or the water, Lithosphere or the rocks and soil and the living component of the environment or the biosphere
2. Refers to the learner's book on ways of conservation of the natural resources in Rwanda.

e) Application activities

Below is the suggested answer to the Application activity 10.8.1. Teacher should be flexible to allow other possible products or services not included in the table. So any other likely correct item is highly welcome.

Resources	Products or services
Plants	Wood, paper, cotton clothing, fruits, vegetables
Air	Wind energy
Minerals	Coins, wire, steel, aluminum cans, jewelry
Oil	Electricity, fuel for cars and airplanes, plastic
Animals	Foods (milk, cheese, steak, bacon) and clothing (wool sweaters, silk shirts, leather belts)
Coal	Electricity
Water	Hydroelectric energy, drinking, cleaning
Sunlight	Solar power, photosynthesis
Natural gas	Electricity, heating

Lesson 2: Tourism

a) Learning objectives

- Define tourism and eco-tourism.
- State the major tourist attractions in Rwanda.
- Explain the factors affecting the development of tourism in Rwanda.
- Evaluate the impact of tourism on the environment and development

in Rwanda.

- Explain the problems affecting tourism.
- Justify the importance of tourism in the development of the economy.

b) Teaching resources

To achieve successful learning, tutor in year one is suggested to use print out and map of Rwanda to show the learners during learning activities. As student-teachers observe and see different features on the map, this will help them to discover different touristic sites and associate them with reality. Finally conducting fieldwork will be a paramount objective in this unit.

c) Prerequisites/Revision/Introduction

This is the last lesson in this unit. The lesson of tourism in Rwanda is closely related to the previous lesson of environmental conservation in the same unit. So, learning tourism will be easy for learners in year one. Because it is associated with the lesson already covered in past studies. The lesson has only one activity and an application activity.

d) Learning activities

For this activity, the tutor will give learners an opportunity to read attentively the passage and give them time to reflect on the provided questions and then give answers. The tutor is requested to try to integrate some generic competencies as well as cross-cutting issues but he/she is free to choose a cross-cutting issue or generic competence taking into consideration the learning environment.

Possible answers are suggested as follows:

1. Refer to the learner's book on definition of tourism.
2. The major national parks are: Akagera national park, Nyungwe national park, Virunga national park and Gishwati-Mukura national park.
3. Refer to the learner's book under Major tourist attractions in Rwanda.

e) Application activities

The suggested answers for Application activity 10.8.2.1 the following:

1. Refer to the learner's book on major tourist attractions in Rwanda.

2. Refer to the learner's book on definition of tourism and eco-tourism.

Lesson 3: Importance and prospects of tourism in Rwanda, Problems affecting tourism in Rwanda and the solutions

a) Learning objectives

- Give the importance of tourism in Rwanda.
- Identify the problems of tourism in Rwanda.
- State the impact of tourism on the environment of the country.
- Explain the factors affecting the development of tourism in Rwanda.
- Evaluate the impact of tourism on the environment and development in Rwanda.
- Explain the problems affecting tourism.
- Justify the importance of tourism in the development of the economy.
- Importance and prospects of tourism in Rwanda.
- Problems affecting the tourism in Rwanda and the solutions.
- Impact of tourism on the environment and development in Rwanda.

b) Teaching resources:

To achieve successful learning, tutor in year one is suggested to use print out, map of Rwanda and fieldwork.

c) Learning activities

1. Refer to the student's book on importance and prospects of tourism in Rwanda.
2. Refer to the student's book under Problems affecting the tourism in Rwanda.

Application activity

1. Refer to the learner's book on the major problems affecting tourism in Rwanda.
2. Refer to the learner's book under future prospects of tourism in the country.
3. 3. Refer to the learner's book on importance and prospects of tourism in Rwanda.

10.8.6.Summary of the unit

This unit deals with environmental conservation (Environmental conservation and Types of natural resources, Reasons for the conservation of natural resources in Rwanda, Ways of conservation of the natural resources in Rwanda, Impact of conservation on the environment and the development in Rwanda, Problems encountered in conserving the environment and the solutions in Rwanda) and tourism in Rwanda which deals with the forms of tourism, major tourist attractions and factors influencing tourism in Rwanda, Factors affecting the development of tourism in Rwanda, Importance and prospects of tourism in Rwanda, Problems affecting tourism in Rwanda and solutions.

10.8.7. Additional Information for teachers

The tutor should prepare a field visit to any of the national parks of Rwanda in order to relate the content of this unit to the real world.

10.8.8. End unit assessment

1. Tourism and environment are closely linked to one another: on one hand tourism destinations are relying on natural resources, such as mountainous regions, forests, rivers and lakes, fauna and flora in general. Or any other resource which function in form of attractions. So continuous conservation of environment will make tourism an endless activity to people, companies and government. But careless or poor measures to conserve the environment will lead to decrease or failure in tourism development.
2. Advertisement is considered as one of the most important procedures that a company or community must have to generate.
 - The objective is to generate tourists from both local and international marketplace on regular basis.
 - Advertising increases the familiarity of the locality to tourism who are planning to organize a personalized leisure or business trip.
 - It transforms curiosity into an interest made by the potential tourists who will be visiting the area to spend leisure time with their families and friends.
 - As a result, there will be an increase in tourist arrivals to the targeted locality where tourists can visit and explore for a certain period of time.
3. Refer to the learner's book on Future prospects of tourism in the country

4. Poaching is one of the major challenges in tourism and environment conservation.
 - a. Poaching is defined as the illegal killing, capturing or hunting of wild animals.
 - b. Poaching often occurs because of limited job opportunities, lack of sufficient agricultural production, and/or inability to maintain livestock production. Briefly, in rural areas many people depend on natural resources.
 - c. Here are some suggestions to stop poaching
 - There must be a strong partnership between government and local community to stop poachers
 - Improving security in the area concerned (national park or game park) and at border between countries
 - Use of technology like drone, or any other remote tracking device to assist rangers in the fight against poaching
 - Fencing the national parks.

10.8.9. Additional activities

10.8.9.1 Remedial activities

Questions:

1. What is environment?
2. Differentiate tourism from eco-tourism

Answers:

1. Environment is anything that surrounds man.
2. Refer to the learner' book on definition of tourism and eco-tourism.

10.8.9.2. Consolidation activities

Question:

Explain why the Government makes effort to promote tourism industry

Answer: Refer to the importance and prospects of tourism in Rwanda in student's book.

10.8.9.3. Extended activities

Question

- How can tourism contribute to environmental conservation?
- Explain the reasons for Kwita Izina event in Rwanda.

Answers:

1. A rise in environmental awareness among tourists can lead to an increase of wildlife conservation because the tourism industry is going to realize how people base their decision making on the sustainability aspect of a destination which will lead to an increased demand of nature based or green tourism.
2. **Kwita Izina** is a Rwandan ceremony of giving a name to a new born baby gorilla. It is named after the ancestral baby naming ceremony that happened after the birth of a newborn. The ceremony's main goal is to help and monitor each individual gorilla and their groups in their natural habitat. It was created as a means of bringing attention both locally and internationally about the importance of protecting the mountain gorillas and their habitats in Volcanoes National Park in the Virunga Mountains in the north of the country.

Skills lab:

Student-teachers will carry out a field visit in their area and identify other possible tourist attractions.



UNIT: 11

CIVILIZATION OF PRE-COLONIAL RWANDA

11.1. Key unit competence

The student-teacher should be able to analyze the civilization of pre-colonial Rwanda

11.2. Prerequisite (knowledge, skills, attitudes and values)

In order to study this unit, the student teachers should have knowledge, skills and competences on the following issues:

- Meaning of civilization.
- Origin of civilization.
- Factors for the rise of any civilization.
- Components of civilization.

In addition, the student teachers should have some understanding on examples of civilizations happened on the world.

11.3. Cross-cutting issues to be addressed

Peace and values education

In this unit of civilization of pre- colonial Rwanda, the student teachers will learn how ancient Rwandans live peacefully, in harmony through different concepts like social organization (solidarity) and share what they have as the case of barter trade where student teachers will be aware on exchange of goods and goods. Different values will be also learned in socio- cultural organization like sharing, cooperation, patriotism...

Inclusive education

Through learning and teaching process of this unit, care will be given to all learners including Special Education Needs cases. At this time, all student teachers will be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities

Gender

This cross-cutting issue is particularly addressed in Section related to *civilization of the pre- colonial Rwanda*. The tutor can help student teachers to understand how female were not equal to male in decision making either at home or in politics of their kingdom. Tutors help student teachers to understand that gender equity is a process to be achieved in different domains.

11.4. Guidance on introductory activity

At the beginning of this *Unit 11*, the introductory activity motivates student teachers to know what happens or will happen in this unit and help them to be passionate to know by the end of the unit what they did not know before. As they get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. This will help them identify some issues and open them to what they did not know and be inquisitive to know what happens in pre-colonial Rwanda.

11.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Introduction to civilization	The student teachers should be able to explain the term civilization and its components.	3
2	Social organization of the Pre-colonial Rwanda	The student teachers should be able to examine the social organization of Rwandan kingdom in comparison to today's Rwanda.	6
3	Cultural organization of the pre- colonial Rwanda	The student teachers should be able to examine the cultural organization of Rwandan kingdom in comparison to today's Rwanda.	5
4	Political and military organization of the pre- colonial Rwanda	The student teachers should be able to examine the political organization of Rwandan kingdom in comparison to today's Rwanda.	5

5	Economical organization of the pre- colonial Rwanda	The student teachers should be able to examine the economic organization of Rwandan kingdom in comparison to today's Rwanda.	5
6	Socio-political and economic dependences	The student teachers should be able to examine the socio-political and economic dependences of the pre-colonial Rwanda.	5
End unit Assessment			1

Lesson 1: Introduction to civilization

a) Learning objective

The student teachers should be able to explain the key concepts related to civilization.

b) Teaching resources

There are many resources that can be used in teaching this lesson such as:

Textbooks: student teachers' social studies book and its tutor's guide and history student book for S1

Teaching materials: world map, African map and traditional Rwandan map, internet, testimonies, press media, tactile materials, Braille materials can be availed if there are impaired learners.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the learners some questions related to the introduction of civilization, that is, its meaning, components, origin and factors for the rise of any civilization. In addition, student teachers should have some knowledge on the general information about history with emphasis on pre- colonial Rwanda.

d) Learning activities

In the case of written documents (internet, newspapers), do not use inflammatory sources. For the internet, you can provide key words to facilitate the learner's search. After finding the document, learners can

be asked to underline words they think are important to them and explain why. They can share their views in pairs or groups. After, the whole class can share their responses.

The teaching of this lesson can be done by means of student teachers' textbook to explain the key concepts of the pre- colonial Rwandan civilization.

After this activity, tutor invites learners to present their work to the whole class.

e) Application activities

Answers to application activity 11.1

1. The term “civilization” refers to the process through which people settling on a territory improve their ways of living during a given period of time. This concept is also defined as a set of characters, distinct signs, pertaining to intellectual, artistic, moral and material life of a country or a given society.

Civilization also refers to the great advance in highly developed culture and way of life when people began to farm, form governments, use metals, develop cities and use writing. To civilize, is said, is to pass from a social status to a more advanced one in terms of moral or intellectual order.

2. Civilization comprises different components or indicators. The following are the main indicators that every civilization might be made up of:
 - **Society:** This implies a set of relations that binds together people or groups of people;
 - **Cultural:** This is how people express themselves through the creation of objects experiences and feelings in painting sculpture, music, dance, theater and literature;
 - **Religious belief:** This is how people belonged to a given society explain what they believed or accept on the basis of faith;
 - **Intellectual:** This is how people form ideas, theories, create mental patterns and designs through experiences and makes sense out of them;
 - **Economic activities:** This is the way through which people organize themselves to meet their economic needs;
 - **Political:** This is how people governed involving matters of authority and obedience, including who makes the laws, decides on

foreign relations such as war and peace, collects taxes, dispenses justice and provides services needed by the general public;

- **Territory:** This means geographical space on which civilization must develop

Lesson 2: Social organization of the Pre-colonial Rwanda

a) Learning objective

The student teachers should be able to examine the social organization of Rwandan kingdom in comparison to today's Rwanda.

b) Teaching resources

The following materials will help you during the lessons; Year 1 on social studies student teacher's Book, internet, poems, media, stories, songs, jaws software, talking globes, tactile maps and braille materials for learners who are visually impaired. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the learners some questions related to the introduction of civilization, that is; its meaning, components, origin and factors for the rise of any civilization. In addition, student teachers should have some knowledge on the pre-colonial Rwanda society.

d) Learning activities

Let student teachers do activity 11.2 in small groups followed by a plenary discussion. If there is a resource person, he/she can be invited and put on his/her input. Remember to let the student teachers write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. Alternatively, the whole group should stand in front of the class, as one of them leads the presentation.

e) Application activities

Answers to activity 11.2

1. The lineage is a set of several families descending from one common and real ancestor and recognizable because of the genealogical tree traces. People who claim the same lineage take on the

name of the common ancestors. Besides carrying a proper genealogic remembrance, the members of the same lineage have kept a minimum residential unity.

The clan is a set of several lineages claiming a same mythic common ancestor, but rather far off and fictitious. It is not easy to trace it using a genealogical tree. The members of same clan share the same culture, same taboos and same totem.

The clan is a group, which is characterized by a biological relationship shared by members who show mutual solidarity. The clan's totem symbolizes unity among its members.

The term "clan" means a group of people who claim to be descendants from one common mythical ancestor. It is a legendary group or a fabulous ascendancy to which a group of people are attached. However, it is not always possible to establish all the genealogic ties between the common ancestor and the entire group.

The word "clan" corresponds to the term "*ubwoko*" and its institution neither has a chief or a particular internal organization. Besides, the clan implies a social category and not a corporate group. It has no chief, internal organization, or procedures that manage business of common benefits. The clan is different from a small lineage "*inzu*" and from a big lineage "*umuryango*". The clan is not even a residential grouping; its members are located all over the country.

Clans also have animal totems and when possible animal taboos. The main clans had totems as their recognition sign, in this situation they were from animal species: an animal, a bird, a mammal, batrachians and a reptile.

Certain clans have taboo. *Abanyiginya* have *impwi* as their taboo.

2. The following are the roles played by clans in the Pre-colonial Rwanda.
 - Clan members have common ties which are social identities or individual identification in relationship with others
 - Clan system was a way of finding friends almost from anywhere.
 - A member of a given clan may be benefited from their hospitality or the support from another clan
 - These entities also play a role in marriage because in principle the exogamy of clans prevails in the choice of the partner.

3. The following are the significances of the animal totem and animal taboos in relation to the clan:

- It led to obedience of each group member
- It led to environmental conservation.
- It was a sign of recognition.

Lesson 3: Cultural organization of the pre- colonial Rwanda

a) Learning objective

The student teachers should be able to examine the cultural organization of Rwandan kingdom in comparison to today's Rwanda.

b) Teaching resources

The following materials will help you during the lessons; Year 1 on social studies student teacher's Book, internet, poems, media, stories, songs, jaws software, talking globes, tactile maps and braille materials for learners who are visually impaired. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the learners some questions related to social organization of the pre- colonial Rwanda.

d) Learning activities

Let student teachers do activity 11.3 in small groups followed by a plenary discussion. If there is a resource person, he/she can be invited and put on his/her input. Remember to let the student teachers write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. Alternatively, the whole group should stand in front of the class, as one of them leads the presentation.

e) Application activities

Answers to application activity 11.3

1. In the Pre-colonial period, Rwandans were monotheists who believed in One Supreme Being. They commonly accepted their God (***Imana***) as omnipotent, omnipresent and omniscient. However, there were no rites for *Imana*, no temple to worship *Imana* but *Imana* is present in throughout some aspects of the daily living of Rwandans.

For instance, in naming their children, Rwandans referred to the idea of the role played by *Imana* in their day-to-day activities and life. These names are like: Ndayisaba (I implore God), Ndayisenga (I pray God), Niyibizi (It is God who knows), Habimana (It is God who exist), Habyarimana (It is God who procreates), Harerimana (It is God who nurtures).

The rite of *Kubandwa* is a ritual ceremony accomplished in two steps and consists to offer the offertories to Ryangombe and other *Imandwa*.

According to the tradition, Ryangombe was a hunter whose origin area is Nkole in Uganda. But other areas are supposed to be his origin as well as Bugoyi, Ndorwa and Bwanamukali. Ryangombe is the son of Babinga and Nyiraryangombe. He had three ladies Nyirakajumba, Gacubya and Karyango. He had also two boys named Binego and Ruhanga and two girls such as Bukiranzuzi and Nyirabirungu.

The first stage of *kubandwa* is “**Kwatura**”. By accomplishment of this stage, a novice is admitted in the community of *Imandwa* and he gets a new name and new parents. He is called from now “**Uruzingo**”.

The second step, called “**Gusubizwaho**” or “**Gusubira ku ntebe**”, the novice is invited to sit once again on the seat of Ryangombe. By this confirmation, he/she takes the definitive name and became *Imandwa*.

A similar cult was practiced in the north of the country and it was rendered to Nyabingi. Legend traces Nyabingi’s origin to Ndorwa or Karagwe. She was a noble woman never married and died very old. After her death, her followers (*Abagirwa* or *Ababyukurutsa*) spread her cult. Legend says that she was the daughter of Nyakajumba and Nyabunyana.

Introduction of Nyabingi’s cult in Rwanda corresponded to the end of reign of Kigeli IV Rwabugiri and it was known in Umutara, Rukiga, Kibari, Murera, Buhoma, Bugamba, Bugoyi and Kanage.

- **Taboos** were activities that were not allowed to be done because they could bring curses. E.g. *Kwica inyamanza*, *kwicara ku isekuru*, etc.
- *Uruzingo* was a novice who was admitted in the community of *Imandwa* and he gets a new name and new parents.
- The rite of **guterekera** concerns to offer some things as food or drinks to *Umuzimu*. That rite took place in small house called *Indaro*. The gestures are accompanied by oral requests formulation according to circumstances. The offertories are symbols because are the smallest. Often these offertories are the things which were liked by *Umuzimu* during his/her life.

- The rite of *Kubandwa* is a ritual ceremony accomplished in two steps and consists to offer the offertories to Ryangombe and other *Imandwa*.

Lesson 4: Political and military organization of the pre- colonial Rwanda

a) Learning objective

The student teachers should be able to examine the political organization of Rwandan kingdom in comparison to today's Rwanda

b) Teaching resources

The following materials will help you during the lessons; Year 1 on social studies student teacher's Book, internet, poems, media, stories, songs, jaws software, talking globes, tactile maps and braille materials for learners who are visually impaired. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the learners some questions related to social organization of the pre- colonial Rwanda.

d) Learning activities

Let student teachers do activity 11.4 in small groups followed by a plenary discussion. If there is a resource person, he/she can be invited and put on his/her input. Remember to let the student teachers write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. Alternatively, the whole group should stand in front of the class, as one of them leads the presentation.

e) Application activities

Answers to application activity 11.4

1. King (*Umwami*)

The *Ubugabuka* system and the army were the main instruments used to achieve the monarchy's goals and objectives but the court was the cornerstone and workshop where the *Nyiginya* State was shaped.

The king was very honored in Ancient Rwanda.

He occupied the topmost position in the political, administrative and military hierarchy to the extent that these functions were closely linked. Following his nomination, the king identified himself as a separate entity from the nobility. The kingdom of Rwanda was sacred and the king was therefore supposed to have the divine origin. The term *Imana* (God) refers to the Creator but also to the essence of life and the fertility of the land and humans. The king and dynastic drums was the very center of unity in the kingdom.

The king was the sole proprietor of everything and had every right to life and death over his subjects. He was also in charge of the armies, lawmaker and supreme judge. His sentences had no appeal.

Queen-mother (*Umugabekazi*)

She was usually the mother of the king. She could perform some ceremonies defined by the tradition. She was the confident of and chief advisor to the king. She could orient the king's actions and act as regent in case the king came to the throne when he was still young. The most remembered queen-mother in the history of Rwanda is Kanjogera under the reign of King Musinga.

Custodians of the esoteric code (*Abiru*)

They were the guardians of the tradition and royal secrets. They were high dignitaries and they came second as advisors of the king. They mastered the rites and symbolic procedures and processes of the country and their accomplishment. The king confided to them the name of his successor and he passed recommendations to the successor through them.

Abiru were responsible for the continuity of tradition and were under the authority of the king. Their function was hereditary. They were also responsible for knowing:

- The order in which queens were chosen and the matri-dynastic clan (*Ibibanda*) of the next queen-mother (*Abega, Abasinga, Abaha Abazigaba, Abagesera and Abakono*);
- Rules of enthronement of the new king (*Inzira y'ubwimike*);
- Rules regarding decoration of royal drums
- Rules regarding different aspect of royal life (*inzira z'ubwiru*)

Chiefs (*Abatware b'intebe*)

They were the heads of *Ibiti* appointed by the king and lived most of their lives in the royal court. They were consulted by the king especially in the

time of crises. They had following functions of:

- Controlling farmers and cattle keepers;
- Supervising closely and control the functions of land and cattle sub-chiefs;
- Commanding the army;
- Raising taxes for the king, *ikoro* and other service;
- Distributing land and to withdraw it from others if it was felt necessary

Abatware b'intebe were largely responsible for the recruitment and mobilization of the mass as far as the protection and maintenance of security of the country were concerned.

2. The army in Ancient Rwanda had the following roles:

- Expanding country;
- Participating in the different wars;
- Fighting against cattle rustlers and various raids;
- Ensuring territorial security

Lesson 5: Economical organization of the pre- colonial Rwanda

a) Learning objective

The student teachers should be able to examine the economic organization of Rwandan kingdom in comparison to today's Rwanda.

b) Teaching resources

The following materials will help you during the lessons; Year 1 on social studies student teacher's Book, internet, poems, media, stories, songs, jaws software, talking globes, tactile maps and braille materials for learners who are visually impaired. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the learners some questions related to cultural organization of the pre- colonial Rwanda.

d) Learning activities

Let student teachers do activity 11.5 in small groups followed by a plenary discussion. If there is a resource person, he/she can be invited and put on his/her input. Remember to let the student teachers write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. Alternatively, the whole group should stand in front of the class, as one of them leads the presentation.

e) Application activities

Answers to application activity 11.5

1. The main imported products from the neighboring countries included the following:
 - The salt from Lake Eduard;
 - The bracelet from Masisi and Buhavu;
 - The perfume from Ijwi Island

The items produced internally are:

- The main crops cultivated were beans, sorghum, peas, maize, yams, bananas, tobacco, sweet potatoes, local green leaves (*Isogi*)...
 - The animal production in Ancient Rwanda was mainly based on cattle rearing, goats, sheep and the keeping of the dogs and the bees.
 - It was from handicraft that Rwandans could get most tools to satisfy their daily needs. They made clothes, metal and wooden objects destined for commercial purposes.
2. Cattle rearing occupied a very important place in Rwandan life because the cows were the measure of wealth and expressed the social prestige. Products from cows were milk, meat, butter, hides and skins used for clothing.

A cow was also used to cement social relations between the different families when they exchanged it as a sign of love and friendship. Cows were also given as dowry or marriage settlement.

3. Three regions of Rwanda had celebrity on making and production of hoes such as:

Buberuka: *Amaberuka*

Buramba: *Amaramba*

Rusengesi: *Amasengesi*

Lesson 6: Socio-political and economic dependences

a) Learning objective

The student teachers should be able to examine the socio-political and economic dependences of the pre-colonial Rwanda.

Teaching resources

The following materials will help you during the lessons; Year 1 social studies student teacher's Book, internet, poems, media, stories, songs, jaws software, talking globes, tactile maps and braille materials for learners who are visually impaired. Sign language should be used when teaching learners with hearing impairment.

b) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the learners some questions related to political and military organization of the pre-colonial Rwanda.

c) Learning activities

Let student teachers do activity 11.6 in small groups followed by a plenary discussion. If there is a resource person, he/she can be invited and put on his/her input. Remember to let the student teachers write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. Alternatively, the whole group should stand in front of the class, as one of them leads the presentation.

d) Application activities

Answers to application activity 11.6

1. Pastoral clientelism (*Ubuhake*): was a social, political and economic dependence of Pre-colonial Rwanda that was mainly based on the cow. It was a *customary contract* which was not obligatory between the owner of cattle, a rich man known as *Shebuja* (Patron) and a person who wished to acquire cow called *Umugaragu* (Client or Servant). The latter who was often poor, socially weak and isolated asked the wealthier for social protection. Once the demand was accepted, the seeker accepted to perform duties for patron.

Dependence based on land (*Ubukonde*) was a right which gave authority to the clan and lineage heads on their respective zones as collective land (*Isambu or Ubutaka*). This collective land was managed by the clan head that was responsible for allocating land

inside his zone of influence to his subjects (*Abagererwa*). Before one starting to work on the land, he had first to seek the blessing and investiture of the clan chief.

Ubukonde existed especially in Murera, Rwankeri, Buhoma, Bushiru, Bugoyi and kange. It was also known in farmer prefecture of Kibuye, Cyangugu and Byumba.

2. The ceremony of investiture consists of giving a small knife called *Inkonzo* to *Umugererwa* which symbolized suzerainty of the clan and the right to clear the forest and cultivate the land at the same time. The investiture also conferred to the receiver (*Umugererwa*) and his descendants an inalienable right of ownership on the fields to be cultivated.

Unlike *Ubuhake*, *Abagererwa* did not pay homage to the clan heads (*Abakonde*). They only paid homage to the head of the family after harvest by offering some of the harvest to him including some sorghum, millet, beans and peas.

3. In 1927, the Belgian administration reduced *uburetwa* for each male adult to one day per week (this time a week of 7 days). The chief had the right to benefit from 52 days unpaid working days per year. For the Belgians, that represented a progress, because before the *uburetwa* was to be performed during 2 days of traditional week.

However, due to the “rationalization” of *uburetwa* introduced by the Belgian colonial administration, *uburetwa* became a burden to be assumed by every adult male and any individual deemed fit for service. Meanwhile, *uburetwa* started to involve more people than before.

In 1933, another royal declaration reduced the number of days of *uburetwa* that is to say 13 days per annum for the chief and 10 days per annum for the deputy chief. Even the *abagaragu*, within the framework of *ubuhake*, were constrained to provide annual services.

11.6. Summary of the unit

Civilization happens over a period of time for people to change from one state of affairs to an improved or a better one that is more universally acclaimed. Cultural organization reflects people’s values, norms, language, beliefs and habitats. It is reflected in what people eat, how they dress and how they relate with each other.

Rwandans in the pre-colonial period believed in a God called *Imana*. Rwandans observed traditional rites known as *imigenzo*, whereby they celebrated events such as: marriages, births and deaths.

Rwandans in the traditional kingdom also observed various taboos.

In traditional Rwandan kingdom, the king (*umwami*) was the overall leader of the political, administrative, religious and military hierarchy. Rwandans in the ancient kingdom performed this economic activity: agriculture, trade, handicraft, fishing, hunting and gathering.

11.7. Additional Information for teachers

Ubuhake was an institution which established relations of dependence of socio-economic nature between different strata of society.

Ubuhake was a voluntary contract between a cattle-owner and someone who wanted to own a cow or cows. *Ubuhake* system established between the 'Umugaragu' and 'Shebuja' was based on dynamics of friendship which manifested through common understanding, common participation and cooperation during times of both joy and pain.

The *Abagaragu* were divided into three categories, namely: house maids, court attendants and exempted courtesans. They performed different types of tasks.

The process of *Ubuhake* started with someone introducing a client/servant to the future master. This was done by a third party who was already *Umugaragu*. However, some people introduced themselves personally. Children were introduced by their parents. The latter would give some help to their children while performing particular tasks in the home of *Shebuja*. *Abagaragu* were sent at puberty and returned to their homes for marriage.

Uburetwa

Uburetwa was a sort of forced labor that people did for traditional authorities. Originally, it was a form of dependence related to land. The poor were supposed to buy land by working for two days a week in the fields of the village chief or a land owner on whose land they lived.

Persons without protection, especially the poor without land were involved in *Uburetwa* whereas *Ubuhake* affected all those who wanted to acquire cattle and protection (with the exception of the king). This meant that a chief could become a client of another more powerful person.

The chief of the land could ask all families that depended on agriculture in his area of jurisdiction to give him part of their harvest and offer him labor services.

Ubukonde

Before the coming of Europeans, Rwanda was governed by a dual land tenure policy called *Ubukonde* and *Isambu*. *Ubukonde* system was therefore a method of collective land ownership. This was common in the North and North-West of Rwanda., along the Nile-Congo Crest.

Members of one lineage did not divide their property (land) into smaller pieces. Every member had a right to exploit it. If the person who acquired land was a stranger to the lineage in the forest region, the land took the name of *Ubugererwa*, from the verb *kugera*, i.e. to measure. The lineage of *Umugererwa* enjoyed full rights on the acquired land but the title of ownership remained in the hands of the lineage head.

Umugererwa was neither supposed to offer dues in kind nor was he supposed to offer any services. On the contrary, he was expected to give his master the first harvest (sorghum, beans, millet and peas to which he added a crate of beer). *Abakonde* expected both alliance and collaboration from their *Abagererwa*.

11.8.End unit assessment (answers)

1. The following are the main indicators that every civilization might be made up of:
 - ***Society***: This implies a set of relations that binds together people or groups of people;
 - ***Culture***: This is how people express themselves through the creation of objects experiences and feelings in painting sculpture, music, dance, theater and literature;
 - ***Religious belief***: This is how people belonged to a given society explain what they believed or accept on the basis of faith;
 - ***Intellectual creation***: This is how people form ideas, theories, create mental patterns and designs through experiences and makes sense out of them;
 - ***Economic activities***: This is the way through which people organize themselves to meet their economic needs;
 - ***Political organization***: This is how people governed involving matters of authority and obedience, including who makes the laws,

decides on foreign relations such as war and peace, collects taxes, dispenses justice and provides services needed by the general public;

- **Territory:** This means geographical space on which civilization must develop.
2. The following are totems that have been identified and their animal totems:

No	Clan	Totem
1	Abanyiginya	Crested crane (Umusambi)
3	Abazigaba	Leopard (Ingwe)
4	Abagesera	Wagtail (Inyamanza)
5	Abasinga	Kate (Sakabaka)
6	Abacyaba	Hyena (Impyisi)
7	Ababanda	Crow (Igikona)
8	Abega, Abakono and Abaha	Frog/Toad (Igikeri)
9	Abashambo	Lion (Intare)
10	Abahondogo	Peak (Ishwima)
11	Abongera	Gazelle (Isha)
12	Abungura	Pigeon (Inuma)
13	Abasita	Jackal (Nyiramuhari / Umuhari / Imbwebwe)
14	Abanyakarama	
15	Abashingwe	

3. In general, a family played several roles. It was the basic unit of cooperation and economic production. It produced all that it needed. In any case, people only went to the market if it was unavoidable. For a polygamous family, every nucleus family consisted of an independent unit of production. It was the husband who sold his labor. The occupations for women depended on the social status the family (rich families had big-sized livestock while poor ones kept small-sized livestock). According to the Rwandan mentality, an increased number of children brought happiness and strength to the family. Marriage of a daughter made it possible to extend alliances with other lineage groups. A daughter was considered as a linking factor between families. The lineage and eventually the army were responsible for the socialization of children.
4. The lineage is a set of several families descending from one common and real ancestor and recognizable because of the genealogical tree traces. People who claim the same lineage take on the name of the common ancestors. Besides carrying a proper genealogic remembrance, the members of the same lineage have kept a minimum residential unity.

The clan is a set of several lineages claiming a same mythic common ancestor, but rather far off and fictitious. It is not easy to trace it using a genealogical tree. The members of same clan share the same culture, same taboos and same totem. The clan is a group, which is characterized by a biological relationship shared by members who show mutual solidarity. The clan's totem symbolizes unity among its members. The term "clan" means a group of people who claim to be descendants from one common mythical ancestor. It is a legendary group or a fabulous ascendancy to which a group of people are attached. However, it is not always possible to establish all the genealogic ties between the common ancestor and the entire group.

The word "clan" corresponds to the term "*ubwoko*" and its institution neither has a chief or a particular internal organization". Besides, the clan implies a social category and not a corporate group. It has no chief, internal organization, or procedures that manage business of common benefits. The clan is different from a small lineage "*inzu*" and from a big lineage "*umuryango*". The clan is not even a residential grouping; its members are located all over the country.

Clans also have animal totems and when possible animal taboos. The main clans had totems as their recognition sign, in this situation they were from animal species: an animal, a bird, a mammal, batrachians and a reptile.

5. The king played a vital role at this level of the life of his country. He occupied the topmost position in the political, administrative and military hierarchy to the extent that these functions were closely linked. Following his nomination, the king identified himself as a separate entity from the nobility. The kingdom of Rwanda was sacred and the king was therefore supposed to have the divine origin. The term *Imana* (God) refers to the Creator but also to the essence of life and the fertility of the land and humans. The king and dynastic drums were the very center of unity in the kingdom.

The king was the sole proprietor of everything and had every right to life and death over his subjects. He was also in charge of the armies, lawmaker and supreme judge. His sentences had no appeal.

6. "Itorero" was an institution where the young men, *Intore*, recruited from among the king's favorite chiefs learnt and practiced such values as generosity, courage, patriotism, the moral responsibility, self-discipline and the quality of being a man, "*kuba umugabo*".

They received also special military training consisting of physical exercises, shooting with bows and arrows, throwing javelin, composing and memorizing of heroic poems, dancing, etc.

7. The duties of client towards the patron included cultivating the fields of the patron, looking after cattle, repairing homesteads, guarding homes at night, provision of water, be at the disposal of his patron by staying around him, be the messenger, escort his patron at war, give cows in the event of epizootics, in the event of bereavement (*Indabukirano*) and take a part in patron's happy or sad events etc.

In return, the patron protected the client against those who were socially stronger than him and others likely to be enemies, compensated someone who is wronged by his client (*Kugura*), gave bull-calves and milk, assisted the client in court (*Kurengera*), revenged the client (*Guhorera*), gave a hoe when the client is a cultivator who cannot get one easily and would take part in client's happy or sad events.

8. *Uburetwa* consisted of the duty for each man to work two days per week (the traditional week had only five days) for a politico-administrative leader without any compensation. The *uburetwa* was directly related to land and to land services. Before 1900, it was based on lineages (*Umuryango* or *inzu*) and family representatives could carry out the required duties in the name of the whole group.

In 1927, the Belgian administration reduced *uburetwa* for each male adult to one day per week (this time a week of 7 days). The chief had the right to benefit from 52 days unpaid working days per year. For the Belgians, that represented a progress, because before the *uburetwa* was to be performed during 2 days of traditional week.

However, due to the "rationalization" of *uburetwa* introduced by the Belgian colonial administration, *uburetwa* became a burden to be assumed by every adult male and any individual deemed fit for service. Meanwhile, *uburetwa* started to involve more people than before.

In 1933, another royal declaration reduced the number of days of *uburetwa* that is to say 13 days per annum for the chief and 10 days per annum for the deputy chief. Even the *abagaragu*, within the framework of *ubuhake*, were constrained to provide annual services.

11.9. Additional activities (Questions and answers)

11.9.1. Remedial activities

Questions

1. List down six economic activities that were carried out in pre-colonial Rwanda.
2. Define the term civilization.
 - b) Briefly list down the components of civilization.

Answers

1. Six economic activities carried out in pre-colonial Rwanda are:
 - Agriculture
 - Trade
 - Animal rearing
 - Handicraft
 - Fishing
 - Gathering and hunting
2. a) civilization refers to the process of advancement in human culture and living conditions including: social, political and economic development.
 - b) The components of civilization are:
 - Territory
 - Economic organization
 - Social organization
 - Political organisation
 - Intellectual creation
 - Cultural organisation
 - Religion

11.9.2. Consolidation activities

Questions

1. Discuss the role played by the following leaders in pre-colonial Rwanda:
 - a. The king
 - b. Queen mother
 - c. Ritualists.
2. Compare pastoral clientelism and *ubukonde*.

Answers

1. The king occupied the topmost position in the political, administrative and military hierarchy to the extent that these functions were closely linked. Following his nomination, the king identified himself as a separate entity from the nobility. The kingdom of Rwanda was sacred and the king was therefore supposed to have the divine origin. The term *Imana* (God) refers to the Creator but also to the essence of life and the fertility of the land and humans. The king and dynastic drums were the very center of unity in the kingdom.

The king was the sole proprietor of everything and had every right to life and death over his subjects. He was also in charge of the armies, lawmaker and supreme judge. His sentences had no appeal.

Queen-mother (*Umugabekazi*)

She was usually the mother of the king. She could perform some ceremonies defined by the tradition. She was the confident of and chief advisor to the king. She could orient the king's actions and act as regent in case the king came to the throne when he was still young. The most remembered queen-mother in the history of Rwanda is Kanjogera under the reign of King Musinga.

Custodians of the esoteric code (*Abiru*)

They were the guardians of the tradition and royal secrets. They were high dignitaries and they came second as advisors of the king. They mastered the rites and symbolic procedures and processes of the country and their accomplishment. The king confided to them the name of his successor and he passed recommendations to the successor through them.

Abiru were responsible for the continuity of tradition and were under the authority of the king. Their function was hereditary. They were also responsible for knowing:

The order in which queens were chosen and the matri-dynastic clan (*Ibibanda*) of the next queen-mother (*Abega, Abasinga, Abaha, Abazigaba, Abagesera and Abakono*);

- Rules of enthronement of the new king (*Inzira y'ubwimike*);
 - Rules regarding decoration of royal drums
2. As for comparing the two systems, it will be noted that *ubuhake* was a contract between a cattle owner (*shebuja*) and a client who wanted a cow (*umugaragu*). That contract was entered free and

on individual choice. In return for services rendered a client was rewarded a cow. However, in the case of *Ubukonde*, *Abakonde* did not owe any service to the clan chief. He was simply obliged to give part of his harvest to the head of the family during the feast to mark the harvest. The gift consisted of sorghum, beans, peas, millet.

11.9.3. Extended activities

Questions

1. “Modern culture is better than traditional culture”, debate.
2. Describe the economic organisation of the pre-colonial Rwanda.

Answers

1. Debate with emphasis on seeds cultivated, methods of cultivation, technicians in agriculture, kind of manure used, crop rotation...
2. See the content summary

Skills lab

In groups and by using a role play, analyze the civilization of the Pre-colonial Rwanda. Then after, compare it to the current civilization by focusing on the positive aspects that deserve to be maintained and the negative ones to be abandoned.

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UNIT: 12

COLONIAL RWANDA (1897 – 1962)

12.1. Key Unit competence

The student-teacher should be able to assess the performance of the German and Belgian rules, the 1959 crisis and the process of the independence in Rwanda.

12.2. Prerequisite (knowledge, skills, attitudes and values)

In order to study this unit, the student teachers should have knowledge, skills and competences on the following issues:

- Meaning of colonization.
- Causes of colonization of Africa.
- Different countries that had colonized Africa.
- Different colonial administrative policies
- Consequences of colonization of Africa.

12.3. Cross-cutting issues to be addressed

▪ Peace and values education

In this unit of Rwanda under German and Belgian colonization of Rwanda, the student teachers will learn how peace in Rwanda has been destroyed by colonizers through different administrative policies. Different bad values have been installed in Rwanda by colonialists and Rwandans have struggled to find peace through gaining independence.

▪ Inclusive education

Through learning and teaching process of this unit, care will be given to all learners including SEN cases. At this time, all learners will be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities

▪ Gender

This cross-cutting issue is particularly addressed in Section related to *Rwanda under German and Belgian colonization*. You can help learners to understand how female were not equal to male in decision making

either at home or in politics of their kingdom. Help learners to understand that gender equity is a process to be achieved in different domains.

- **Genocide Studies**

Dealing with unit on *German and Belgian colonization of Rwanda*, the cross-cutting issue on genocide education will be addressed. In this regard, you can help learners to understand that the lack of social freedom, liberty and self-governance under colonial rule pushed Africans to react violently against colonial masters. The student teachers will know the role of colonization as ground roots for the genocide against the Tutsi in Rwanda.

12.4. Guidance on introductory activity

At the beginning of this *Unit 12*, the introductory activity motivates student teachers to know what happens or will happen in this unit and help them to be passionate to know by the end of the unit what they did not know before. As they get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. This will help them identify some issues and open them to what they did not know and be inquisitive to know what happens in colonial Rwanda.

12.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	German occupation of Rwanda	The student- teachers should be able to explain the causes for the Germany occupation of Rwanda	3
2	German administration and its impact	The student- teachers should be able to explain the reform made by Germans in Rwanda	6
3	The coming of missionaries	The student- teachers should be able to explain the roles played by missionaries in Rwanda	4

4	First World War in Rwanda	The student- teachers should be able to explain the causes and consequences of the First world war in Rwanda.	5
5	Belgian military occupation and its reforms (1916 – 1926)	The student- teachers should be able to describe the reforms made by Belgians in Rwanda during military occupation.	6
6	Rwanda under Belgian Mandate (1926-1946)	The student- teachers should be able to explain the reforms made in Rwanda by Belgians during mandate period	5
7	Rwanda under Belgian Trusteeship (1946–1962)	The student-teachers should be able to explain the reforms made in Rwanda by Belgians during trusteeship period	9
8	Assessment of the Belgian colonization of Rwanda	The student teachers should be able to evaluate the effects of the Belgian colonization of Rwanda	2
End unit Assessment			2

Lesson 1: German occupation of Rwanda

a) Learning objective

The student- teachers should be able to explain the causes for the Germany occupation of Rwanda.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic:

Year 1 social studies student teacher's Book, Internet, poems, media (radio, newspapers and videos), stories, tactile materials, jaws software, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the student teachers some questions related to meaning and causes of colonization of Africa.

d) Learning activities

Group learners into pairs and let them to Activity 12.1. Student teachers to present their ideas from the discussions to the rest of the class while they take notes. You can invite a resource person to sing, recite poems, tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to activity 12.1

1. See the content
2. See the content

Lesson 2: German administration and its impact

a) Learning objective

The student- teachers should be able to explain the reform made by Germans in Rwanda.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic: Year 1 social studies student teacher's Book, Internet, poems, media (radio, newspapers and videos), stories, tactile materials, jaws software, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the student teachers some questions related to process through which Rwanda became protectorate and the causes of colonization of Rwanda.

d) Learning activities

Group learners into pairs and let them to Activity 12.2. Student teachers to present their ideas from the discussions to the rest of the class while they take notes. You can invite a resource person to sing, recite poems, tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to activity 12.2

1. By this delimitation, Rwanda had lost a part equal to one half of its actual size. Ijwi Island, Bwishya and Gishari were annexed to Belgian Congo while Bufumbira went to Uganda.
2. On this question, Tutor will have time to listen to the ideas from student teachers. No specific answer. The aim of this question is to help student teachers to promote their critical thinking. They are some ideas they can provide:

For Yes:

- They were not sure for their security.
- They were trying to see if the colonization of Rwanda peacefully is possible, if not, to fight.
- Everywhere they passed, the war was inevitable. They thought it would be the same in Rwanda.

For no:

- The military phase was not necessary because the treaty was already signed
- The military phase was not necessary because even the war could happen between Rwandan and German troops, German knew that was so strong to defeat Rwanda.

Then, after seeing that they are welcomed, they launched their second phase and began their civil administration and supported Musinga to pacify the country and began to operate some reforms.

3. The German government helped the King Musinga to suppress several rebellions, markedly the rebellion of Ndungutse and his acolytes Rukara and Basebya. Ndungutse rebellion had started in the north of Rwanda towards the 1910 in the former provinces of Ruhengeri and Byumba (Buberuka, Kibali and Bukonya).

Lesson 3: The coming of missionaries

a) Learning objective

The student- teachers should be able to explain the roles played by missionaries in Rwanda.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic: Year 1 social studies student teacher's Book, Internet, poems, media (radio, newspapers and videos), stories, tactile materials, jaws software, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use introduction by asking the student teachers some questions related to missionaries' activities in Rwanda.

d) Learning activities

Group learners into pairs and let them to Activity 12.3. Student teachers to present their ideas from the discussions to the rest of the class while they take notes. You can invite a resource person to sing, recite poems, tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to activity 12.3

1. The criteria for choosing missionary location are:

- Densely populated areas
 - Good climate
 - Strategically located
2. The role played by missionaries in Rwanda is multidimensional. From their arrival, the White Fathers started training Rwandans. They taught them how to cook, horticulture, building, woodwork, forging, shoemaking, binding etc.

They also taught them how to read and write, arithmetic and drawing. They taught them rudimentary foreign languages like Swahili and German. In general, Christian missionaries created schools, both primary and secondary schools.

Missionaries also wrote dictionaries and grammar books in Kinyarwanda. They also carried out some studies on Rwandan culture.

In Agriculture, missionaries introduced Western and tropical crops: Irish potatoes, Cassava, Groundnuts, Oranges, Pineapples. Coffee etc.

They also introduced new domestic animals like pigs and turkeys in Rwanda to improve on the animal production. They introduced products like cheese, jam and plants such as cyprus, filao, grevilia and eucalyptus which are widely used in woodwork and building.

They trained local clergy: The first two Rwandan priests (Donat Rebero and Balthazar Gafuku) were ordained in 1917. The minor seminary of Kansi was transferred to Kabgayi in 1913.

Lesson 4: First World War in Rwanda

a) Learning objective

The student- teachers should be able to explain the causes and consequences of the First world war in Rwanda.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic: Year 1 social studies student teacher's Book, Internet, poems, media (radio, newspapers and videos), stories, tactile materials, jaws software, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use introduction by asking the student teachers some questions related to First World war in Rwanda.

d) Learning activities

Group learners into pairs and let them to Activity 12.4. Student teachers present their ideas from the discussions to the rest of the class while they take notes. You can invite a resource person to sing, recite poems, tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to activity 12.4

The reasons why the Belgian troops defeated German troops are:

- Belgian military tactics
 - War plan
 - Belgians were helped by the British from Uganda
1. Yes. Some consequences of the first world war in Rwanda are:
 - It caused the famine called Ruzagayura
 - Some people lost their lives
 - Destruction of properties and infrastructures
 - Environmental degradation
 - It led to a big number of orphans, widow and widower
 2. It was caused by the destruction of the food crops like bananas and suspension of sorghum cultivation as ordered by the Germans in order to deny cover to the enemy.

Lesson 5: Belgian military occupation and its reforms (1916 – 1926)

a) Learning objective

The student- teachers should be able to describe the reforms made by Belgians in Rwanda during military occupation.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic: Year 1 social studies student teacher's Book, Internet, poems, media (radio, newspapers and videos), stories, tactile materials, jaws software, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use introduction by asking the student teachers some questions related to First World war in Rwanda.

d) Learning activities

Group learners into pairs and let them do Activity 12.5.1. Student teachers present their ideas from the discussions to the rest of the class while they take notes. You can invite a resource person to sing, recite poems, tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to activity 12.5.1.

1. The Belgians weakened the power of the king Musinga because:
 - He had refused to be baptized
 - Musinga was not following the orders of the colonialists
 - He didn't benefit from western education
 - He was polygamous
2. This was because the claims made by king Musinga and the intervention of Bishop Leon Classe

Lesson 6: Rwanda under Belgian Mandate (1926-1946)

a) Learning objective

The student- teachers should be able to explain the reforms made in Rwanda by Belgians during mandate period.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic: Year 1 social studies student teacher's Book, Internet, poems, media (radio, newspapers and videos), stories, tactile materials, jaws software, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use introduction by asking the student teachers some questions related to Rwanda under Belgian military occupation.

d) Learning activities

Group learners into pairs and let them do Activity 12.5.2. Student teachers present their ideas from the discussions to the rest of the class while they take notes. You can invite a resource person to sing, recite poems, tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to activity 12.5.2

1. Impact of forced labors and obligatory cash crops on Rwandan people during mandate period are:
 - Many people fled the country to Katanga and Uganda for searching for job.
 - Famines
 - Living in bad conditions
 - Lack of taxes
 - Conflicts between people and the leaders.
2. It had categorized people which led to conflicts between them
3. Musinga was deposited because of the following reasons:
 - He had refused to be baptized

- Musinga was not following the orders of the colonialists
- He didn't benefit from western education
- He was polygamous

Lesson 7: Rwanda under Belgian Trusteeship (1946–1962)

a) Learning objective

The student- teachers should be able to explain the reforms made in Rwanda by Belgians during trusteeship period.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic: Year 1 social studies student teacher's Book, Internet, poems, media (radio, newspapers and videos), stories, tactile materials, jaws software, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use introduction by asking the student teachers some questions related to Rwanda under Belgian mandate.

d) Learning activities

Group learners into pairs and let them do Activity 12.5.3. Student teachers present their ideas from the discussions to the rest of the class while they take notes. The tutor can invite a resource person to sing, recite poems, tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to application activity 12.5.3.

1. see the content summary
2. In order to increase the agricultural production in Rwanda, Belgian government introduced different measures:
 - Increase of the number of agronomists

- Introduction of the new crops
- Establishment of information network
- Fighting against famines by regulating agriculture
- Finding out new land for agriculture (management of pastures, hills and drainage of swamps)
- Cassava and potatoes are made compulsory food crops
- Introduction of anti- erosive program since 1937
- Improvement of oleaginous plants

Lesson 8: Effects of Belgian colonization of Rwanda

a) Learning objective

The student- teachers should be able to evaluate the effects of Belgian colonization of Rwanda.

b) Teaching resources

The following materials will help you during the delivery of this sub-topic: Year 1 social studies student teacher's Book, Internet, media (radio, newspapers and videos), stories, tactile materials, talking globes and tactile maps and braille materials. Sign language should be used when teaching learners with hearing impairment.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use introduction by asking the student teachers some questions on Belgian colonization of Rwanda. He/ She should also have knowledge on colonization of Africa in general.

d) Learning activities

Group learners into pairs and let them do Activity 12.5.4. student teachers present their ideas from the discussions to the rest of the class while they take notes. The tutor can invite a resource person to tell relevant stories or shed more light on the sub-topic. Remember to let them write points as they discuss in groups. They should appoint one person to represent them during plenary discussion. They should as well appoint a class secretary to note down points agreed on as one of them leads the presentation.

e) Application activities

Answers to application activity 12.5.4.

1. To answer this question, the student teachers need to know all the effects of the Belgian colonization of Rwanda both positive and negative. But they will emphasize on the negative effects because whatever Belgium did in Rwanda it was for their own interests not the interests of Rwandans and Africans in general.

12.6. Summary of the unit

The Berlin conference (1884-1885) assigned Rwanda to Germany as a protectorate that took place from 1898 to 1916. This colonization has been possible thanks to explorers' accounts that provided written information about Rwanda. The German occupation has been characterized by good relationships between the *Mwami* and colonial administration and by many economic projects which have not been realized due to time shortage.

After the German failure in WWI, Rwanda was militarily occupied by Belgium from 1916 up to 1919. During this period, Belgians did not make important changes, but very soon they imposed thorough control on traditional power. On 1-1-1919 the military regime was replaced by a civil administration and the first resident was Edmond Van Den Eede. On 28th-6-1919 the Versailles treaty gave to the allies the right to occupy the former German colonies. Belgium was then reassigned the mandate of Rwanda without the Eastern region: Gisaka and Mutara-Mubali according to the Orts-Milner convention. After long negotiations and discussions, the mentioned regions were given back to Rwanda and the mandate was officially confirmed on 31st-8-1923 by the League of Nations. Belgium accepted it by the law of 20-10-1923.

During the mandate period (1919-1946) the history of Rwanda has been characterized by deep transformations in political, economic, and social areas. Globally the aim of economic reforms consisted of increasing the production while the political ones aimed at reducing gradually the *Mwami's* power. As most of these reforms were considered as constraints, they were badly received by the local population.

After WWII, Rwanda has been placed under UN Trusteeship. Belgium was asked to improve Rwandans' socio-economic conditions. So, the ten years plan for socio-economic development of Ruanda-Urundi was elaborated to cover the period 1952-1961, however, Rwandans were not

involved in its elaboration. On political level, as Belgian authority had to prepare/ to help local people to self-administration, political parties occurred in 1959 early 1960s, there were around twenty political parties and alliances in Rwanda and most of them were regional and ethnic based. This period was also characterized by the increasing of hatred against Tutsi, violence and upheavals and the independence has been achieved on 1/7/1962 after having chased Tutsi from their properties and from the country

12.7. Additional Information for the tutor

Conference of Berlin 1884-85 was an international meeting aimed at settling the problems connected with European colonies in Africa. At the invitation of the German chancellor Otto von Bismarck, representatives of European nations, and the Ottoman Empire met at Berlin to consider problems arising out of European penetration of West Africa. The stated purpose of the meeting was to guarantee free trade and navigation on the Congo and on the lower reaches of the Niger. In fact, the territorial adjustments made among the powers were the important result. The sovereignty of Great Britain over Sub-Nigeria was recognized. The claims of the International Association, a private corporation controlled by King Leopold II of Belgium, were more or less recognized; these applied to the greater part of the Congo. These territorial awards ignored French claims to parts of the Congo and of Nigeria and the historical claim of Portugal to the mouth of the Congo. The attempts to guarantee free trade and the neutrality of the region in wartime and to set up rules for future colonial expansion in Africa were hailed, but soon the agreements proved too vague to be workable

12.8. End unit assessment (answers)

Suggested answers to end unit assessment

1. The European countries came to colonize Rwanda because of the following reasons:
 - **Need of cheap labor:** Especially Belgians needed a work force to cultivate their plantations in Kongo;
 - **Need of areas to invest:** The Germans and Belgians needed the new areas where they could invest their surplus capital and found Rwanda as a virgin country to cater for such desire which made them to be interested in colonizing Rwanda;
 - **Need of markets:** Germany and Belgium were among the first industrialized countries in Europe and they needed the markets

for their manufactured products elsewhere outside of Europe, may be in Africa including Rwanda. This encouraged them to come and occupy Rwanda;

- **Need to promote Western civilization:** By coming and colonizing Rwanda, the Germans and Belgians socially wanted to promote Western civilization by making people of Rwanda modern and civilized. This developed more obsessive desire in colonizing Rwanda;
 - **Need to spread Christianity:** The Germans and Belgians who were Christian missionaries were fascinated by colonizing Rwanda as they could spread out their religion to Rwanda as they looked it as “the best religion” in the World;
 - **Need to gain political prestige and glory:** By the time, European countries believed that having more colonies is one way to be respected in the World. Therefore, the Germans had also this desire to acquire political prestige by colonizing more areas including Rwanda and among others; **Green light given by the 1884 – 1885 Berlin Conference:** This conference on partition of Africa had officially recognized Germany as the rightful colonial master of Rwanda. This granted and encouraged the Germans to take up Rwanda as their colony
2. The role played by missionaries in Rwanda is multidimensional. From their arrival, the White Fathers started training Rwandans.
- They taught them how to cook, horticulture, building, woodwork, forging, shoemaking, binding etc.
 - They also taught them how to read and write, arithmetic and drawing. They taught them rudimentary foreign languages like Swahili and German. In general, Christian missionaries created schools, both primary and secondary schools.
 - Missionaries also wrote dictionaries and grammar books in Kinyarwanda. They also carried out some studies on Rwandan culture.
 - In Agriculture, missionaries introduced Western and tropical crops: Irish potatoes, Cassava, Groundnuts, Oranges, and Pineapples. Coffee etc.
 - They also introduced new domestic animals like pigs and turkeys in Rwanda to improve on the animal production. They introduced products like cheese, jam and plants such cyprus, filao, grevilia and

eucalyptus which are widely used in woodwork and building.

- They trained local clergy: The first two Rwandan priests (Donat Rebero and Balthazar Gafuku) were ordained in 1917. The minor seminary of Kansi was transferred to Kabgayi in 1913
- 3. A German emissary is said to have been sent to the Belgian authorities to enquire about the latter's position on peace or war in their respective colonies. While waiting for a response from the higher authorities, he was put under surveillance. This precautionary measure was interpreted as a declaration of war and fighting started.
- 4. The Belgians did not wait for the peace conclusions to act on the sovereignty of the conquered territories. Right after the conquering Rwanda in May 1916, the Belgian troops were replaced by occupation troops. The Belgian military High Command of German Eastern Africa was handed over to the Royal High Commissioner General J.P Malfeyt, with his residence at Kigoma in Tanganyika.
- 5. See the content summary
- 6. Some causes of the 1959 crisis in Rwanda are:
 - Bad will of Belgian colonizers by defending their interests
 - Divisive ideology based on racism
 - Creation of political parties based on divisive ideology
 - The misinterpretation of the death of king Rudahigwa.

The violence had mainly the following effects:

- a. The houses of Tutsi and Hutu members of UNAR were burned and destroyed systematically.
- b. Many Tutsi were killed (at least 200 people), internally displaced and became refugees in neighboring countries like in Burundi, Uganda, Tanzania and Belgian Congo (almost between 150.000 and 200.000 people)
- c. There were arbitrary arrests, imprisonments and assassinations.
- d. The 20 chiefs were dismissed and 150 sub-chiefs were replaced by the members of PARMEHUTU assisted by Colonel Guy Logiest.
7. The following are the steps Rwanda pass through in order to achieve its independence.
 - a. From 26th June to 30th July, 1960, communal elections took place where PARMEHUTU had 166 Bourgmestres, 21 were from APROSOMA, 7 were from RADER and 17 were from other different political parties. UNAR had only one Bourgmester.

- b. On October 26, 1960, a provisional government was put in place by the resident general. It was composed of 10 Rwanda ministers and 9 Belgian state secretaries. On the 25th January, 1961, the resident general conferred upon these institutions the powers of autonomy.
- c. On the 28th January, 1961, the famous “Coup d’état of Gitarama” took place. At that time, a meeting took place in a market in Gitarama in which about 2,900 councilors and bourgmasters took part. These people were elected from PARMEHUTU and APROSOMA political parties. With the complicity of the Belgian government, they proclaimed the following decisions:
 - The abolition of the monarchy and the kingdom emblem, the royal emblem drum Kalinga and *Ubwiru* institution.
 - The proclamation of a republic and the election of the first president of the republic, Mr. Mbonyumutwa Dominique.
 - The formation of a government made up of 11 ministers with Grégoire Kayibanda as prime minister.
 - Creation of a supreme court.
- d. On the February 1961, the Belgian Trusteeship recognized that regime and transferred the power of autonomy to them. A new tricolor flag of Red, Yellow and Green was exhibited.
- e. On September 25th 1961, legislative elections and a referendum were organized and were won by PARMEHUTU
- f. On the second of October 1961, the legislative assembly was put in place and Grégoire Kayibanda was elected President of the Republic by the Legislative Assembly headed by Joseph Habyalimana Gitera. From October 1961 up to July 1962, the negotiations and other preparations were done by UN and Belgian government so as to offer the independence Rwanda and Burundi.
- g. On the 1st July 1962, independence was given to Rwanda; the Belgian flag was replaced by the Rwandan flag.

12.9. Additional activities

12.9.1. Remedial activities

Questions

1. Discuss the causes of German and Belgian colonization of Rwanda.
2. Examine the impact of German colonization of Rwanda.

Answers

1. The following are the points to be explained:

- Industrial revolution in Europe
- Investment of surplus capital
- Rwanda as source of raw materials
- Need for market
- Need to spread Christianity
- Stopping slave trade and slavery in Rwanda
- Employment of European people in Africa
- To civilize Rwanda
- European countries looking for new places in Africa to settle their surplus population
- Pride
- The Berlin Conference of 1884 – 1885
- German defeat in the World War I (1914 -18).

2. The following are the points to be explained:

- Demarcation of Rwandan border
- Support to King Musinga (Mwami)
- Opening of the country to outside world
- Exportation of goods
- Introduction of money
- Experimentation with some few agricultural crops
- Construction of passable roads
- Racial discrimination
- Introduction of head tax
- Coming of European missionaries

12.9.2. Consolidation activities

Questions

1. Give the reforms introduced by the Belgian colonization of Rwanda from 1916 - 1962.

2. Explain the effects of Belgian colonization of Rwanda.

Answers

1. The following are the points to be explained:

- Military occupation reforms
- Banning of rights over life and death.
- Reduction of the king's power
- Undermining the *Mwami's* legal power (1922).
- Abolition of *Ubwiru* and *Umuganura* institutions.
- Declaration of religious freedom (July 1917).
- Abolition of *Imponoke* and *Indabukirano*.

Socio-cultural reforms were in education and health centers while **economic reforms** were in the (forced) labor policy and agriculture

2. The following are the effects of the Belgian colonization of Rwanda:

Political effects

- Change in the traditional administration
- Formation of councils
- Formation of political parties

Economic effects

• Improvement in agriculture	• Construction of roads
• Generation of electricity	• Introduction of taxes
• Establishment of industries	• The traditional manufacturing sector was discouraged
• Introduction of commercial farming	• Introduction of forced labor

Social effects

- Abolishment of traditional education
- Establishment of health centers
- Construction of churches

12.9. Extended activities

Questions

1. What measures were taken by the Belgian colonial administration to curb the famines which had become rampant in Rwanda?
2. What were the exploitation mechanisms during the colonial period?

Answers

1. To curb rampant hunger that used to ravage Rwanda during the colonial period, the Belgian colonial administration increased cultivable crops to the detriment of animal husbandry. They improved valleys, lowlands to cultivate resistant crops such as cassava and sweet potatoes.
2. The colonial exploitation mechanisms were:
 - Forced work during the colonial period included planting of tree, carrying goods and chiefs, road construction, etc...
 - Compulsory crops included food crops such as cassava, sweet potatoes and cash crops like coffee
 - The fiscal system introduced in 1917, concerned capitation or poll tax which had to be obligatorily paid by all male adult Rwandans of sound, mind.

Skills lab

In groups and by reading different sources of information related to the colonial period of Rwanda, examine the negative effects of the Belgian colonization on your country you still observe today and propose different strategies that can be adopted to overcome them. Afterwards, present your work to the whole class.

REFERENCES

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- Ministry of Education, National curriculum development centre (2010), The history of Rwanda secondary school teacher's guide, module I&II, the Jomo Kenyatta foundation.

UNIT: 13

THE FIRST AND THE SECOND REPUBLICS OF RWANDA

13.1. Key Unit competence

The student-teacher should be able to examine the achievements and the failures of the First and the Second Republics of Rwanda.

13.2. Prerequisite (knowledge, skills, attitudes and values)

In order to study this unit, the student teachers should have knowledge, skills and competences on the following issues:

- Meaning of colonization.
- Causes and consequences of colonization of Rwanda.
- Different changes made in Rwanda by German and Belgian.
- Different colonial administrative policies applied in Rwanda

13.3. Cross-cutting issues to be addressed

Peace and values education

In this unit of the first and the second republics of Rwanda, the student teachers will learn how those republics instead of maintaining peace and security of Rwandans, they have motivated and prepared Rwandans to make genocide. Different bad values have been installed in Rwandans by the leaders of the first and the second republics which finally led to the genocide against the Tutsi in Rwanda.

Inclusive education

Through learning and teaching process of this unit, care will be given to all learners including SEN cases. At this time, all learners will be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities

Gender

This cross-cutting issue is particularly addressed in Section related to

First and the second republics of Rwanda. The tutor can help learners to understand how female were not equal to male in decision making either at home or in politics of the country. Help learners to understand that gender equity is a process to be achieved in different domains.

Genocide Studies

Dealing with unit on *First and the second republics of Rwanda*, the cross-cutting issue on genocide education will be addressed. In this regard, you can help student teachers to understand that it was the first and the second republics that have put into action the root causes and other causes that had led to genocide against the Tutsi in Rwanda. The student teachers will know the role of learning and understanding what happened in the first and the second republics of Rwanda in order to know them but mainly to help them to avoid the same mistake.

13.4. Guidance on introductory activity

At the beginning of this *Unit 13*, the introductory activity motivates student teachers to know what happens or will happen in this unit and help them to be passionate to know by the end of the unit what they did not know before. As they get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. This will help them identify some issues and open them to what they did not know and be inquisitive to know what happens in colonial Rwanda.

13.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Achievements of the first Republic	The student teachers should be able to explain the achievements of the First republic of Rwanda	6
2	Failures and downfall of the first Republic	The student teachers should be able to explain the reasons for the failure and downfall of the First republic of Rwanda	5

3	Achievements of the Second Republic	The student teachers should be able to explain the achievements of the Second republic of Rwanda	6
4	Failures and downfall of the second Republic	The student teachers should be able to explain the reasons for the failure and downfall of the Second republic of Rwanda	6
End unit Assessment			1

Lesson 1: Achievements of the first Republic

a) Learning objective

The student teachers should be able to explain the achievements of the First republic of Rwanda.

b) Teaching resources

There are many resources that can be used in teaching this lesson such as:

- **Textbooks:** student teachers social studies book and its tutor's guide and history student book for S3
- **Teaching materials:** a political map of Rwanda, economic statistics photos of the presidents Mbonyumutwa and Kayibanda, national identity card in the first republic, internet, testimonies, press media, tactile materials, braille materials can be availed if there are impaired learners.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the student teachers some questions related to First and the second republic by emphasizing on its achievements. In addition, student teachers should have some knowledge on the general information about the First and the second republic of Rwanda.

d) Learning activities

By using extracts from chosen text the tutor helps student teachers to identify and explain the achievements of the First republic of Rwanda.

The representatives of each team will make presentations. Thereafter, the tutor will invite the student teachers to take their textbooks and read the content summary on the achievements of the First Republic in Rwanda which will be followed by a synthesis.

e) Application activities

Answers to activity 13.1

The following are the political change done during the First Republic of Rwanda:

- Establishment of the constitution
 - A new government was put on
 - The national assembly was established
 - The Supreme Court was instituted in the first Constitution of the Republic of Rwanda
1. The economic achievements recorded by the First Republic, from 1962 up to 1973 are the following:
- The First Republic inaugurated some financial institutions like banks which helped to finance a few factories and industrial companies
 - In the sector of infrastructure, some projects had been conceived to macadamize all the road axes linking the country to the outside world in the frame-work of the five-year development plan (1966-1971). In order of priority, the following roads were to be macadamized:
Kigali- Gatuna; Kigali-Rusumo;
Kigali- Butare and Ruhengeri- Cyanika
 - The construction of the Rusumo Bridge at the Akagera River linking Rwanda and Tanzania and that of the Bridge over Nyabarongo River
 - The emphasis was placed on the reclamation of marshlands in order to improve agricultural production and the distribution of improved seeds and plants in some parts of the country.
 - There was introduction of new crops like rice.
 - Some cattle dips were put in place to fight ticks which attack cows.

Lesson 2: Failures and downfall of the first Republic

a) Learning objective

The student teachers should be able to explain the reasons for the failure and downfall of the First republic of Rwanda.

b) Teaching resources

There are many resources that can be used in teaching this lesson such as:

- **Textbooks:** student-teachers' social studies book and its tutor's guide and history student book for S3.
- **Teaching materials:** a political map of Rwanda, economic statistics, national identity card in the first republic, internet, testimonies, press media, tactile materials, Braille materials can be availed if there are impaired learners.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the student teachers some questions related to achievements of the First republic of Rwanda. In addition, student teachers should have some knowledge on the general information about the First republic of Rwanda.

d) Learning activities

The tutor organize the student teachers in groups. With help of extracts from chosen text the tutor asked student teachers to do the activity 13.2 found in the student teachers' textbook. After they will be a class presentation followed by harmonization.

e) Application activities

Answers to activity 13.2

1. The following are the main reasons for the downfall of the First Republic of Rwanda:
 - Regionalism
 - Institutionalization of discrimination against Tutsi
 - Need for constitutional amendment
 - The 5th July 1973 Coup d'état

Lesson 3: Achievements of the Second Republic

a) Learning objective

The student teachers should be able to explain the achievements of the Second republic of Rwanda.

b) Teaching resources

There are many resources that can be used in teaching this lesson such as:

- **Textbooks:** student teachers' social studies book and its tutor's guide and history student book for S3
- **Teaching materials:** a political map of Rwanda, economic statistics, national identity card in the first republic, internet, testimonies, press media, tactile materials, Braille materials can be availed if there are impaired learners.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the student teachers some questions related to factors for the downfall of the First republic of Rwanda. In addition, student teachers should have some knowledge on the general information about the second republic of Rwanda.

d) Learning activities

The tutor organize the student teachers in groups. With help of extracts from chosen text, the tutor prompts the student teachers to list down some achievements of the second republic of Rwanda. After they will be a class presentation followed by harmonization.

e) Application activities

Answers to activity 13.3

1. The political changes that were undertaken under the Second Republic are:
 - Creation and institutionalization of MRND
 - Constitution of 1978
 - Institutionalization of Communal work (*Umuganda*) and Facilitation by MRND
 - Ethnic and Regional balance

2. The socio – cultural evolution of Rwanda under the Second Republic :

- Under the Second Republic, many attempts were made like the expansion of the health sector, the dispensaries were transformed into health centers and more medical personnel were trained.
- In 1979 that the Rwandan Government established the Broad-Based Vaccination Programme (PEV/BVP) whose objective was to reduce infant mortality through vaccination against certain targeted diseases: tuberculosis, whooping cough, tetanus, polio, measles and diphtheria.
- In 1987, the Rwandan Government established the National Programme for the Fight against AIDS (PNLS) whose objective was to control, prevent, reduce and conduct research on AIDS.
- In education sector, some achievements were attained such as:
- The construction of new primary and secondary schools and many reforms have been made at all levels of education in Rwanda;
- In 1978 – 1979, the system of primary education teaching was revised. The primary cycle changed from 6 years to 8 years. Training in professional skills was introduced in Primary 7 and P8, and Kinyarwanda became a language of instruction from P1 up to P8.
- At the secondary education level, the Ordinary Level was reduced and specializations sections now started in the Second year of secondary education
- At University level, the national Institute of Education for Teacher Training was fused with certain department of the National University of Rwanda. The creation of the new campus at Nyakinama in the 1980 – 1981 was a result of this fusion. The duration of studies in the Faculties of Arts and Education was reduced from 5 to 4 years.

Lesson 4: Failures and downfall of the second Republic

a) Learning objective

The student teachers should be able to explain the reasons for the failure and downfall of the Second republic of Rwanda.

b) Teaching resources

There are many resources that can be used in teaching this lesson such as:

- **Textbooks:** student teachers' social studies book and its tutor's guide and history student book for S3.
- **Teaching materials:** a political map of Rwanda, economic statistics, internet, testimonies, press media, tactile materials, and Braille materials can be availed if there are impaired learners.

c) Prerequisites/Revision/Introduction

To begin this lesson, tutor can use revision by asking the student teachers some questions related to achievements of the First republic of Rwanda. In addition, student teachers should have some knowledge on the general information about the second republic of Rwanda.

d) Learning activities

The tutor organize the student teachers in groups. With help of extracts from chosen text, the tutor prompts the student teachers to list down some factors that led to the downfall of the second republic of Rwanda. After they will be a class presentation followed by harmonization.

e) Application activities

Answers to application activity 13.4

1. Explain with emphasis on the content summary provided in the student teacher textbook.
2. See the content summary on the downfall of the second republic of Rwanda mainly on mismanagement of the refugee problems.

13.6. Summary of the unit

From the points discussed by student teachers in their groups, class presentations, activities done in classroom and at home, come up with synthesis of this unit.

13.7. Additional Information for teachers

Independence (1962)

On 25 September 1961, a referendum was held to establish whether Rwanda should become a Republic or remain a kingdom. Citizens voted

overwhelmingly for a republic. After parliamentary elections held on the same day, the First Republic was declared, with Kayibanda as prime minister. Mbonyumutwa was named the first president of the transitional government.

Between 1961 and 1962, refugees staged attacks on Rwanda from neighboring countries. Rwandan troops responded, and thousands of people were killed in the clashes. On 1st July 1962, Belgium, granted independence to the two countries (Rwanda and Burundi). Rwanda was established as a Republic governed by MDR-PARMEHUTU, which had gained full control of national politics. In 1963, the refugees' invasion from Burundi unleashed another anti-Tutsi backlash by the Rwandan government and an estimated 14,000 Tutsi were killed. The economic union between Rwanda and Burundi was dissolved and tensions between the two countries worsened.

Kayibanda became Rwanda's first elected president, leading a government chosen from the National Assembly. Peaceful negotiation of international problems, social and economic elevation of the masses, and integrated development of Rwanda were the ideals of the Kayibanda regime. He established formal relations with 43 countries, including the United States, in the first ten years. Despite the progress made, inefficiency and corruption developed in government ministries in the mid-1960s.

The Kayibanda administration established quotas to try to increase the number of Hutu in schools and the civil service. This effort discriminated the Tutsi who were allowed only nine percent of secondary school and university vacancies. The quotas also extended to the civil service. With high unemployment levels, competition for position increased social tensions. The Kayibanda government also continued the Belgian colonial government's policy of ethnic identity cards, and also discouraged mixed marriages.

Following more violence in 1964, the government suppressed political opposition. It banned UNAR and RADER and executed the Tutsi leaders. The term *inyenzi* (cockroaches) was used to describe Tutsi rebels for what was perceived as infiltrating the country. As a result, hundreds of thousands of Tutsis moved to neighboring countries as refugees.

The Catholic Church was closely involved with PARMEHUTU, and they shared local resources and networks. Through the church, the government maintained links with supporters in Belgium and Germany. The Catholic newspaper Kinyanyamateka supported the government.

Second Republic

On July 5th, 1973, the defense Minister Maj. Gen. Juvénal Habyarimana overthrew Kayibanda. He suspended the constitution, dissolved the National Assembly and imposed a strict ban on all political activity.

In 1975, President Habyarimana formed the *Mouvement Révolutionnaire National pour le Développement* (MRND) [the National Revolutionary Movement for Development] whose goals were to promote peace, unity, and national development. The movement was organized from the grassroots to the national level and included elected and appointed officials.

Under MRND, a new constitution which made Rwanda a one-party state under the MRND, was approved in a referendum in December 1978. These were shortly followed by presidential elections a few weeks later. Habyarimana, as president of the MRND, was the only candidate on the ballot. He was re-elected in 1983 and again in 1988, each time as sole candidate. However, in a minor concession to democracy, voters were given a choice of two MRND candidates in elections to the National Assembly. Responding to public pressure for political reform, President Habyarimana announced in July 1990 his intention to transform Rwanda's one-party state into a multiparty democracy.

13.8. End unit assessment (answers)

1. see the content
2. see the content
3. see the content
4. see the content

13.9. Additional activities (Questions and answers)

13.9.1. Remedial activities

Questions

1. When did Rwanda recovered independence?
2. Who was the first president of the republic of Rwanda?

Answers

1. 1st July 1962
2. Gregoire Kayibanda

13.9.2. Consolidation activities

Questions

1. Give two reasons which led to the failure of the 1978/1979 education reform.
2. Give two achievements of the 2nd republic in the Health sector

Answers

1. The two reasons which were behind the total failure of the 1978/1979 education reforms were the lack of teaching materials, lack of qualified teachers in different subjects introduced under the reform curriculum for secondary education.
2. The two achievements of the second Republic in the Health sector were:

The national programme for the fight against AIDS (PNLS) whose objective was to control, prevent, reduce and conduct research on AIDS

The broad- Based Vaccination programme whose objective was to reduce infant mortality through vaccination against certain targeted diseases: tuberculosis, whooping cough, measles and diphtheria.

13.9.3. Extended activities

Questions

1. Explain different ways used by Kayibanda to eliminate the opposition political parties.
2. Explain any four reasons for the fall of the First republic of Rwanda.

Answers

1. Kayibanda used the following ways to eliminate opposition:
 - The MDR-PARMEHUTU eliminated or assimilated other opposition political parties
 - Intimidation and arbitrary arrests
 - Physical violence, for example the killing of RADER and UNAR leaders
 - Attracting APROSOMA leaders
2. The four reasons for the fall of the First Republic are:
 - Problem of refugees: Kayibanda regime refused to solve the problem of refugees scattered worldwide.

- **Ethnicism and regionalism:** Kayibanda used ethnic violence against Tutsi PARMEHUTU members from Gitarama monopolized the party and the government power, excluding the northern region.
- **Economic problems:** Food insecurity caused by shortage of land became common. Moreover, there was lack of infrastructure and financial means to support decent standards of living, and the poor functioning of the monetary and customs union between Rwanda and Burundi. There was a serious economic crisis due to deficits in balance of payments and inflation. For example, in 1964, inflation rose to 300 percent
- **Social problems:** There was lack of unity among Rwandans. A part of the population that was excluded from education and public service

Skill lab

In groups and by using different textbooks or internet, discuss how leaders of the First and second Republics had perpetuated the divisionism policy initiated by the colonizers. Then after, show how the same policy led to the perpetration of the 1994 genocide against Tutsi and at the same time suggest how the present-day leaders have to behave in order to avoid such errors. Afterwards, present your work to the whole class.

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UNIT: 14

THE 1990-1994 LIBERATION WAR IN RWANDA

14.1. Key Unit competence

The student teacher should be able to assess the causes and the consequences of the Liberation war of 1990-1994.

14.2. Prerequisite (knowledge, skills, attitudes and values)

In order to study this unit, the student teachers should have knowledge, skills and competences on the following issues:

- General information on the first republic of Rwanda
- General information on the second republic of Rwanda

14.3. Cross-cutting issues to be addressed

Inclusive education

Through learning and teaching process of this unit, care will be given to all student teachers including Special Education Needs cases. At this time, all learners will be given a quality and equitable education that meets their basic learning needs, and understands the diversity of their backgrounds and abilities

Gender

This cross-cutting issue is particularly addressed in Section related to *the 1990-1994 Liberation war in Rwanda*. The tutor can help learners to understand how female were not equal to male in decision making either at home or in politics of the country. Help learners to understand that gender equity is a process to be achieved in different domains.

Genocide Studies

With this cross-cutting issue, student teacher will be offered the opportunity to know about the genocide perpetrated against the Tutsi.

Peace and values education:

With this cross-cutting issue, student teachers will be enabled to have a better awareness of the root causes of conflicts, violence, and lack of peace and how they can build more peaceful families, communities, societies and ultimately a more peaceful world. They will also have positive values

14.4. Guidance on introductory activity

At the beginning of this *Unit 14*, the introductory activity motivates student teachers to know what happens or will happen in this unit and help them to be passionate to know by the end of the unit what they did not know before. As they get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. This will help them identify some issues and open them to what they did not know and be inquisitive to know what happens in liberation war of Rwanda.

14.5 List of lessons/sub-heading

#	Lesson title	Learning objectives	N u m b e r of periods
1	The causes of the 1990 – 1994 liberation war in Rwanda	The student teachers should be able to explain the causes of the 1990-1994 liberation war in Rwanda	4
2	The course of the 1990 – 1994 liberation war in Rwanda	The student teachers should be able to describe the causes of the 1990-1994 liberation war in Rwanda	4
3	The effects of the 1990 – 1994 liberation war in Rwanda	The student teachers should be able to explain the effects of the 1990-1994 liberation war in Rwanda	3
End unit Assessment			1

Lesson 1: The causes of the 1990 – 1994 liberation war in Rwanda

a) Learning objective

The student teachers should be able to explain the causes of the 1990-1994 liberation war in Rwanda.

b) Teaching resources

Learner's books and the photographs of the commanders of the Rwanda Patriotic Army like that of General Fred Gisa Rwigema. In schools with enough resources and means, a teacher can use a film.

c) Prerequisites/Revision/Introduction

To introduce this new lesson, invite learners to describe the situation that prevailed in Rwanda before the outbreak of the Liberation War of 1990–1994.

d) Learning activities

Organize learners into groups and then ask them to do activity 14.1 in their textbook (**See Learner's Book page 271**). To make a synthesis of the lesson, summarize the content that is in the student teacher's Book (**pages 271**) basing on the answers developed by the learners.

e) Application activities

Answers to application activity 14.1

1. see the content summary

Lesson 2: The course of the 1990 – 1994 liberation war in Rwanda

a) Learning objective

The student teachers should be able to describe the course of the 1990-1994 liberation war in Rwanda.

b) Teaching resources

Student teacher's books and a map of Rwanda showing the main battle fields of the Liberation War. In schools with enough resources, a teacher can use a film. Tactile maps and brailled materials. Sign language should be used when teaching learners with hearing impairment, etc.

c) Prerequisites/Revision/Introduction

Introduce this lesson by asking student teachers to mention some of the causes of the Liberation War.

d) Learning activities

Organize student teachers into groups and then give them the task of describing the course of the Liberation War in Rwanda. To make a synthesis of the lesson, summarize the content that is in the Learner's Book) basing on the answers developed by the student teachers.

e) Application activities

Answers to application activity 14.2

1. see the content summary

Lesson 3: The consequences of the 1990 – 1994 liberation war in Rwanda

a) Learning objective

The student teachers should be able to explain the consequences of the 1990-1994 liberation war in Rwanda.

b) Teaching resources

Learner's books and in schools with enough resources, the use of a movie is highly recommended so as to show some of the consequences of the Liberation war. Tactile maps and brailled materials. Sign language should be used when teaching learners with hearing impairment, etc.

c) Prerequisites/Revision/Introduction

Introduces this lesson by asking the student teachers to briefly describe some of the stages of the Liberation War through question and answer technique.

d) Learning activities

Organize student teacher into groups and then ask them to do activity 14.3. To make a synthesis of the lesson, summarize the content that is in the student teacher's Book basing on the answers developed by the learners.

e) Application activities

Answers to application activity 14.3

1. The liberation war has both positive and negative effects
 - a. Positive effects

- The loss of lives and destruction of properties
- The decline of the Rwandan economy
- Displacement and exile of many people
- b. Positive effects
 - Restoration of national unity
 - Fighting against the public malpractice
 - Establishment of the democracy
 - Improvement of the image of Rwanda
 - Promotion of good diplomatic relations with other countries

14.6. Summary of the unit

From the points discussed by learners in their groups, class presentations, activities done in classroom and at home, come up with synthesis of this unit.

14.7. Additional Information for teachers

The course of the Liberation War

The Liberation War was launched by the Rwanda Patriotic Front (RPF) and its armed wing (RPA) on the 1st of October 1990. The Rwandan Patriotic Front had been founded in 1987. At first it was composed of a group of exiles living in Uganda, led by the charismatic Major General Fred RWIGEMA. The RPF wished to re-establish national unity in Rwanda, establish true democracy and put an end to the question of refugees and dictatorship which characterized the 1st and 2nd republics of Rwanda between 1962 and 1994.

They first launched the attack in Umutara at the beginning of October 1990. The attack was not successful for many reasons. The death of Major General Fred RWIGEMA was one of the major setbacks of the struggle. After being pushed from the Umutara, the RPF resorted to using guerrilla tactics in the northern region of Rwanda commonly called volcano region. The choice of this region had many operational advantages for the guerrilla warfare. They captured Ruhengeri in January 1991 and liberated some political prisoners who had been incarcerated in Ruhengeri prison. Among them were Theoneste Lizinde, Biseruka and Brother Jean Damascene Ndayambaje.

On the 29th March 1991, the first negotiations between the RPF and the Government of Rwanda started shortly after the RPF seized Byumba.

In July 1992, a ceasefire was negotiated and signed in the Arusha Peace Agreement was signed between the RPF and the Habyarimana Government. An organisation of African unity force known as GOMN (*“Groupe d’Observateurs Militaires Neutres”*/ Neutral Military Group of Observers) was put in place to observe the ceasefire.

On November 15th, 1992, Habyarimana took an about turn and declared that what had been partially negotiated and agreed upon between his regime and the RPF was mere piece of paper rubbish and openly expressed congratulations to the Interahamwe killer militia of his MRND Party on the massacres they had just committed especially in the Northern part of the country. That way, he had made the ceasefire rather fragile by flagrantly violating its terms and working null and void. In reaction to those massacres, the RPF launched an offensive attack on the 8th of February 1993 which saw them capturing a large part of the country especially in the Northern region. In fact, the RPF were nearing the gates of Kigali, the capital because they reached Rutongo. But soon after, due to the International pressure to resume negotiations, the RPF returned to its former positions around Kinyihira.

On the 4th August 1993, the Arusha Agreement was signed. It was a political compromise for Power sharing between the Government and the RPF but on the 10th of September 1993, the “Broad-based Transition Government” failed to take off because Habyarimana refused to swear in the new government and Parliament in which RPF was to be part of.

In December 1993, the French military detach left and a United Nations Intervention Force arrived. It was a United Nations Peacekeeping Force known as UNAMIR (MINUAR) (United Nations Mission for Rwanda). Its mission was to supervise the implementation of the Arusha Agreement of 4th August 1993.

In December 1993, 600 soldiers of the 3rd battalion of the RPF arrived at the CND to ensure security of the RPF future Ministers and Members of parliament in the new Broad-based Transition Government.

On the 5th of January 1994, President Habyarimana was sworn in as president in accordance with the Arusha Agreement but blocked the swearing in of other members of the Broad-Based Transition Government.

On the 6th April 1994, the Presidential plane, the “mystere Falcon 50” was hit by a missile. The gunning down of the plane parked the beginning

of genocide against the Tutsi and the killing of some Hutu who did not approve the government's political extremism.

14.8. End unit assessment (answers)

1. See the content summary
2. See the content summary
3. See the content summary
4. See the content summary

14.9. Additional activities (Questions and answers)

14.9.1. Remedial activities

Questions

1. Give two the effects of the Liberation War
2. When did the liberation war start?

Answers

1. The effects of the liberation war are:
 - The first effect was is the death of Major General Fred Gisa Rwigema the chairman of RPF and the supreme commander of RPA. This death was a great loss for RPF.
 - Many soldiers were killed on both sides and others were wounded. There was also displacement of many people from their homes.
 - People were psychologically affected; properties were destroyed and so on...
2. The Liberation War started on October 1st, 1990.

14.9.2. Consolidation activities

Questions

1. The major effects of the liberation war on Rwandan society.
2. Explain the principal causes of the Liberation War in Rwanda

Answers

1. The major effects of the liberation war on Rwandan society

Negative effects:

- Major General Fred Gisa Rwigema was killed. It was a great loss for RPF.
 - Many soldiers were killed on both sides and others wounded.
 - Many people were displaced and their properties destroyed.
 - The genocide survivors suffered for a long time from “trauma”.
 - Abagowe people were massacred from 1991 to 1993 by the Habyarimana regime in retaliation to the RPA attack. Similar killings were carried out in Kibirira, Bugesera, Kibuye, Mutara and Murambi.
 - The liberation war led to the signing of the Arusha Peace Agreement in August 1993 whose purpose was to obtain lasting peace.
 - National unity, justice, and the end of segregation.
 - Corruption and favoritism, and embezzlement are being fought.
2. The principal causes of the Liberation War were:
- The long exile: Since 1959, Tutsi were persecuted and condemned to exile during the First and the Second Republics which refused to allow them to return to their mother-land.
 - Ethnic and regional divisions: The Tutsi were discriminated and regarded as second class citizens. Besides, regionalism was an obstacle to open political democratic space.
 - Intimidation and killing of opposition politicians: Kayibanda and Habyarimana regimes eliminated opposition by killing opposition politicians and banning other parties.
 - Increasing dictatorship in Rwanda: During the First and the Second Republics only one political party was allowed: MDR – PARMEHUTU for the First Republic and MRND during the Second Republic. Power was concentrated in hands of small groups and no single decision could be made without the approval of the president and his political party.
 - Participation of Rwandans in movements of national liberation: Some Rwandan refugees were enrolled in liberation struggles in Uganda and Mozambique.
 - Etc..

14.9.3. Extended activities

Questions

1. What are the roots of the Liberation War?
2. Describe three first steps of the Liberation War.
3. Analyse two effects of the liberation war.

Answers

1. The root causes of the Liberation War were the following:
 - The desire to return home of Rwandan refugees who had been in exile since 1959 due to violence, and massacres of the UNAR members, mainly Tutsi, committed by PARMEHUTU with the help of Belgian colonialists. Refusal by the government to allow the return of refugees.
 - Both the first and the Second Republics institutionalized ethnic labels (Hutu, Tutsi, Twa) in identity cards and the quota system (ethnic and regional equilibrium) in administration, in schools, in the army, etc.
 - During the First Republic, power was in the hands of a few people from some communes of Gitarama, and again a few people from some parts of the former Ruhengeri and Gisenyi prefectures during the Second Republic.
 - Intimidation and killing of opposition politicians: The regime of Habyarimana did not accept or tolerate any opposition. Any person who tried to oppose him suffered from long prison terms; assassinations were quite frequent as well. For instance, the former editor of Kinyamateka Newspaper, Father Sylvio Sindambiwe, and Félicula Nyiramutarambirwa, former member of the MRND Central Committee were murdered.
 - Increasing dictatorship in Rwanda: During the Second Republic, only one political party was allowed. This was MRND as it was stipulated by the 1978 constitution. All the powers were concentrated in the hands of a small group of the President's family and his in-laws. The group was also known as *Akazu*. No decision could be made without prior approval and or blessing of the President and his MRND.
 - Participation of Rwandans in other liberation movements: Rwandan's like Fred Gisa Rwigema who by 1979 had already been

involved in liberation struggles in Africa, especially in Mozambique, saw that the option of war would work for Rwanda.

2. Description of the first two phases of the Liberation War:

- On October 1st 1990, the Rwanda Patriotic Front (RPF) and its armed wing (RPA) launched the war of liberation which lasted almost four years. The reasons for starting the liberation war were: to restore national unity among Rwandans, establish true democracy and put an end to the question of refugees and dictatorship which characterized the First and the Second Republics of Rwanda between 1962 and 1994.
- The first attack was in Umutara and was not successful because of Fred Gisa Rwigema's death, RPA was pushed from Umutara and it changed tactics by practicing guerrilla warfare in the northern region of Rwanda commonly called the volcano region.

Skill lab

The tutor will help the student teachers in creation of the groups and invite them to read the extra from the textbooks. The tutor ask student teachers to analyze the roles played by major general Fred Gisa Rwigema and other heroes in the 1990-1994 liberation war in Rwanda.

To ask the student teachers different activities that can be done to be a hero.

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UNIT: 15

CAUSE, COURSE AND CONSEQUENCES OF THE GENOCIDE AGAINST THE TUTSI

15.1. Key Unit competence

The student-teacher should be able to explain the causes and consequences of the genocide against the Tutsi.

15.2. Prerequisite (knowledge, skills, attitudes and values)

As prerequisites to facilitate the teaching and learning of this unit the following elements should have been learned before:

- Definition and of genocide (1948 Convention and other legal instruments)
- Definition and features of other mass crimes.
- Differentiation of genocide from other mass crimes
- Causes of 1994 genocide against the Tutsi
- Planning and execution of the 1994 genocide against the Tutsi
- Role played by RPF/RPA to stop genocide against the Tutsi

15.3. Cross-cutting issues to be addressed

Peace and values education: With this cross-cutting issue, student teachers will be enabled to have a better awareness of the root causes of conflicts, violence, and lack of peace and how they can build more peaceful families, communities, societies and ultimately a more peaceful world. They will also have positive values.

Inclusive education: Care will be given to all student teachers including SEN cases. All learners should be given a quality and equitable education that meets their basic learning needs, and takes care of the diversity of their backgrounds and abilities.

Genocide Studies: With this cross-cutting issue, Rwandan student teachers will be offered the opportunity to know about the genocide perpetrated against the Tutsi people as well as other genocides, like the Holocaust.

Gender: With this cross-cutting issue, student teachers both boys and girls will be enabled to exploit their full potential and talents without any discrimination or prejudice.

15.4. Guidance on introductory activity

Give an activity that requires student teachers to be fascinated to know what happens or will happen in this unit and help them to be passionate to know by the end of the unit what they thought was not possible at the beginning. As they get engaged in the lesson, they themselves discover answers to the questions they were asking at the beginning. This will help them to identify some issues and open them to what they did not know and be curious to know about living together in Rwanda.

15.5. List of lessons/sub-heading

#	Lesson title	Learning objectives	Number of periods
1	Causes of genocide against Tutsi in Rwanda	The student teachers should be able to explain the causes of the genocide against the Tutsi.	7
2	Course of the genocide against the Tutsi	The student teachers should be able to explain the course of the genocide against the Tutsi.	9
3	Effects of genocide against the Tutsi	The student teachers should be able to explain the consequences of the genocide against the Tutsi.	7
End unit Assessment			1

Lesson 1: Causes of genocide against Tutsi in Rwanda

a) Learning objective

The student teachers should be able to explain the causes of the genocide against the Tutsi.

b) Teaching resources

Learner's books, and in schools well equipped with resources, use a film. Testimonies can also be used where it is possible. Tactile maps and

brailled materials. Sign language should be used when teaching learners with hearing impairment, etc.

c) Prerequisites/Revision/Introduction

To introduce this new lesson, ask student teachers to briefly give some meaning of the 1994 genocide against the Tutsi and its features.

d) Learning activities

Organize student teachers into groups and then invite them to do activities 15.1 that are in the student teacher's book. To make a synthesis of the lesson, summarize the content that is in the Learner's Book basing on the answers developed by the student teachers.

e) Application activities

Answers to application activity 15.1

1. The media played a key role in aiding the 1994 genocide against the Tutsi. The call to murder all Tutsi men, women and children was broadcasted over one of the two radio stations in Rwanda. Various newspapers, magazines, and television stations also called for and supported the 1994 genocide against the Tutsi. Examples are the Kangura and Umurwanashyaka magazines, the government owned Radio Rwanda and RTLM (Radio *Télévision Libre de Mille Collines*) radio and television station. The Kangura newspaper for example carried news that portrayed false ideology of "Hutu Majority" and "Tutsi minority". It claimed that all Tutsi were dangerous, and their intention was to clear the Hutus. It advised that that Tutsi needed to be dealt with before they launched their attacks on Hutus. In other publications, the newspaper negatively portrayed opponents of the government as traitors working with the RPF. The media also downplayed the state sponsored violence against innocent civilians that was being carried out under the disguise of security. It also coordinated and mobilized killings as well as ensuring that the plans of extermination were fully executed.
2. The Genocide against Tutsi was possible in Rwanda because of the following reasons:

It was planned by the government of the second republic, that is, all materials were bought, *interahamwe* were trained, all leaders were informed what was left was the spark off only.

Lesson 2: Course of the genocide against the Tutsi

a) Learning objective

The student teachers should be able to explain the course of the genocide against the Tutsi.

b) Teaching resources

Learner's books, and in schools well equipped with resources, use a film. Testimonies can also be used where it is possible. Tactile maps and brailled materials. Sign language should be used when teaching learners with hearing impairment, etc.

c) Prerequisites/Revision/Introduction

To introduce this new lesson, ask student teachers to briefly cause of the 1994 genocide against the Tutsi.

d) Learning activities

Organize student teachers into groups and then invite them to do activities 15.2 that are in the student teacher's book. To make a synthesis of the lesson, summarize the content that is in the Learner's Book basing on the answers developed by the student teachers.

e) Application activities

Answers to application activity 15.2

1. *Hirondelle* operation was violation of the cease-fire and breaking the fighting against RPF. By this operation, the Kigali City was "cleaned" using the list of the people to be killed just established.
2. The role of Jean Kambanda and Sindikubwabo Theodore in preparation of the 1994 genocide against the Tutsi are:
 - To convene and preside meetings of high ranked soldiers and political leaders which aimed at preparing and executing the Tutsi
 - Distribution of weapons like guns and grenades by prime minister Jean Kambanda
 - Sensitization of the population to commit genocide through speeches and meetings with local population for instance the speech of the president Sindikubwabo Theodore in Butare.

3. It should be noted that it was the RPF – Inkotanyi soldiers who stopped the genocide and everywhere they were scored victory over the genocidal forces. It was on 4th July 1994 with the liberation of Kigali City and Butare that the 1990 – 1994 liberation War was generally over and genocide stopped.

Lesson 3: Effects of genocide against the Tutsi

a) Learning objective

The student teachers should be able to explain the consequences of the genocide against the Tutsi.

b) Teaching resources

Learner's books, and in schools well equipped with resources, use a film. Testimonies can also be used where it is possible. Tactile maps and brailled materials. Sign language should be used when teaching learners with hearing impairment, etc.

c) Prerequisites/Revision/Introduction

To introduce this new lesson, ask learners to briefly give some causes of the 1994 genocide against the Tutsi and describe some of the steps taken by its perpetrators.

d) Learning activities

Organize learners into groups and then invite them to do activity 15.3 that are in the student teacher's book. To make a synthesis of the lesson, summarize the content that is in the student teacher's Book basing on the answers developed by the learners.

e) Application activities

Answers to application activity 15.3

1. The 1994 genocide against the Tutsi led to both human and environmental disaster.

It led to human disaster because in genocide against the Tutsi more than one million of men, women and children had been killed in 100 days. In addition, excessive degradation of human dignity was due to inhuman crimes committed during this genocide like cannibalism, raping even the burial of live people in some areas. In some areas also the killers mutilated the body of victims. It also led to environmental disaster

because this genocide had caused the devastation of the environment. For instance, many forests had been cut down, huge plantations had also been damaged, and number of domestic animals belonging to the Tutsi had also been slaughtered and consumed.

2. At the end of the 1994 genocide against Tutsi, more than one hundred thousand suspected of having participated in committing genocide had been apprehended and imprisoned. Considering the big number of these prisoners who waited to be judged, it was difficult to give justice to both victims and prisoners in a reasonable period.
3. Women are the category of people that deeply suffered during the 1994 genocide against the Tutsi because of the following reasons:
 - Many women were died
 - Many women get HIV/AIDS
 - Women were raped
 - Many women became chiefs of the family
 - Genocide led to widow and widower
4. Other effects of the 1994 genocide against the Tutsi are:
 - A climate of suspicion and mistrust also prevailed in the country
 - The Gacaca court was created by organic law no. 40/2001 of 26/01/2001 to judge a big number of alleged culprits of the 1994 genocide against the Tutsi.
 - Rwanda international image was tarnished.
 - Because of the 1994 genocide against the Tutsi, more than two million of Rwandans fled the country and established themselves in neighboring countries in refugees camps.
 - Due to 1994 genocide against the Tutsi, Rwanda became an epicenter of genocide ideology in the great lakes' region.

15.6. Summary of the unit

From the points discussed by student teachers in their groups, class presentations, activities done in classroom and at home, come up with synthesis of this unit.

15.7. Additional Information for teachers

Effects of the 1994 genocide against the Tutsi

The 1994 genocide against the Tutsi caused a lot of harm in Rwanda.

Very many people were killed, a lot of property was destroyed, and very many people were displaced from their homes. Many children and women are still suffering the consequences of those horrible acts. Rwanda is still suffering from the wounds of these 100 days of genocide against Tutsi. The problem started in 1959, when the Tutsi were forced out of Rwanda. Many Tutsi fled the country and went to live in neighboring countries.

In 1973, another big number of Tutsi were also forced to leave the country. In 1987, Rwandan refugees formed the Rwanda Patriotic Front, and then in 1990, many men left their families to fight and return to their homeland.

In April 1994 after President Habyarimana's plane was shot down, the genocide against Tutsi started and lasted for 100 days. In the 100 days, 1 million Tutsi were killed using machetes, knives, grenades, bullets, etc.

Women were raped, parents were killed in front of their children, and very many people got serious injuries and wounds.

In July 1994, the Rwanda Patriotic Front's soldiers stopped the genocide against the Tutsi, captured power, and immediately ordered a cease fire.

More than two million Hutu fled from the country to the Democratic Republic of Congo, Burundi and Tanzania.

Many of the Tutsi who survived these killings are traumatized, because of what they experienced and witnessed.

During the 1994 genocide against the Tutsi, very many buildings, including hospitals, schools, churches, roads and business centers were destroyed.

Widows

Many women lost their husbands in the 1994 genocide against the Tutsi. Most of these women had no means of economic survival.

Raping of women

In the 1994 genocide against the Tutsi, the Interahamwe militias raped women and young girls. Some of these Interahamwe were HIV positive, and hence infected some of the girls and women. In addition, there were unwanted pregnancies as a result of rape.

Destruction of infrastructure

During the 1994 genocide against the Tutsi, a lot of public and private infrastructure including schools, hospitals, roads, homes, business

centres and other buildings were destroyed. Homes of Tutsi were also destroyed.

Poverty

After the 1994 genocide against the Tutsi, many people suffered from poverty and could not afford basic needs.

15.8. End unit assessment (answers)

Suggested answers to end unit assessment

1. Different causes that led to the outbreak of the 1994 genocide against the Tutsi in Rwanda are:
 - The loss of cultural identity
 - The hatred culture of Rwandans vis-à-vis other Rwandans under the two Republics
 - Institutionalization of untruthfulness and the culture of impunity
 - The poor management of resources and poor conditions of life
 - The social inequality
 - The ethnic based ideology
 - The bad governance under the two First Republics
2. The following are the cruelty committed during the 1994 genocide against the Tutsi: cannibalism, raping even the burial of live people in some areas. In some areas also the killers mutilated the body of victims.
3. The genocide had many consequences. Among them there are some which are economic:
 - Destruction of infrastructures (public and private buildings, roads...) industry and basic infrastructure were also destroyed.
 - Weakened economy: agricultural production for subsistence and for export was reduced.
 - Deterioration of trade balance due the falling prices and quantities to be exported
 - The exploitation of land is completely paralyzed by the extermination of a part of the population others left their home and are either outside of the country or in camps inside the country.
 - Banks, state and private properties were looted

- Tourism sector which was one of the pillars of the national economy remained stalled during armed conflicts
 - The debt burden inherited from the outgoing regime weigh heavily on the economy: the regime had taken out loans to finance the war and the genocide.
4. It started later because its prefect, Uwizeye Fidele, disagreed with others authorities and it started after his dismissal from the power by Prime Minister Jean Kambanda.

15.9. Additional activities (Questions and answers)

Questions

1. Evaluate the effects of the genocide against the Tutsi that are still visible
2. Describe the major steps of the genocide against the Tutsi

Answers

1. The following are the effects of the genocide against the Tutsi that are still visible in Rwanda:

• A big number of genocide survival	being
• Economic decline	• Suspicion among Rwandans
• Loss of productive human	• Traumatism
	• A big number of orphans

2. ***The following are the major steps of the genocide:***

- The night of April 6th-11th April 1994: Assassination of Prime Minister Uwilingiyimana Agatha, 10 Belgian UN Peacekeeping soldiers, several ministers, opposition political leaders, business people and civil servants in Kigali City.
- After the 11th April 1994: horror had spread throughout the entire country except Gitarama and Butare
- April 12th 1994 the government flees the capital and settles in Gitarama
- April 19th 1994: Butare plunges into genocide and massacres after the inflaming speech of Sindikubwabo who had openly authorized and recommended them. After April 21st it was now the turn of Gitarama to sink low in genocide.

- Finally, it should be said and registered that it was the RPF which stopped the genocide everywhere they scored victory over the genocidal forces.

15.9.1. Remedial activities

Questions

1. Give four consequences of the 1994 genocide against the Tutsi.
2. Explain any two causes of the 1994 genocide against the Tutsi.

Answers

1. See the content summary
2. See the content summary

15.9.2. Consolidation activities

Questions

1. Explain the consequences of the genocide against the Tutsi in Rwanda that are still visible
2. Assess the role of colonial masters in preparation of the genocide against the Tutsi.

Answers

1. The consequences of the genocide against the Tutsi that is still visible on Rwandans
 - Orphans
 - Widower and widow
 - Decline of economy
 - Ruins of properties and infrastructure
 - Traumatism
 - Degradation of the Rwandan image towards some countries
2. The role of the colonial masters in preparation of the genocide against the Tutsi are:
 - Creation and distribution of identity card that contain three ethnic groups
 - Creation of disunity among Rwandans through the use of divide and rule policy

- Encouraging the so-called Hutu to make coup d'Etat of Gitarama
- Different measures to weaken the power of the King
- Destruction of the Rwandan values
- Implementation of different political and administrative reforms

15.9.3. Extended activities

Questions

1. Assess the effects of the genocide against the Tutsi on Rwandans
2. The Habyarimana's airplane crash some said to be the spark off of the 1994 genocide against the Tutsi. Discuss.

Answers

1. The effects of the genocide against the Tutsi on Rwandans are :
 - Loss of lives
 - Destruction of properties and infrastructures
 - Economic decline
 - A lot of widower and widow
 - Many orphans
2. Habyarimana's death was not a root cause of the Genocide against the Tutsi because even long before he died, mass killings had already started in places like Kibirira (1991), Bigogwe (1991), Murambi (1991), Bugesera (1992), Kibuye (1993), etc. His death was just a spark as the genocide against the Tutsi had been planned earlier on.

Skill lab

The tutor will organize the field trip at genocide memorial site at Gisozi and ask one part of the student teachers on the cause, course and the consequences of the 1994 genocide against the Tutsi and another part on achievements and challenges of the Rwandan government after the genocide against the Tutsi and make an essay writing. After the student teachers will make a presentation which will be followed by harmonization of the work. The tutor will proceed by inviting the student teachers to carry out different activities that can be done by them to fight against the genocide against the Tutsi and the genocide ideology at school, at national level and on the world in general.

● UNIT: 16

BASIC ECONOMIC CONCEPTS AND THE IMPORTANCE OF ECONOMICS

16.1: Key unit competence:

Be able to use the basic concepts of economics appropriately and appreciate the role of economics in society.

16.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related subjects like entrepreneurship and geography and in daily life experience to economics, since economics is concerned with man's living styles and conditions in everyday life. However, student teachers may not have the capacity to apply it in the field of economics without the guidance of the tutor. It is vital to note that, student teachers already have a handful of skills from other subjects and their daily life experience that can enable them to understand and master this unit's subject matter.

This subject being new in year 1, student teachers need to be guided on how to relate it with other subjects and tackle or handle economics discussions and analysis in turn. They should be guided to discover that economics, as a subject, deals with real life issues in their daily lives, thus appreciate its study. They too need to understand that, Economics is not all about money, as many others may think, but it is about weighing different choices or alternatives; some of which, may involve money, but most do not. However, they should know that in many cases, money is merely a helpful tool or just a veil, standing in for a partial way to evaluate some of the goals we really care about and how we make choices about those goals. Therefore, economics is a wider thing than just use of money in daily life. All this guidance forms a basis upon which a tutor can build to take through the student teachers up to the end in this Unit and the whole study of economics.

Therefore, as a tutor, it would be good to always draw examples from other related subjects and real-life situations to make a clear connectivity between economics and the student teachers' experience of what they

already know and face and what is yet to be studied. It is good to always remember that there is a direct link between Economics and social life, therefore student teachers should be guided on how to draw conclusions and interpret the economic and social phenomena and data especially those that affect them directly and their societies, thus be able to act accordingly with thoughtfulness.

16.3: Cross-cutting issues to be addressed:

There is a wide range of cross-cutting issues that can be integrated into the teaching of Unit 16 in year 1. This implies that, understanding the basic economic concepts and the importance of economics can be related to specific cross-cutting issues. For example, when teaching this unit, it is important to emphasize to the student teachers the need for proper use of resources especially **financial resources**, emphasize the need for budgeting in the process of using the scarce resources to satisfy their unlimited wants.

Emphasize the importance of **environmental conservation** when teaching this unit as well. Explain to the student teachers that in order for development to be sustainable, as they exploit resources to meet their unlimited wants, they should be able to conserve the environment so that the future generations can access them as well.

Furthermore, the activities, language and instructional techniques used in class, should enable the tutor to fittingly integrate other cross-cutting issues e.g.

- Inclusive education like engaging all student teachers in class activities and discussion without discrimination,
- Peace and values education by handling class environment in an orderly and peaceful manner,
- Gender education like using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc.

Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other data that may be related to a given cross-cutting issue that he or she needs to integrate.

16.4: Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity. It enables the student teachers to

connect the knowledge, skills, attitudes and values already acquired in other subjects and in real life and the new unit title and subject they are to study. In this case, it tests the level of student teacher's understanding of the subject matter of economics they may be already having. For example, the case study provided in the introductory activity, challenges them to identify from it, the meaning and basis of economics as a subject and who needs to economise.

For instance, in the introductory activity,

- a) On why Mr. and Mrs. Niyorembo would not provide all that their children requested for at the time they were asked to, student teachers may discover that it is because the two parents had inadequate resources to fulfill what it required to satisfy everything by everyone at home.
- b) A student teacher can list down the so many things he/she requires or even needs to do in life depending on each individual's wants and needs. They automatically will say they cannot fulfill or access them all at ago because resources to do so are not in their reach.
- c) They may try to identify the field of study they would put the above scenario in their own perspective, but as a tutor you will need to guide them at the end of their discussion that it is **Economics**.
- d) On who needs the knowledge of economics and when, after student teachers pointing out their views, the tutor guides them towards the idea that everyone at any time needs to economise in their daily life by making right decisions on doing what is most important at that very moment of need and fulfilling others later at a time where resources are available. These decisions can be financial or non-financial.

It should be noted that, as student teachers get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. This will help them identify some issues and open them to what they did not know and be inquisitive to know more about certain economics issues.

16.5: List of lessons/ subheadings:

#	Lesson title	Lesson objectives	No. of periods.
1	Meaning and origin of economics:	• Explain the meaning and origin of studying economics. • Appreciate the power of economics in describing and influencing aspects of society	2
2	Importance of studying economics	Describe the importance of studying economics	1
3	Basic terms used in economics.	• Explain and Use economic terms appropriately when describing the importance of economics • State the different economic agents in an economy. • Analyse the contribution of the different economic agents to the development process of Rwanda.	4
4	Economic Systems.	• Identify types and roles of various economic systems. • Justify the economic system under which the Rwandan economy operates.	4
End unit assessment.		• Use the basic concepts of economics appropriately and appreciate the role of economics in society.	1

Lesson 1: Meaning and origin of economics:

a) Learning objective:

- Explain the meaning and origin of studying economics.
- Appreciate the power of economics in describing and influencing aspects of society

b) Teaching resources:

Relevant Text books, stationery (papers), computers, internet access.

c) Prerequisite/Revision/introduction

This is the first lesson. It seems small but it is allocated 2 periods because, being the introduction to the unit and more so to Economics as a new subject to them, student teachers have to be given some ample time to get introduced to economics as a subject and used to modalities of discussing economics issues. However, the tutor must be aware of time management.

The tutor should guide the students to find out the meaning of economics and its origin. This is done by asking them to first give their own views on what they think is economics then after, allow them carry out research on the meaning and origin of economics from the textbook or internet, as they compare with what they had in their minds.

As a tutor, you should organize the class in a convenient and most effective way of making the lesson interactive. For example, basing on the size of the class, you can have the student teachers in pairs or groups and ask them to share their views on what they think economics is, how it came into existence (origin), and compare their views with their research findings, then after, they share to the class as plenary.

The tutor should also be equipped with necessary and appropriate information: materials and methodology that will enable him/her guide the student teachers in their research and discussion, and attend to their questions appropriately. This will make the student teachers enjoy the lesson.

Tutor should finally harmonize student teacher's findings/ views to enable them take a consented conclusion about the lesson.

d) Learning activities

i) Guidance to the learning activity 16.1:

Basing on activity 16.1, put student-teachers in groups or pairs and ask them to briefly share their views on what they think is the meaning of economics. Let them share their views in plenary.

- Provide them with research questions to analyse the different economist's definitions. In this case they use written documents like internet, newspapers and related economics textbooks. For the internet, the tutor can guide them on how to use it to facilitate their search by giving them the relevant web sites..
- After their findings, student-teachers can be asked to discuss briefly amongst themselves for more clarity. This builds trust and cooperation amongst themselves, alongside promoting friendship and teamwork spirit.
- Then the tutor invites different groups or pairs, (one at a time) to briefly present their findings to general class. This inculcates in them the spirit of public speaking skills and self-confidence.
- The tutor sums up the student-teacher's findings to have a general consensus on the meaning and origin of economics. The tutor should stress out that there is no one general definition of economics, but student-teachers should know that, while defining economics, they have to state whose definition they are to use. For example, one can say, economics according to **Lionel Robbins** is defined as "a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses". Or according to **Alfred Marshall**, Economics is defined as "a study of man in the ordinary business of life".

ii) Answers to activity 16.1:

- a. Let learners express themselves on what they think is economics. Respect their views because it's what they think.
- b. Refer to the definitions of economics by the different economists in the learner's book, under the subheading "Meaning of economics".
- c. Let learners express their views on what the difference is, basing on their perspective after research.
- d. Refer to the learner's book on the origin of economics.

e) Application activity 16.1:

This activity, in the student-teacher's book, is meant to gauge the student teacher's level of knowledge, skills, values and attitudes gained in the due course of the lesson. This puts the tutor in position to measure the level of understanding by the different student teachers, thus take right actions after the lesson.

Answers to the application activity 16.1;

- a. Based on the knowledge and understanding gained from the research and discussions, let the student teachers now express themselves on the definition of economics according to different economists as stated in the student teacher's book under subheading 16.1.1.
- b. The major basis of economics is **scarcity**. i.e. economics rotates around scarcity. If it wasn't the scarcity of resources, there would be no need for man to economise. He would be fulfilling all his wants at any time with ease.
- c. The origin of economics still remains as it is in the student teacher's book under sub title 16.1.2.

Lesson 2: Importance of studying economics

a) Learning objective:

- Describe the importance of studying economics.
- Appreciate the power of economics in describing and influencing aspects of society.

b) Teaching resources:

Relevant Text books, stationery (papers), computers, internet access.

c) Prerequisite/Revision/introduction

In this lesson, the student teachers link up with what they studied in the previous lesson about what economics is, its origin and who needs to economise, so that they can discuss the importance of economics. The tutor can decide on brainstorming about the meaning and origin of economics to review the previous lesson and this helps the student teachers to reflect and base on that to present their views on why they study economics.

d) Learning activities

i) Guidance to the learning activity 16.2:

- Use of question and answer discussions on the importance of studying Economics.
- Make sure that all student teachers participate in the discussion ensuring that even slow learners are also involved in the discussion. This will make the learners enjoy the lesson.
- The tutor should finally harmonize learners' findings/views to enable them take a consented conclusion about the lesson.

ii) Answers to activity 16.2:

- (a) The possible professions one would pursue for higher studies after the study of Economics course in TTC include among others teaching, management, environment studies, international relations, accountancy, banking, statistics, demography etc. Let student teachers mention others they think require the knowledge, skills, values and attitudes from the economics background.
- (b) Economics prepares them to pursue those professions in future by equipping them with;
- Mathematical knowledge and skills required in accountancy, statistics etc.
 - Entrepreneurial ability to start up different business activities and run them efficiently.
 - Skills to economise resources efficiently and avoid environmental destruction for environmental sustainability.
 - Understanding the basic economic concepts and principles and how to apply them in daily life.
 - Knowledge and skills required for them to fully participate in the economic activities aimed at developing their economies.
 - Knowledge and skills required in various fields as policy makers and economic planners.
 - Understanding human behaviour and in cultivating analytical and argumentative skills that are crucial for winning employment in the present-day labour market.
- c) Guide student teachers, having discovered that the study of economics revolves around scarcity, to understand that scarcity of resources

brings about such economic problems like unemployment, inflation, and high pollution growth rates. For example,

- Due to scarcity of resources, all people cannot get jobs that match the growing population.
- Also, they gain understanding and analytical skills about population problems, by investigating the relationship between the high population growth rates in relation to scarce resources.
- The scarce resources have led to limited supply of commodities causing scarcity inflation.

Therefore, the study of Economics will help student teachers to identify and interpret the effects of the major economic events and problems that have taken place in their society or country as discussed above.

d) As we have seen that the basis of major economic problems is scarcity of resources in an economy, the study of economics will help student teachers to use the knowledge and skills to identify and find solutions to the problems identified above in the following ways.

- It prepares student teachers with knowledge, skills and values of curiosity i.e. as they observe things that have been or are happening, relate them with what they study, analyse the cause and results thus draw conclusions. This will help them in solving or providing tangible solutions to such problems or approach the relevant authorities for the solution implementation.
- Through the interactive methods used in the learning of economics, it helps student teachers to work together in teams, promote cooperation that enables them to work collectively towards achieving a common goal.
- The research methodology used in the study of economics, promotes the attitude of lifelong learning which makes them more curious towards analysing the cause, effect and propose solutions to certain economic issues and events that might be in their means to solve.
- Through educational tours that student teachers may undergo, they may understand better the economics phenomena they study in class and work together towards solving any problem that might be a threat to the economy of their country and where possible the world over, since a problem in one country may be a global problem.
- Economics instills in student teachers a value of responsibility,

where in its study technics, they are made to effect tasks apportioned to them and are prepared to always take good care of the resources given to them.

e) Application activity 16.2:

The study of economics is important to the society in the following ways.

- Economics helps individuals identify the policy measures for attaining sustainable growth path with which the countries have to make so as to attain economic progress, thus take due measures to attain sustainable growth in their economies.
- Helps individuals to take economic analysis so as to find major sources of growth of low-income countries, therefore, advocate for capital accumulation, increases in the size and quality of labour force, technological improvement and efficient management of natural resources.
- Study of economics helps a person in understanding of human behaviour and in cultivating analytical and argumentative skills that are crucial for winning job in the present-day job market thus solving unemployment problems in the society.
- Studying economics equips individuals to take better decisions leading to increasing the economic security and well-being of the people and society.
- The field of study of economics provides one of the most important and relevant skills for the world today by helping us choose wisely when it comes to our personal, social and professional lives.

Lesson 3: Basic terms used in economics

a) Learning objective:

- Explain and use economic terms appropriately when describing the importance of economics.
- State the different economic agents in an economy.
- Analyse the contribution of the different economic agents to the development process of Rwanda.

b) Teaching resources:

Student teacher's Economics book, Economics journals, internet access and Economics magazines.

c) Prerequisite/Revision/introduction

Since student teachers are now familiar with Economics as an area of study, review the previous lesson through brain storming the importance of studying economics and then connect to the new lesson. Thereafter, list a few concepts used in economics and find out from the student teachers the meaning of those concepts. When teaching this lesson, begin with the very familiar concepts such as resources, wealth, goods to make it easy for the learners to grasp these concepts.

d) Learning activities**i) Guidance to the learning activity 16.3 and 16.4:**

The tutor can decide on any appropriate methodology like brainstorming, pairs, or group work to share the different selected terms used in economics. These two activities are still covering the terms used in economics since the terms are diverse. Whether pair or group work, tutor can decide to give each pair or group its own term to discuss about from the textbooks or the internet, so that all student teachers participate in the discussion ensuring that even slow learners are also involved in the discussion. This will make the learners enjoy the lesson. The tutor should finally harmonize learners' findings/views to enable them take a consented conclusion about the lesson.

ii) Answers to activity 16.3:

All these terms in activity 16.3 plus more others are in the student teacher's book. Therefore, refer to the student's book under subheading 16.2.1 to 16.2.11, for the following

- a. Meaning of price, commodities, goods, services and market.
- b. Difference between wealth and welfare.
- c. Difference between needs and wants.
- d. Meaning of Resources
- e. Meaning and components of economic agents.
- f. Identification and forms, characteristics, advantages and disadvantages of different economic systems.

iii) Answers to activity 16.4:

- a) Based on **Munana's** scenario in the activity, his **needs** are rent, food, School fees for his children, medication and transport fee to and from his work **while his wants** are smart phone, going out for a picnic with his family, buy jewelries for his wife and plait his daughter's hair.
- b) Between needs and wants, needs are basic because one cannot live without them. They pose a threat to one's living in case they are accessed. Wants are not basic because one can live without them and still has no threat to his life.
- c) This last question needs one to give his or her views first on which to fulfill first but at the end guide them to the view that one has to full fill needs first before wants since one must attain them to survive. They should also be made to recall that, if it was not for scarcity of resources, all would be fulfilled at ago since resources at their disposal would be enough.

e) Application activity 16.3:

This activity, in the student teacher's book, is meant to assess the student teacher's level of knowledge, skills, values and attitudes gained in the due course of the lesson. This puts the tutor in position to measure the level of understanding by the different student teachers, thus take right actions after the lesson. It can be done through brain storming where the tutor asks different student teachers by show of hand to describe the role of any economic agent towards the development process of the economy.

Answers to the Application activity 16.3:

1. The question requires the student teachers to use their understanding from some of the basic concepts studied and relate to the usual terms used in daily life to categorize them into either goods or services.

Category (A) Goods	Category (B) Services.
Cars, houses, chairs, beds, refrigerators, flasks, textbooks, pens.	Education, healthcare, communication, tourism, entertainment, banking, research.

Products in category A are goods because they physical or tangible, while those in category B are non-physical or intangible. However, they both aid in satisfying human needs and wants.

2. The contribution of each economic agent towards the development of the economy.

Here student teachers have to first identify the economic agents. i.e. households, firms, the government and the foreign sector. Having understood what each agent is all about, the tutor guides the student teachers in their discussion about the contribution of each agent towards development of the economy. i.e.

a) Households:

- Supply resources used in production e.g. Labor and land
- To satisfy their needs and wants, they consume products produced by firms thus provide ready market for investor's products which encourages further production in the economy.
- In addition, households are engaged in certain non-remunerative types of productive activities such as child rearing, cooking, cleaning, household maintenance and repairs.
- They pay taxes to the government as a source of government revenue

b) Firms:

- They transform raw resources into useful goods and services which are then sold to consumers/ households or other firms for a profit. They are the producers of goods and services in an economy, which increases national output
- They pay taxes to the government as a source of government revenue.
- Employ resources for production process thus reducing unemployment in the economy.

c) Financial sector:

- They channel funds from surplus spending units to deficit spending ones which promotes credit accessibility for either consumption or investment in an economy.
- They too pay taxes to the government.
- They help in monetizing the economy in providing credit facilities for commercial purposes.

d) Government sector:

- Care taking- administers and coordinates the provision of justice, national defense and foreign relations.

- Provision of services- provision of public health, police and fire protection, public roads, schools, parks, facilities, transportation and communication services.
- Social protection- Provide old age pensions, unemployment insurance, welfare payments, family allowances etc. all which improve citizens standard of living.

e) Foreign sector:

- Promotes inter-connections of the country's economy with the rest of the world for example through exportation and importation.
- Helps in technology transformation and exchange of ideas and skills between or among national economies thus promoting quick economic growth and development.

Lesson 4: Economic Systems.

a) Learning objectives:

- Identify types and roles of various economic systems.
- Justify the economic system under which the Rwandan economy operates.

b) Teaching resources:

Text books on Economics.

Newspaper articles on economics.

Internet access.

Audio media and economics journals.

c) Prerequisite/Revision/introduction

From the knowledge skills, values and attitudes gained by the student teachers about economic agents, they can be guided on the fact that these agents need to be organized into one unit to efficiently allocate and utilize resources into productive activities for the development of the economy. Therefore, as a tutor, review the previous lesson through brainstorming making them state the different economic agents and their role in development of the economy,

Tutor guides student teachers to discover that organized economic agents form one large unit called an economic system. Thus, introduce them into a new lesson about economic systems.

d) Learning activities

i) Guidance to the learning activity 16.5:

Tutor can decide on any appropriate methodology like using pairs or group work to enable learners make research about economic systems as required in the activity.

Whether pair or group work, tutor can decide to give each pair or group all questions to research on in textbooks or from the internet, so that all student teachers gain some hint on all questions and thus be able to participate in the discussion in plenary after research.

Ensure that even slow learners are also involved in the discussion in one way or the other. This will make all the student teachers enjoy the lesson and acquire relevant knowledge, skills and values at more or less the same pace.

Tutor should finally harmonize learners' findings/views to enable them take a consented conclusion about the lesson.

ii) Answers to activity 16.5:

For all the questions in activity 16.5 refer to the student book under subheading 16.2.12.

e) Application activity 16.3

This activity, in the student-teacher's book, is meant to assess the student teacher's level of knowledge, skills, values and attitudes gained in the due course of the lesson. This puts the tutor in position to measure the level of understanding by the different student teachers, thus take right actions after the lesson. It can be done through brain storming where the tutor asks different student teachers by show of hands to describe, with relevant examples in the country, the economic system they think Rwanda operates. Student teachers should be left to first analyse all economic systems and state which economic system they think Rwanda operates with supporting reasons.

Tutor summarizes the lesson by stressing that Rwanda operates a mixed economic system because all the characteristics of a mixed economic system that exist in Rwanda.

Refer to 16.2.1. C.

16.6. Summary of the unit:

- Economics is defined by different economists; thus, no simplified definition of economics exists. However, Lionel Robbins definition has by far been widely used to define economics.
- The modern word “Economics” has its origin in the Greek word **“Oikonomos”** meaning a steward. This word can be divided into two parts, **“Oikos”**, meaning a house and **“nomos”**, meaning a manager. The sum up of the two words is what economics is all about. Literally, ***Oikonomos means house manager.***
- The study of Economics is important to the learner, and the society at large as seen in the unit.
- There are different terms used in economics and everyday life by economists and other people in their analytical speeches and problem-solving approaches. Like goods, services, market, prices, wealth, resources, economic agents etc.
- Different countries in the world operate under different economic systems as a way of resource allocation and utilisation. Therefore, we differ in economic ideologies worldwide. Some are having laissez faire economies; others have socialistic economies while others have mixed economic system.

16.7. Additional information for the Tutor:

Examples of Some countries with little or no government interference include countries like Switzerland, Ireland and Ukraine (Europe), Mauritius (tiny island), Botswana (sub-Saharan Africa), Chile (In Central and South America) etc.

Examples of some economies guided and fully controlled by the government with no freedom of private individuals in allocation and utilization of resources include; North Korea, Cuba, Former USSR, Algeria, Angola, Bangladesh, Guyana, India, Mozambique, Portugal, Sri Lanka, and Tanzania: These countries all expressly state they are socialist in their constitutions. Their governments run their economies. All have democratically-elected governments. However, there are no countries that are 100% socialist, for example, Cuba, China, Vietnam, Russia, and North Korea: These countries incorporate characteristics of both socialism and communism. Belarus, Laos, Syria, Turkmenistan, Venezuela, and Zambia: These countries all have very strong aspects of governance, ranging from health care, the media, or social programs run by the government.

A good may be free at the point of use, but not classed as a 'free good'! For example, to visit the doctor is 'free' for people in some hospitals. However, we have to pay the doctor through taxes. Therefore, health care is not an example of a free good. If we devote resources to health care there is definitely an opportunity cost.

Guidance to skills lab. 16

1. Basing on knowledge gained from positive and normative statements, let the student teachers make research on school setting; observe and even interview school leaders on how things are working in the school. And then in their small groups come up with suggestions of how things should be and then present it to the tutor or administrators making development policies for the school.
2. The tutor guides student teachers on how to handle a talk with ordinary level secondary leavers on the choice of combinations based on the purpose of the study of economics. Thereafter, they convince those students to take economics courses in TTC's

16.8: End unit assessment

Answers to end of unit assessment.

1.a) Economics was defined by many economists differently, which one do you think is most appropriate and why?

From the different definitions of economics, refer to all definitions in the student teacher's book subheading 16.1.1; many economists consider Robbins' definition the most appropriate. This is because:

- It gives the fundamental causes of the economic problems such as unlimited human needs, limited means to satisfy man's needs, the alternative uses for the resources and the different importance of wants.
- Robbins' definition emphasizes scarcity as a foundation of Economics, otherwise without scarcity, there would be no Economics.
- Man's problem is not accumulating wealth, but satisfaction of human needs.

b) Explain why you would put more strength in studying Economics.

One would put more emphasis on studying economics because of its importance to him or her and the society. Refer to importance of studying economics in unit 16 under subheading 16.1.3.

2. a) Distinguish between wealth and welfare. Show the relationship between the two.

Wealth refers to the stock of valuable assets held by an individual, a firm/an organisation or a country, at any particular moment of time. Wealth can be individual wealth, business wealth or public or society wealth **welfare** refers to the wellbeing of people or it is the satisfaction that the individual or society derives from wealth. Wealth and welfare are publicly related.

The relationship between wealth and welfare is such that, as one's wealth increases, his or her welfare increases because he or she derives more satisfaction from that wealth, thereby increasing his or her welfare. This applies to the business as well as society. E.g. as a country's wealth increases, its people's welfare also increases which promotes development of the economy.

b) How does individual and business wealth affect society wealth?

Individual wealth refers to wealth that belongs to an individual and is usually kept in individual homesteads. Business wealth refers to that wealth which belongs to the business/enterprise like machinery, premises, buildings, trucks etc. while Public/society wealth is the wealth that belongs to the society in collectivity and it is managed by the government on behalf of people. E.g. public hospital, bridges, dams, airports, railways, schools, etc.

Therefore, the more the individuals and businesses want to increase their wealth, the more they use or exploit society wealth like roads, natural resources etc. and this leads to their quick depletion thus reducing their existence for future use. But if they (individuals and businesses) utilise them efficiently, they (society wealth) are available today and in future for use by the citizens.

On the other hand, the more the individual and business wealth, the more the society wealth and vice versa. Because as individuals and businesses increase their wealth in form of land, labour, business premises and plants, the more the government expenditure on public utilities increase to foster public and individual wealth etc.

3 a) Explain the role of the various economic agents in the development process of any economy.

Refer to the answers on the Application activity 16.3 in this guide.

b) Describe how the various economic agents are organized to allocate resources in an economy.

Various economic agents are organized through the different economic systems i.e.

- Capitalism where there is resource allocation by private individuals with little government interference
- Socialism where there is resource allocation by the government.

Mixed economic systems where there is resource allocation by the interplay between the government and private individuals.

16.9: Additional activities

16.9.1: Remedial activities.

1. The commodities we desire to have in life that we see and touch with our eyes are called while those we don't see and touch but help to satisfy our needs and wants are called
2. Public goods are those owned and enjoyed collectively by While private goods are those that are owned and exclusively enjoyed by
3. Categorize the following into free goods and economic goods.
Telephone, sunshine, Inyange water, rain water, bread, air, car, uniform, shoes, bags, sea water etc.

Answers to the remedial activities:

1. Goods and services
2. The whole society..... by private individual
3. They can be categorized as;

Free goods

Sunshine

Rainwater

Air

Seawater

economic goods

Telephone, uniform, shoes,

Inyange water, bags

bread

Car

16.9.2. Consolidation activities.

Question: Why are public goods always provided by the state?

- Because they are expensive to be provided by individuals
- Some are risky undertakings not to be just left in hands of the public e.g. security
- They are non-rivalry meaning that there is no competition in consuming them. Therefore everybody uses them without reducing their availability to others.
- They are non-excludable meaning that no one is excluded from using them
- They are non-divisible, meaning they are provided in totality, so everyone can use it.

16.9.3: Extended activities.

The questions in activities may not be exhaustive, as a tutor, you can set other questions from the unit to make student teachers express themselves widely on this unit. For example,

1. What are the characteristics of a free good?
2. What are the different forms of wealth?
3. How are resource categorized?

Answers to the extended activities:

1. Characteristics of free goods

- a. Free goods good have zero opportunity cost.
- b. There is no element of rivalry e.g. if person A breathes, there is still enough air for another person B to breath too.
- c. They are naturally abundant.
- d. They provide utility
- e. Not marketable.

2. The different forms of wealth include,

Individual wealth, business or firm wealth and public or social wealth.

3. Resources can be categorized as

- a. **Natural resources:** These are resources freely given by nature in, on or over the earth's surface like water bodies, forests, mineral

deposits, air rain etc. They are all together called ***land***.

- b. Human resources:** These are all physical and mental human effort that is used in the production process like ***labour and entrepreneur***.
- c. Man-made resources:** These are all resources made by man and are used as inputs in the production process. They are called ***capital***.

UNIT: 17

NATURE AND SCOPE OF ECONOMICS

17.1 Key Unit Competence:

To able to describe the nature and scope of economics as applied in various domains

17.2. Prerequisite (knowledge, skills, attitudes and values)

In order to study this unit, the student teachers should have knowledge, skills and attitude and value competences about the following issues:

- Nature of economics as a science or an art;
- Differences between normative and positive economics;
- Branches of economics.

In addition, the student teachers should have prior knowledge on the description of the nature of economics with respect to other sciences and this will enable them to appreciate the nature of economics as a science or an art and show concern for society and the entire economy. By comparing and contrasting the branches of economics and their relevancy in an economy, the learner will be able to understand how economic variables are, and how they ought to be. By analyzing the branches of economics (micro and macroeconomics) the student teacher shall be able to participate in problem solving at micro and macroeconomic levels in the society.

17.3: Cross-cutting issues

While teaching this topic, it will be important to consider widening the nature and scope of Economics to encompass the effects of human activities, especially economic activities, on the environment and sustainability of human race. The massive extraction of raw material has led to depletion of those materials, use of biofuels has resulted to global warming and thus the climate change that is affecting millions of farmers and threatening their livelihoods. Environmental economics and sustainable development economics are new branches of Economics that are emerging to ensure the environment is conserved and the resources are used prudently to ensure sustainability.

17. 4: Guidance on the introductory activity:

The introductory activity in the student teachers' book is cardinal tool used as orientation activity, that enables the students to connect the knowledge, skills, attitudes and values already acquired in previous classes so as to gain more understanding of the nature and the scope of economics.

In question (a) they will discover in the due course of the unit that the limits of economics as a subject involves the scope with in which economic issues are covered or discussed for example, economics as an art and a science subject, at a small/ micro level, or at large or macro level.

In question (b) the levels at which economic problems are handled are both at micro and macro levels.

17.5 List of subheading and lessons

#	Lesson titles	Learning objective	Number of periods
1	Nature of Economics	• Describe the nature of economics with respect to other sciences. • Appreciate the nature of economics as a science or an art and show concern for society and the entire economy. • Distinguish between normative and positive economics	2
2	Branches of Economics.	• Identify the branches of economics. • Compare and contrast the branches of economics and their relevancy in an economy. • Participate in problem solving at micro and macroeconomic levels in the society.	1

Assessment		• Be able to describe the nature and scope of economics as applied in various domains	1

Lesson 1: Nature of Economics

a) Learning objective;

- Describe the nature of economics with respect to other sciences.
- Appreciate the nature of economics as a science or an art and show concern for society and the entire economy.
- Distinguish between normative and positive economics

b) Teaching resources.

Relevant Text books (student teachers' social studies book and its teacher's guide, stationery (papers), computers, internet access, magazines and journals.

c) Prerequisite/Revision/introduction

The tutor should guide the student teachers to find out the nature of economics. This is done by asking them to first give their own views on what they think about the nature of economics as an art or science. Then after, allow them carry out research on the nature of economics from the textbook or internet, as they compare with what they had in their minds.

As a tutor, you should organize the class in a convenient and most effective way of making the lesson interactive. For example, basing the size of the class, you can have the student teachers in pairs or groups and ask them to share their views on what they think about the nature of economics as an art and science subject with the help of examples, and then they share with the rest of the class.

d) Learning activities;

i) Guidance to activity 17.1

Learners should be encouraged to read from textbooks or internet on the meaning and origin of economics. Basing on activity 17.1, student teachers, share their prior knowledge (either in pairs or groups or brain storming) about what they think on the nature of economics as an art or science.

ii) Answers to activity 17.1:

Refer to sub headings 17.1.1 and 17.1.2:

e) Application activities;

Refer to the description of the nature of economics as an art or science from student teacher's book.

ii) Guidance to activity 17.2:

As a tutor, basing the size of the class, you can have the student teachers in pairs or groups and ask them to carry out research either in the library or textbook and come up with the difference between normative and positive economics and state different normative and positive statements. Basing on the research made they use questions in the activity 17.2 to state whether they are factual by writing letter F or non-factual by writing letter N.

Answers to activity 17.2:

1. Government-provided healthcare increases public expenditures. (F)
2. The government should provide basic healthcare to all citizens. (F)
3. The rising price of crude oil on world markets will lead to an increase in transport costs in most countries worldwide. (F)
4. A reduction in income tax will improve the incentives of the unemployed to find work. (F)
5. Unemployment is more harmful than inflation. (N)
6. The government should increase the minimum wage to 10,000frw per hour to reduce poverty. (N)
7. The retirement age should be raised to 70 to combat the effects of our ageing population. (N)

(e). Application activities; (17:2)

Let student teacher use the knowledge and understanding gained from the lesson and write down their own positive and normative statements. Correct and guide them as a tutor.

Lesson 2: Branches of economics

a) Learning objectives:

- Identify the branches of economics.
- Compare and contrast the branches of economics and their relevancy in an economy.
- Participate in problem solving at micro and macroeconomic levels in the society

b) Teaching and learning resources;

Relevant Text books (student teachers' social studies book and its teacher's guide,) new paper articles, magazine and internet access.

c) Prerequisite/Revision/introduction

Having looked at economics as an art or science, and also dividing this into positive variables and normative variables. This means that economics is a wide subject which can be divided into micro and macroeconomics. Therefore, as a tutor, you can make sure that you have newspaper articles or economic journals covering an aspect of each branch. For example, you may find an article about inflation, economic growth, a survey on individual consumer patterns, a firm's behavior (investment or production). These examples need to be relevant to the Rwandan context to enable the student teacher identify with them. The tutor should guide the student teachers to distinguish between micro and macroeconomics.

d) Learning activities;

i) Guidance to activity 17.3:

Let student teachers either in small groups, pairs or as individuals make research from economics textbooks, internet access and newspaper articles about branches of economics. Thereafter, they analyse the case study given the activity 17: 3 and through group or pair discussion they express themselves on what they think about the micro and macroeconomics.

Answers to activity 17:3

- a. Nyinawumuntu was at micro approach while Ntare was at macro approach.
- b. The main difference between microeconomics and macroeconomics is scale. Micro economics is at small scale but Micro economics is at large scale.

- c. Economic policy makers and planners depend on the changes in choices made by individual households and firms to make macro-economic planning. Therefore, the two are complementary, for example aggregate production and consumption levels are a result of choices made by individual households and firms.

17.6. Summary of unit

- **Economics as an art** (social science) seeks to explain the economic basis of human societies and shows how a particular society solves its economic problems.
- **Economics as a science** uses scientific approaches when establishing truths about an economic event. It defines concepts and quantifies them for purposes of evaluation and testing
- **Positive Economics:** Is a branch of Economics that studies variables the way they are, that is, the way they exist in real life. Positive economics is factual and can be verified.
- **Normative Economics:** Is a branch of Economics that studies variables the way they ought to be, as a desirable condition.
- **Microeconomics:** Is a branch of Economics that studies individual units of the economy. Such units may be households, firms or prices of commodities, among others.
- **Macroeconomics:** Is a branch of Economics that studies all units of the economy as an aggregate. It looks at the economy as a single functioning unit.

17. 7. Additional information for the teacher;

As you know that Economics is divided into numerous branches, but the main branches are microeconomics and macroeconomics. There is needed to go further and give student teachers the examples of units and decisions under the two branches. Individuals, households (families) and firms and the decisions they make about production and consumption fall under microeconomics. Macroeconomics deals with the totality of all the economic agents within the economy. You need also to go further and emphasize that these are merely the traditional branches and over time other branches like development Economics, institutional Economics and industrial economics have emerged.

17.8 Answers to end of unit assessment.

1. Refer to student teachers' book unit 17: 1
2. Let student teachers state their own positive and normative statements and for the difference between normative and positive economics, refer to the student teachers' book unit 17:2
3. Let student teachers state their own examples of micro and macroeconomic study and for the relationship, we can conclude that, the two are complementary because aggregate production and consumption levels are the result of choices made by individual households and firms. The major change in individual households and firms result into a change in the aggregate.

17.9 Additional activities

17.9.1: Remedial activities.

Categorize the following as micro and macro issues.

Welcoming year one students in a school, drought affecting eastern province, school dropout in TTC Matimba, school dropout in Rwanda, unemployment in Rwanda.

Micro	Macro
Welcoming year one students in a school,	School drop outs in Rwanda
Drought affecting eastern province	Unemployment problem
School dropout in TTC Matimba.	

17.9. 2. Consolidation activities;

Qn: Examine the difference between positive and normative economics.

Difference between positive and normative economics is that;

- The biggest difference between positive economics and normative economics is that the former one is based on facts and the latter one is based on values, judgments, and opinions.
- The statements under positive economics can be tested or verified. That means the statements can be either true or false. The statements under normative economics, on the other hand, are opinions and recommendations which can't be verified until they're acted upon first.
- The statements under positive economics are objective in nature. The statements under normative economics are subjective in nature.

- The statements under positive economics focus on cause and effect relationships. On the other hand, the statements under normative economics concentrate on what can work and why.
- Positive economics and normative economics both are important because, without one, another doesn't make sense.

17.9.3. Extended activities;

Discuss the importance and limitations of both micro and macroeconomics.

Answers to the extended activities;

Microeconomics: is the branch of economics that studies the behavior of individual decision-making units of the economy

Importance of microeconomics:

- It helps in understanding the behavior of individual units in the economy.
- It helps in understanding the working of the economy particularly a free enterprise economy.
- It offers principles such as scarcity, choice and opportunity cost in allocation of resources.
- It helps in examining conditions of human welfare because it deals with small sections of the economy.
- It helps in economic policy making and evaluation because it gives an over-view of human behavior which is an important aspect in planning.
- It gives a foundation to macroeconomics e.g. Gross Domestic Product (GDP) i.e. macroeconomics is derived from individual production, savings level is got from individual savings.

Limitations of Microeconomics:

- It assumes full employment of resources among the small section of the economy such that all resources are fully utilized and all sectors are engaged in economic activities decisions. Such a situation is quite difficult to attain.
- It bases mainly on the principle of laissez faire (free market economy)

by assuming no government intervention in the economy, which is too ideal and may not be possible.

- It neglects the whole economy and instead isolates sections from other economic agents whose working together is important in economic development. (it studies parts and neglects whole)
- It assumes the *ceteris paribus* condition where the individual decision-making unit is taken to be so small that its decisions cannot affect the similar decision of the other units. However, its assumption is too ideal to attain in real life experience.

Macroeconomics: is the branch of economics that studies the behavior of the economy as a whole or as an aggregate.

Importance of Macroeconomics:

The study of macroeconomics is important in the following ways.

- It helps in understanding of the working of the whole economy in which we live.
- It helps in seeking solutions to macroeconomic problems like inflation, high population, growth and unemployment that affect us and our economics.
- It helps us to study the community welfare (nature and size of material welfare of nations).
- The estimates of gross national product provide economists with one of the most useful tools to analyse the performance of the economy.
- It helps to provide practical policy guidelines on how various macroeconomic variables like GDP, total employment, general price level, wage etc. are affected by change in government spending or taxes.
- It helps us to study the determinants of the levels of aggregate income and employment and the causes of fluctuations in the levels of these aggregate levels.

Limitations of Macroeconomics:

- It focuses on aggregate economic values as homogeneous forgetting the significance of their internal composition and structure. i.e. with aggregate consumption, we assume all consumers have same tastes and preferences forgetting that they have individual differences.
- It has little relevance to the developing countries. This model has

been constructed on realities of developed countries, yet economic problems of developing countries are different from those of developed countries.

- It lacks generally acceptable principles to all economists i.e. different economists have different views on macroeconomic market conditions. E.g. Macroeconomic condition for equilibrium by classical economists is different from Keynesian macroeconomic equilibrium.

● UNIT: 18

FUNDAMENTAL PRINCIPLES OF ECONOMICS

18.1 Key Unit Competence:

To be able to demonstrate a good understanding of the fundamental economic principles and their applicability to daily life.

18.2 . Prerequisite (knowledge, skills, attitudes and values)

In order to study this unit, the student teachers should have knowledge, skills and attitude and value competences on the following issues:

- Fundamental principles of economics; Definition of scarcity, choice and opportunity cost and their relationship.
- Production possibility frontier (PPF).
- Economic questions.

A student teacher after having learnt and understood the nature and scope of economics, he must connect it to the fundamental principles of economics, by understanding that scarcity, choice and opportunity costs and the economic questions all happen at micro and macro levels, and also positive and normative statements are built on the fundamental principles of economics.

In addition, the student teachers should have prior knowledge on the definitions of scarcity, choice and opportunity cost and relationship between scarcity, choice and opportunity cost. This will enable him to appreciate the option of choice in terms of allocating scarce resources so as to satisfy the unlimited needs. This will also help the student teacher to be able to create economic questions and also come up with the right decisions.

18.3. Cross-cutting issues

When teaching this unit, financial education should be emphasized. Financial education informs student teachers that since resources are scarce there is need to be aware of financial issues such as the need for saving, the need for budgeting and prioritizing when making financial decisions. Student teachers should also be aware that life is all about

making right decisions not only because resources are scarce, but also because there are many different life alternatives which all look to be good. Not all goods things are essential to our lives therefore a student teacher who understands the fundamental principles of economics is also expected to apply this to other different aspects of life like social, political and environmental aspects by making the right choices. Student teachers should also know that such decisions may be at micro level i.e. affecting only one person or at macro level i.e. affecting everyone in the community.

18.4.Guidance on the introductory activity

The introductory activity on (18:1) in the student teachers' book, is cardinal tool used as orientation activity, that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in previous unit so that to gain more understanding about the Fundamental principles of economics and their relationships and applications, and also economic questions.

- a. A tutor should guide the student teachers to come up with others scenarios basing on the case study in the activity (18:1)
- b. It is always the case because resources are fewer than people's desire for them.
- c. The solutions to the above scenarios are always about making the right choices in allocating scarce resources so as to satisfy unlimited human desires.

18.5. List of subheading and lessons

	Lesson titles	Learning objective	Number of periods
1	Scarcity, choice and opportunity cost, and their relationships	• Identify the fundamental principles of economics. • Describe the applicability of the fundamental principles of economics in the economic world.	2

		• Assess the influence of the fundamental principles of economics on the performance of societies, companies and nations.	
2	The Production possibility frontier (PPF).	• Explain the relationship between the fundamental principles of economics using the Possibility Production Frontier (PPF). • Illustrate the fundamental principles of economics using the PPF.	2
3	Economic questions:	• State the basic economic questions • Analyze the applicability of basic economic questions in the economic world.	1
Assessment			1

Lesson 1: Scarcity, choice and opportunity cost, and their relationships

a) Learning objectives

- Identify the fundamental principles of economics.
- Describe the applicability of the fundamental principles of economics in the economic world.
- Assess the influence of the fundamental principles of economics on the performance of societies, companies and nations.

b) Teaching resources.

Recommended student teachers' books, internet access, newspaper articles on Economics, economics journals.

c) Prerequisite/Revision/introduction

The tutor should guide the student teachers to understand fundamental principles of economics and their relationships. This is done by asking them to first give their own view about the fundamental principles of economics and how these principles are related. Then after, allow them carry out research about the fundamental principles and how these principles are related from the textbook or internet, as they compare with what they had in their minds.

d) Learning activities;

Guidance to learning activity 18.1:

In small groups, student teachers undertake documentary research from the library, the internet or any other relevant Economics materials basing on activity 18.1, student teachers, share their prior knowledge (either in pairs or small groups and then presentation to the class about what they about the fundamental principles of economics and how these principles differ.

Answers to activity 18.1:

The fundamental principles are scarcity, choice and opportunity cost. Scarcity refers to the limitedness of resources relative to human desire for them. Choice refers to the act of taking a rightful decision among available alternatives or among different possible solutions/options. Opportunity cost refers to the second best alternative foregone when a choice is made.

Guidance to application activity 18.1 (b)

Let the student teachers in their groups study and exchange ideas about the photographs and answer the questions that follow.

Answers to application activity 18.1(b)

- (i) The term used to refer to **the car and firm** that **B** has picked is **choice**.
- (ii) The **remaining items** that B has not picked become opportunity **cost**
- (iii) **B** cannot pick all the items **because his resources are not enough (scarcity) to afford all items**.
- (iv) Allow the student teachers to discuss amongst themselves and give their opinions.
- (v) Advice to **A** to also take his choice is to **first make a scale of preference. But allow student teachers to give their own ideas**
- (vi) Let the student teachers give and support their own ideas in a class discussion.

Guidance to learning activity 18.2:

In small groups, student teachers undertake documentary research from the library or the internet and other relevant Economics materials to explain the relationship between the fundamental principles of economics.

Answers to activity 18.2:

The relationship between scarcity, choice and opportunity cost is such that, Since all things are limited in supply (scarce), one has to make choice on how the available means (resources) shall be used. Individual consumers/ producers will therefore have to decide which of their needs/ wants have to be given priority and forego others thus making opportunity cost. This relationship can also be explained by the use of PPF curve.

e) Answers to application activity 18. 1 (b)

Scarcity of two types

- a. Relative scarcity where resources are just fewer than peoples' desire for them (for example of low-income earner who can afford basic needs of life but not all everything he/she desires)
- b. Absolute scarcity; this is where resources are totally scarce. In such a situation people are absolutely poor that they cannot be able to afford basic needs of life.

Lesson: 2 The Production Possibility Frontier (PPF).

a) Learning objectives;

- Explain the relationship between the fundamental principles of economics using the Possibility Production Frontier (PPF).
- Illustrate the fundamental principles of economics using the PPF.

b) Teaching resources.

Recommended Student teacher's books, Internet access, Newspaper articles on economics and Economics journals

c) Prerequisite/Revision/introduction

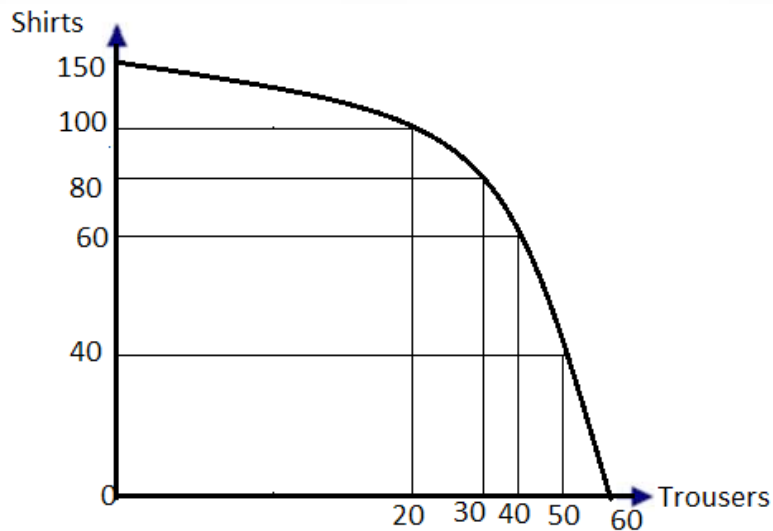
The tutor should guide the student teachers to be able to explain the relationship between scarcity, choice and opportunity cost using the Possibility Production Frontier (PPF) by the use of activity 18.3 then after, allow them carry out research about it. Basing on the previous knowledge about the fundamental principles of economics, the student teachers will be able to come up with their views about the relationships using PPF curves.

d) Learning activities;

In small groups, student teachers undertake documentary research to explain and illustrate the relationship between the fundamental principles of economics and also describe the importance of the PPF with regard to resource allocation. They make their presentations to the whole class, answer some questions and then take notes.

Answers to activity 18:3.

- a. The commodity that is highly produced is *shirts*.
- b. What the firm can do to increase on production of the less produced commodity follows;
 - Increase levels of technology.
 - Increase the number of skilled workers.
 - Increase on levels capital employed.
 - Increase on the labour force employed.
- c. The curve showing the possible combinations of trousers and shirts produced by Utexrwa being plotted the quantities of shirts on the y-axis and the quantities of trousers on the x- axis.

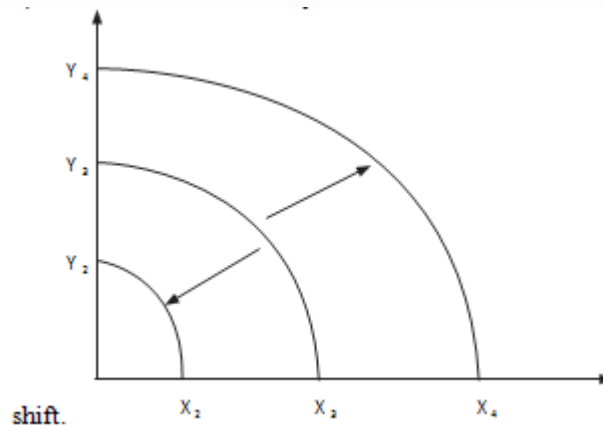


d. The curve bases on the following assumptions;

- It assumes that only two commodities are produced.
- It assumes that the level of technology is fixed and constant.
- It assumes that all resources are fully utilized.
- It assumes that similar resources will be used to produce either or both of the two goods.

Answers to Activity 18.4

a. PPF can be illustrated by inward shift and outward shift.



b. Inward shift means decline in economic growth and outward shift means economic growth.

c. The reasons why the PPF may shift to either directions;

Why it shifts outwards:

- Discovery of new natural resources.
- Advancement in technology that leads to production of more goods and services.
- Expansion of markets that encourage production of more goods and services.
- Improvement in the skills of labour that results into efficiency in production.
- Increased investment as a result of improved entrepreneurship skills.

Why it shifts inwards:

- Lack of new natural resources.
- Decline in the invention and use of technology that leads to production of poor quality and fewer goods and services.
- No new markets that encourage production of more goods and services.
- Decline in the availability of trained manpower, through retrenchment of workers. This results into less output and inefficiency in production.
- Decreased investment as a result of poor entrepreneurship skills

e) Answers to application (18:2)

- When the consumer is making consumption decisions.
- When the producers are determining the price to charge for their goods
- When the producers are determining the type of commodity to be produced.
- When the producers are determining the method of production to be used.
- When the producers are determining the location of business.

Lesson 3: Economic questions:

a) Learning objectives:

- State the basic economic questions

- Analyze the applicability of basic economic questions in the economic world.

b) Teaching and learning resources;

Relevant Text books (student teacher's social studies book and its teacher's guide,) new papers articles magazine internet access.

c) Prerequisite/Revision/introduction

After having understood the fundamental principles of economics and PPF curve very well as important aspects in resource allocation, the student teacher gets a strong foundation to understand how resources can be efficiently and effectively utilized into maximize returns from different economic, social and political ventures. This also helps the student teachers to realize that in allocating resources in order to maximize returns, countries and production firms have to answer different economic questions very effectively.

d) Learning activity

Guidance to activity 18.4

Through documentary research on various economic systems, student teachers state and analyze the operation of different economic systems and they describe applicability of the basic economic questions in the economic world.

Basing on the case study given the activity 18: 4, through brain storm and group discussion let student teachers express themselves on what they think about economic questions.

Answers to activity 18:4.

- What to produce:* Here the firm needs to decide on the nature of the goods to produce. The firm may decide to produce capital goods or consumer goods.
- How to produce:* The producer has to decide on the methods and techniques to be used in the production process. The producer may decide to use capital intensive techniques of production or labour intensive techniques of production. The technique of production minimizes costs while at the same time maximizes the level of output.
- When to produce:* The producer is required to decide whether to produce now or to produce in future. The producer is normally guided by the

demand for the products in the market. The best time for production is when the demand for the goods or services is the highest.

- d) *Where to produce:* The producer has to determine on the location of his or her firm or industry. The location will depend on availability of the market, the source of raw materials, security and transport and communication networks. All in all, a thorough assessment of the impact of that firm to the environment must be carried out and evaluated.
- e) *For whom to produce:* The producer considers the target consumers that will use the goods to be produced. The producer may be for the young, the rich, the poor, the rural people or for the urban people.

e) Answers to application activity 18.4.

Its applied when the consumers are making consumption decisions and when producers (either individuals, firms, a nation or countries) are making production decisions. In short it is applicable when answering the basic economic questions.

Guidance to the skills lab 18.

The tutor organizes and guides student teachers as whole class on setting questions necessary for the interview to the resource person. This will help them be consistent in their research objectives.

18.6. Unit Summary

- Scarcity refers to the limitedness of resources relative to human desire for them.
- **Choice** refers to the act of taking a rightful decision among available alternatives or among different possible solutions/options.
- **Opportunity cost** refers to the second best alternative foregone when a choice is made
- **PPF / transformation curve/ opportunity cost curve** is a locus of points showing the possible combinations of two commodities that can be produced when all the resources are fully utilized
- **Scale of preference** refers to the list of a list of one's wants in order of satisfaction from the most pressing one put at the top and then the list pressing one put last on the list.

Assumptions of the PPF:

- It assumes that only two commodities are produced.
- It assumes that the level of technology is fixed and constant.
- It assumes that all resources are fully utilized.
- It assumes that similar resources will be used to produce either or both of the two goods.

Indicators of economic growth on PPF/ reasons for out ward shift of PPF curve.

- Discovery of new natural resources.
- Advancement in technology that leads to production of more goods and services.
- Expansion of markets that encourage production of more goods and services.
- Improvement in the skills of labour that results into efficiency in production.
- Increased investment as a result of improved entrepreneurship skills.

Factors for inward shift of PPF curve/ indicate an economic decline.

- Lack of new natural resources.
- Decline in the invention and use of technology that leads to production of poor quality and fewer goods and services.
- No new markets that encourage production of more goods and services.
- Decline in the availability of trained manpower, through retrenchment of workers. This results into less output and inefficiency in production.
- Decreased investment as a result of poor entrepreneurship skills.

These fundamental economic questions include:

- What to produce: Here the firm needs to decide on the nature of the goods to produce.
- How to produce: The producer has to decide on the methods and

techniques to be used in the production process.

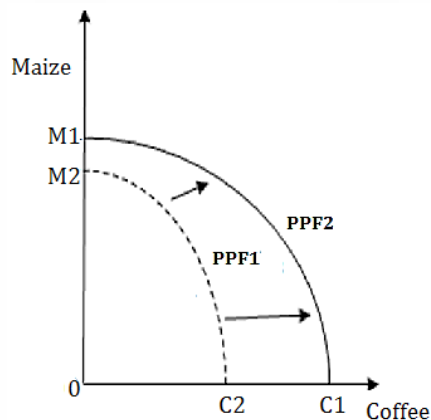
- When to produce: The producer is required to decide whether to produce now or to produce in future.
- Where to produce: The producer has to determine on the location of his or her firm or industry.
- For whom to produce: The producer considers the target consumers that will use the goods to be produced.

18.7: Additional information for the Tutor.

Biased shift of PPF:

A parallel shift of the PPF means that there an increase in capacity to produce both commodities. In some cases, economic growth may only be in favor of one commodity thereby causing a tilted or biased shift of the PPF.

i) A tilted shift of the PPF



Even though there is positive economic growth in production of both commodities, the PPF shifts outwards but the rate at which maize is sacrificed to get coffee is not at the same rate.

There can be a biased PPF where there is increase/decline in production of maize alone while there is no change in coffee production and similarly there can be increase/decline in production for coffee and no change in maize production. This can be due to an increase or decline in technology and resources in one commodity than another.

Illustration of PPF showing a change in production of maize and constant coffee production

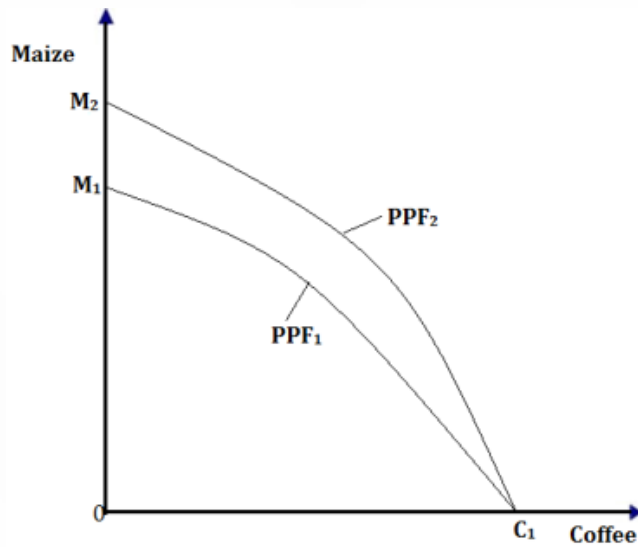
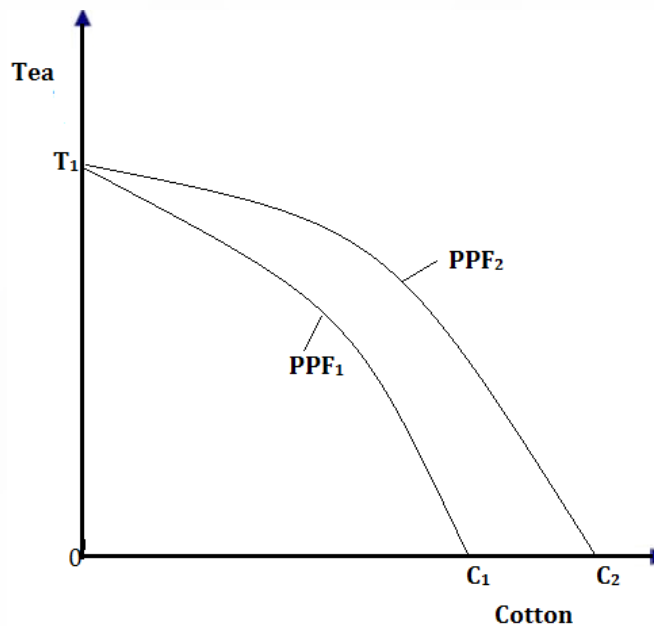


Illustration of PPF showing a change in production of cotton and constant Tea production



The slope of the productive possibility frontier (PPF) at any given point is called marginal rate of transformation (MRT).

$$\text{MRT} = \frac{\text{change in production of commodity X}}{\text{Change in production of commodity Y}}$$

The marginal rate of transformation allows economists /managers to

analyze the opportunity costs to produce one extra unit of something.; In this case the opportunity cost is represented in the lost production of another specific good. Generally speaking, the opportunity cost rises as one moves along (down) the PPF; as more of one good is produced, the opportunity cost (in units) of the other good increases.

18.8. Answers to end of unit assessment

1. This question requires the description of fundamental economic principles which are well stated in student teachers' book from the lesson (18.1).
2. Question 2 requires the student teacher to explain the relationships between fundamental principles by use PPF which is also well explained in the student teachers' book in the lesson (18.3).
3. PPF explains economic growth when it shifts outwards and it explains decline in economic growth when it shifts inwards and Illustrations must be used.
4. The major economic questions that an entrepreneur has to answer as he or she prepares to engage in production are also found in student teacher book in the lesson unit 18.4.

18.9 Additional activities

18.9.1: Remedial activities.

For example,

1. The situation where resources are fewer than people's desire for them is known as
2. Choice and opportunity costs arise because of.....
3. State factors that causes the transformation curve to shift inwards
4. **Give any four significances of the concept of opportunity costs to the producers.**

Answers to the remedial activities:

1. Scarcity
2. Scarcity
3. *Causes of the shifts inwards by the transformation curve include;*
 - Reduction in the skills of workers
 - Exhaustion of resource.

- Decrease in capital inflow.
 - Decrease in levels of technology
4. Significance of the concept of opportunity costs to the producers include.
- It helps the producer to determine the price of the commodity.
 - It helps the producer to determine how much to produce.
 - It also helps the produce to determine for whom to produce.
 - It also guides the producer in deciding how to produce.
 - It helps the produce to determine where to produce.
 - It also helps the produce to determine what to produce.
 - For consumer it helps in making consumption decisions.

18.9.2. Consolidation activities.

Qn. What economic implication is attached to the production in, on and above the PPF curve?

Answers to the consolidation activities

Any point inside the PPF shows underutilization of resources, any point on PPF shows maximum resource utilization, and any point above shows desirable resources which are not affordable. Producing there would mean over utilizing resources.

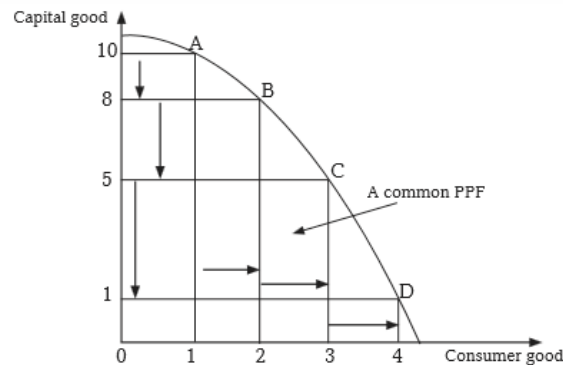
18.9. 3. Extended activities.

Qn: Describe the different types of PPF.

They include the following.

- **Common PPF:** This is a PPF where there is an increase in opportunity cost as the production of one good is increased.

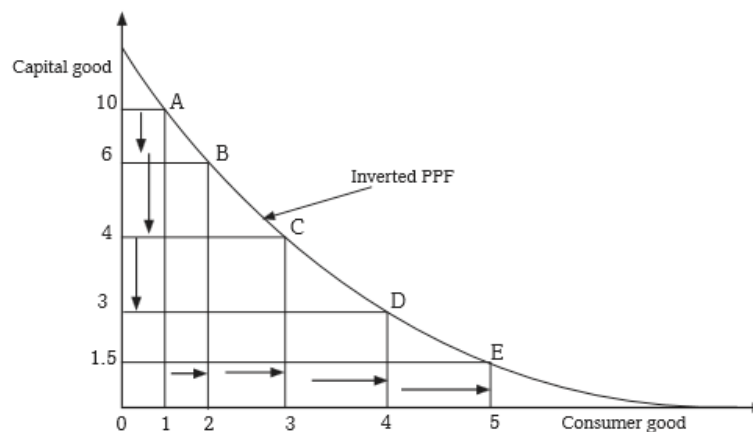
Illustration:



From the above PPF, in order to produce an additional unit of consumer good, two units of capital goods have to be foregone. But additional unit of consumer good will cause three units of capital goods to be foregone and another additional unit of consumer good will cause four units of capital good to be foregone. A common PPF is also known as a concave PPF.

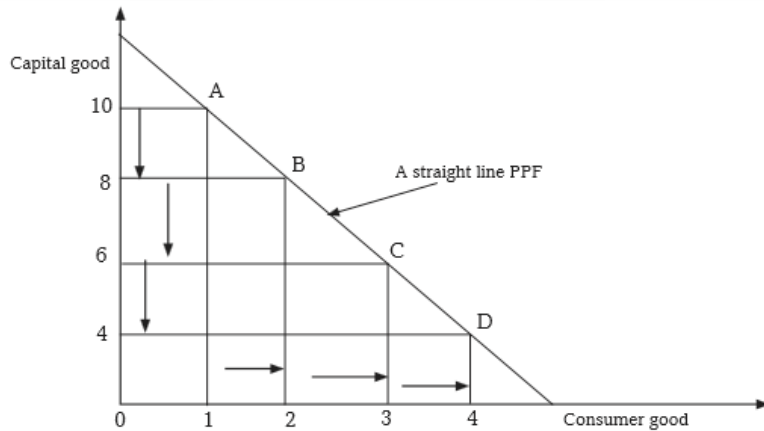
- **Inverted PPF:** This is a PPF where the opportunity cost is decreasing with each of one good.

Illustration:



From the above PPF, to produce an additional unit of consumer good, four units of capital good are foregone. But another additional unit of consumer good will cause two units of capital good to be foregone. Any further additional unit of consumer goods will cause one unit of capital goods to be foregone. Opportunity cost will continue to decrease with any additional unit of consumer goods being produced. An inverted PPF is also known as a convex PPF.

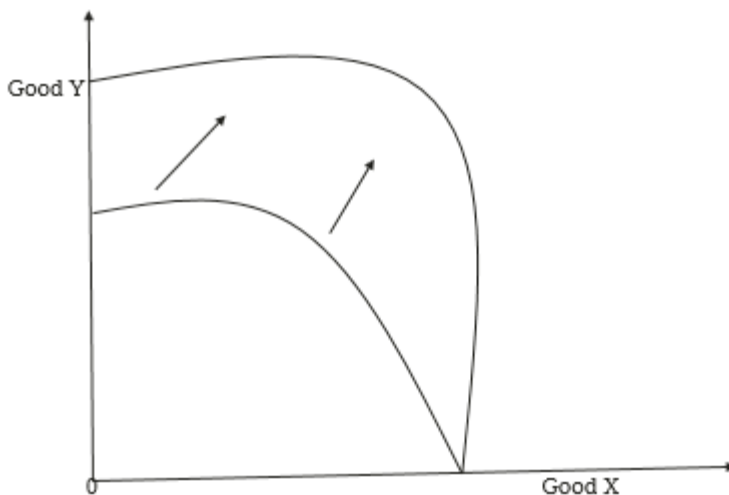
- **A straight line PPF:** This is a PPF where the opportunity cost is constant with an increase in the production of one good.



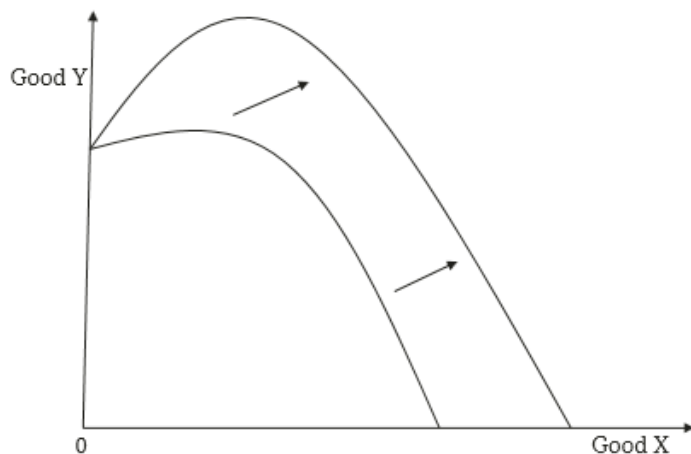
From the above PPF, an increase in production of one unit of consumer goods causes an opportunity cost of two units of capital goods. Each subsequent production of one additional unit of consumer goods will have a constant opportunity cost of two units of capital goods. A straight line PPF is also known as a constant PPF.

- **Biased PPF:** This is a PPF that shifts outwards in favour of one commodity only. In this case, the PPF shifts outwards more in one direction than the other. This is caused by improvement in technology and increased factors of production that are in favour of one commodity.

Illustration:



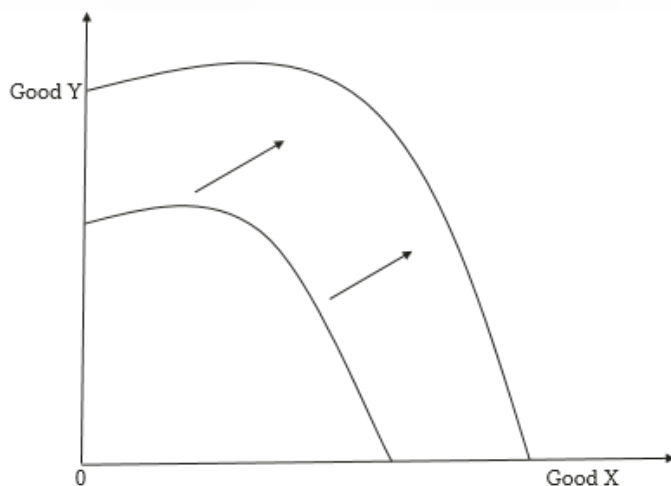
The above illustration shows an increase in production of Good Y while there is no increase in production of Good X. This implies that the improvement in technology and increase in resources caused increase in production of Good Y only.



The above illustration shows an increase in production of Good X with no increase in production of Good Y. This implies that the improvement in technology and increase in resources was in favour of production of Good X only, causing an increase in production of Good X.

- **Unbiased PPF:** This is the PPF that shifts evenly such that, there is an increase in production of both goods. This therefore implies that an improvement in technology and increase in resources favours both goods, thereby causing an increase in production of both Goods X and Y.

Illustration:



UNIT: 19

EQUATIONS AND FRACTIONS IN ECONOMIC MODELS

19.1. Key unit competence:

Be able to describe economic phenomenon using mathematical tools.

19.2. Prerequisite (knowledge, skills, attitudes and values)

As seen in different other units before, economics is not an independent subject, it relates to other subjects. Thus, student teachers should integrate the knowledge, skills, values and attitudes acquired prior in other subjects to the understanding and analysis of economic concepts and phenomena. For example, Student teachers have the knowledge and skills gained in S.1- unit 3 (linear functions, equations and inequalities), S.2- unit 3 (simultaneous equations), S.3- unit 6 (linear and Quadratic equations), therefore can use to apply in this unit of Equations and fractions in economics. Student teachers already have some knowledge of the content of this unit. The tutor though, needs to have a good understanding and skills on mathematical expressions so as to entice student teachers towards the urge to use the mathematical tools in economic analysis.

In unit 16, we saw the different possible professions that require economics background and the reason why economics is studied, therefore, a student teacher, needs this unit to prepare them, not only for the understanding and analysing economic issues in TTC but also for their future careers. This unit, therefore, will help the student teachers to manipulate mathematical symbols in the calculation and interpretation of certain different economic equations and concepts in year one and through the whole life of economics and other related courses study. Therefore, the unit will not only be useful to the economics student teachers in TTC now, but throughout their study beyond TTC.

However, a tutor should know that this unit will introduce the student teacher to mathematical tools that are used in solving economic problems. Therefore, student teachers, who may not be very competent in Mathematics need not to worry since the unit is meant to help in analysis of Economics and proficiency can be progressively achieved.

19.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the tutor. It may be direct in the explanation or in the due course of learning the unit as whole, it may be indirectly tackled. For example, in the learning activity 19.1, when stressing the relationship between advertising and sales as reflected by Quality supermarket, it is important to emphasize to the student teachers the need for proper accountability so that they gain the profits expected as the major aim of any producer. This is seen, for example, if Quality Supermarket wants to gain profits, it must balance its cost price vis a-vis advertising costs. This develops the sense of financial education.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other cross-cutting issues. E.g. *Inclusive education* like engaging all student teachers in class activities and discussion without discrimination, *peace and values education* by handling class environment in an orderly and peaceful manner, *gender education* like using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other data that may be related to a given cross-cutting issue that he or she needs to integrate.

19.4. Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity, that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects as seen in the introduction above and the new unit title. In this case, it tests the level of student teacher's understanding of the subject matter of economics they may be already having. For example, the case study, about the calculation of national income using value added approach, provided in the introductory activity, challenges student teachers to gain numeracy skills on how to use mathematical symbols calculate the level of national income by subtracting costs incurred in cassava production from its sales revenue gained.

It should be noted that, as student teachers get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. This will help them identify some issues and open them to what they did not know and be inquisitive to know more about using mathematical tools in economic analysis.

19.5. List of lessons/ subheadings

#	Lesson title	Lesson objectives	No. of periods.
1	Linear equations and graphs in economics.	• Solve linear equations as applied in economics. • Illustrate economics graphs using linear, equations. • Apply linear equations in economics phenomenon.	2
2	Non-linear equations	• Solve nonlinear equations as applied in economics. • Illustrate economics graphs using nonlinear equations. • Apply non-linear equations in economics phenomenon.	2
3	Simultaneous equations	• Solve simultaneous equations as applied in economics. • Apply simultaneous equations in economics phenomenon.	2
4	Differentiation equations	• Solve differentiation equations as applied in economics. • Apply differentiation equations in economics phenomenon.	1
5	Fractions in economics:	• Solve economic problems using fractions. • Use fractions in analysing economic phenomenon /situation • Adopt the mathematical tools in solving economic problems in real life.	4
6	End of unit assessment.	• Describe economic phenomenon using mathematical tools.	1

Lesson 1: Linear equations and graphs in economics.

a) Learning objectives:

- Solve linear equations as applied in economics.

Illustrate economics graphs using linear, equations.

- Apply linear equations in economics phenomenon.

b) Teaching resources:

Relevant Text books, stationery (papers), computers, internet access, calculators, rulers.

c) Prerequisite/Revision/introduction:

Freshen your skills in Mathematics and instruct your students to do the same. Ensure you have ample examples, in relation to economics units that will help students do sufficient practice. This lesson requires more practice by the student teacher so as to develop relevant competences from the unit. However, the tutor must be aware of time management. The tutor should guide the student teachers on how to calculate and interpret these mathematical calculations in regard to economics sense. They should not be diverted from an economic sense rather to a mathematical one. They should therefore, interpret linear equations in relation to any economic issue or phenomena.

d) Learning activities

(1) Guidance to the learning activity 19.1:

- Basing on activity 19.1, put student-teachers in pairs and ask them to calculate, interpret and share their views on this given activity. Tutor moves around in different pairs to check on how best they are faring, guiding them where they are stranded. In this case they rely on the knowledge and skills gained in mathematics as had seen in the prerequisites for the unit. Allow them to freely interact so as to gain more knowledge and understanding of activity requirements.
- After their findings, tutor samples some pairs of student teachers (one at a time) to present their findings in plenary. This inculcates in them the spirit of public speaking skills and self-confidence.

- The tutor sums up the student-teacher's findings to have a general consensus on the calculations and their interpretation in an economic sense.

(2)Answers to activity 19.1:

(i)The relationship between advertising and sales as reflected in the above table is that;

The higher the advertising expenditure, the higher the sales by the supermarket. This is because, as the commodity is more advertised, especially persuasive advertisement, consumers are attracted to it, thus increasing its sales and vice versa.

(ii)The sales revenue generated at 9 million FRW and 10 million FRW levels of advertising are;

From the table provided in the activity 19.1 in the student teacher's book, following advertising expenditure and sales figures of Quality Supermarket, we can see that sales increase by 4 million from 1 million advertising expenditure. Therefore, at zero advertising expenditure, sales would be $24\text{m} - 4\text{m} = 20$ million.

Therefore, our equation, $y = a + bx$, would be $y = 20 + 4x$.

Given this equation, we can be able to find out the amount of sales arising from a given expenditure in advertising and the amount of advertising necessary to generate a desired amount of sales revenue.

Thus, the sales revenue generated by 9 million advertising expenditure would be:

$$Y = 20 + (4 \times 9)$$

$$= 20 + 36$$

$$Y = 56\text{m}$$

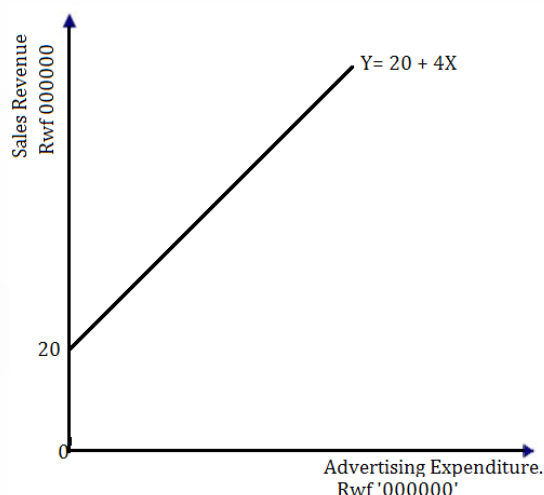
The sales revenue generated by 10 million advertising expenditure would be:

$$Y = 20 + (4 \times 10)$$

$$Y = 20 + 40$$

$$Y = 60\text{m}.$$

(iii) This can be illustrated as below.



Lesson 2: Non-linear equations:

a) Learning objectives

- Solve nonlinear equations as applied in economics.
- Illustrate economics graphs using nonlinear equations.
- Apply non-linear equations in economics phenomenon.

b) Teaching resources:

Relevant Text books, stationery (papers), computers, internet access, calculators, rulers.

c) Prerequisite/Revision/introduction:

Freshen your skills in Mathematics and instruct your students to do the same. Ensure you have ample examples, in relation to economics units that will help students do sufficient practice. This lesson requires more practice by the student teacher so as to develop relevant competences from the unit. However, the tutor must be aware of time management. The tutor should guide the student teachers on how to calculate and interpret these mathematical calculations in regard to economics sense. They should therefore, interpret non-linear calculations in relation to any economic issue or phenomena.

d) Learning activities:

(i) Guidance to the learning activity 19.2:

-Basing on activity 19.2 , let student-teachers practice on an individual basis and interpret and share their views on this given activity in plenary. Tutor moves around in class to check on how best they are faring, guiding them where they are stranded. In this case they rely on the knowledge and skills gained in mathematics as had seen in the prerequisites for the unit. Allow them to freely interact so as to gain more knowledge and understanding of the activity requirements. After their findings, tutor samples some student teachers (one at a time) to present their findings in plenary. This inculcates in them the spirit of public speaking skills and self-confidence.

Answers to activity 19.2:

Let a student teacher try to draw from the activity to get the shape of the curves and explain their shape. Use content summary under unit 19 subheading 19.2. to explain the shape of a nonlinear graphs.

(ii) Answers to Application activity 19.2:

$Q_d = 48 - 4p$. What would be the Quantity demanded in case price was;

0 ii) 2, iii) 4 iv) 6 v) 8 vi) 10 vii) 12

Price in Rwf	Quantity demanded (Q_d) in kgs
0	48
2	40
4	32
6	24
8	16
10	8
12	0

i) What would be the price in case quantity demanded was;

a) 44, b) 36, c) 28.

a) At Q_d 44,

$$Q_d = 48 - 4p.$$

$$44 = 48 - 4p$$

b) At Q_d 36,

$$Q_d = 48 - 4p$$

$$36 = 48 - 4p$$

$$4p = 48 - 44$$

$$4p = 4$$

Divide both sides by 4

$$P = 1$$

c) At $Q_d = 28$

$$Q_d = 48 - 4p$$

$$28 = 48 - 4p$$

$$28 = 48 - 4p$$

$$4p = 48 - 28$$

$$4p = 20$$

Divide all sides by 4

$$P = 5$$

$$4p = 48 - 36$$

$$4p = 12$$

Divide both sides by 4

$$P = 3$$

Lesson 3: Simultaneous equations.

a) Learning objectives:

- Solve simultaneous equations as applied in economics.
- Apply simultaneous equations in economics phenomenon

b) Teaching materials:

Relevant Text books, stationery (papers), computers, internet access, calculators, rulers.

c) Prerequisite/Revision/introduction:

Ensure you have ample examples, in relation to economics units that will help students do sufficient practice. This lesson requires more practice by the student teacher so as to develop relevant competences from the unit. The tutor should guide the student teachers on how to calculate and interpret these simultaneous calculations in regard to economics sense. They should therefore, interpret simultaneous equations in relation to any economic issue or phenomena.

d) Learning activities:

i) Guidance to the learning activity 19.3:

Put student teachers in groups to discuss and share views on how to solve the equations given in the activity. Move around different groups facilitating the discussions. Thereafter, tutor invites some sampled groups to present in plenary their findings. Tutor summarizes the lesson by clarifying on the student teacher's findings.

Answers to the activity 19.3

From the activity: At a certain point, two small businessmen noted that their bank accounts had 110 and 600 dollars respectively. The first man decided to increase his account by 30 dollars every year for n years. The second decreased his bank account balance by 40 dollars every year for n years. After n years, the bank balance in each year was p dollars. Assuming that no other transactions were done in these accounts,

- a. Express p in terms of n in each

$$110 + 30n = p$$

$$600 - 40n = p$$

- b. Use each equation to make a table of values for n and p for each person, for values of n not **more than 10 years**.

Years (n)	Businessman 1 bank credit	Businessman 2 bank credit
1	$110 + 30 = 140$	$600 - 40 = 560$
2	$140 + 30 = 170$	$560 - 40 = 520$
3	$170 + 30 = 200$	$520 - 40 = 480$
etc	etc	etc

- c. Do you think there will be a time when their bank balances will be equal? If yes, when and how much will it be?

The bank balance for the two businessmen will be equal if;

$$110 + 30n = 600 - 40n$$

Collect like terms together

$$30n + 40n = 600 - 110$$

$$70n = 490$$

Divide both sides by 70

$N = 7$ years.

For Businessman 1, Then at 7 years,

$$110 + 30n$$

$$110 + 30(7)$$

$$= 110 + 210$$

$$= 320 \text{ dollars}$$

For businessman 2, Then at 7 years,

$$600 - 40n$$

$$= 600 - 40(7)$$

$$= 600 - 280$$

$$= 320 \text{ dollars}$$

Therefore, after 7 years the two businessmen will have their bank balances equal at 320 dollars.

d. How do you describe the relations in (ii) above?

The two equations are linear simultaneous equations because they have more than one equation, with two variables (n and p).

ii) Guidance to the learning activity 19.4:

Put student teachers in groups to discuss and share views on how to solve the equations given in the activity. Move around different groups facilitating the discussions. Thereafter, tutor invites some sampled groups to present in plenary their findings. Tutor summarizes the lesson by clarifying on the student teacher's findings.

Answers to activity 19.4:

Taking P for price and the other unknown for quantity, solve the simultaneous linear equations. They represent the various demand and supply functions we come across in our daily lives. Illustrate your findings on graphs. Make class presentations.

1. $Q = 3P + 2$, $Q = 2 - P$

2. $3P + 7Q = 10$, $4P - Q = 3$

3. $5P + 10Q = 10$, $2P - Q = 1$

4. $P + 4 = 3Q$, $4P + 7Q = 24$

Note: You can use any of the above methods earlier learned, or any of these methods.

- Elimination method
- Graphical method
- Cramer's method
- Inverse method

Answers

1. $Q = 3P + 2$, $Q = 2 - P$

a) Elimination method

$Q = 3P + 2$ (1)

$Q = 2 - P$ (2)

Multiply (2) by 3,

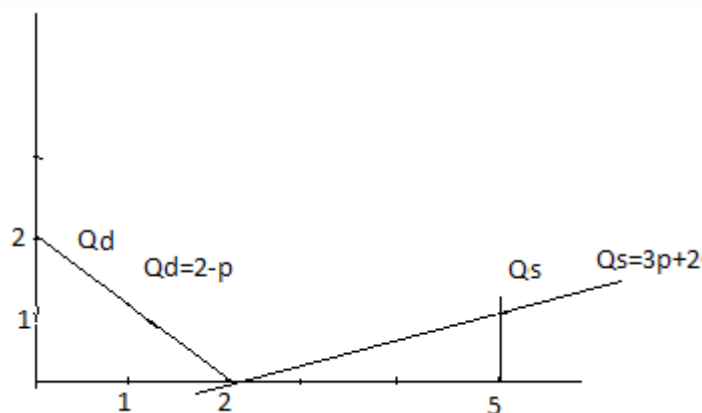
$3Q = 6 - 3P$ (3),

Add (1) and (3)

$4Q = 8 \Leftrightarrow Q = 2$

$P = 0$

b) Graphical method



2. $3P + 7Q = 10$,

$$4P - Q = 3$$

c) Crammer's method.

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

$$x = \frac{c_1b_2 - b_1c_2}{a_1b_2 - a_2b_1} \Leftrightarrow P = \frac{10(-1) - 3(7)}{3(-1) - 4(7)} = \frac{-31}{-31} = 1 \Leftrightarrow P = 1$$

$$y = \frac{c_1b_2 - b_1c_2}{a_1b_2 - a_2b_1} \Leftrightarrow Q = \frac{3(3) - 4(10)}{3(-1) - 4(7)} = \frac{9 - 40}{-31} = 1 \Leftrightarrow Q = 1$$

$$3. \quad 5P + 10Q = 10$$

$$2P - Q = 1$$

c. Inverse Method

$$5P + 10Q = 10 \quad (1)$$

$$2P - Q = 1 \quad (2)$$

$$\text{in (2) } Q = 2P - 1 \quad (3)$$

$$\text{put (3) in (1)} \Leftrightarrow 5p + 10(2p - 1) = 10$$

$$\Leftrightarrow 5p + 20p - 10 = 10$$

$$\Leftrightarrow 25p = 20$$

$$\Leftrightarrow P = 20/25$$

$$\Leftrightarrow P = 4/5$$

$$4. \quad P + 4 = 3Q,$$

$$4P + 7Q = 24$$

d) Elimination

$$P + 4 = 3Q \quad (1)$$

$$4P + 7Q = 24 \quad (2)$$

$$\text{In equation (1) } P = 3Q - 4$$

$$\text{In (2) } 4(3Q - 4) + 7Q = 24$$

$$12Q - 16 + 7Q = 24$$

$$17Q = 34$$

$$Q = 2$$

In equation (1) $P + 4 = 3 \times 2$

$$P = 6 - 4$$

$$P = 2$$

iii) Answers to application activity 19.4:

Given quantity supplied equation as $Q_s = 20 - 3P$ while quantity demanded equation $Q_d = 5 + 2P$

We know that at equilibrium, $Q_s = Q_d = Q_e = p_e$

then,

$$Q_e = 20 - 3P_e$$

$$Q_e = 5 + 2P_e.$$

Equate the 2 equations

$$20 - 3P_e = 5 + 2P_e.$$

$$20 - 5 = 2p_e + 3p_e$$

$$15 = 5p_e$$

$$\frac{15}{5} = \frac{5p_e}{5}$$

$$3 = p_e$$

Substitute in any equation

$$Q_e = 20 - 3P_e$$

$$Q_e = 20 - 3(3)$$

$$Q_e = 20 - 9$$

$$Q_e = 11.$$

Lesson 4: Differential equations

a) Learning objectives:

- Solve differentiation equations as applied in economics.

- Apply differentiation equations in economics phenomenon.

b) Teaching materials:

Relevant Text books, stationery (papers), computers, internet access, calculators, rulers.

c) Prerequisite/Revision/introduction:

Ensure you have ample examples, in relation to economics units that will help students do sufficient practice. This lesson requires more practice by the student teacher so as to develop relevant competences from the unit. The tutor should guide the student teachers on how to calculate and interpret these simultaneous calculations in regard to economics sense. They should therefore, interpret differentiation equations in relation to any economic issue or phenomena.

d) Learning activities:

i) Guidance to the learning activity 19.5:

Put student teachers in groups to discuss and share views on how to solve the **differential equations** given in the activity. Move around different groups facilitating the discussions. Thereafter, tutor invites some sampled groups to present in plenary their findings. Tutor summarizes the lesson by clarifying on the student teacher's findings.

Answers to activity 19.5

- a. The total cost of a firm is given by the equation $TC = 3Q^3 - 2Q^2 + 60Q + 8$

If the value of $Q = 1\text{kg}$, determine the marginal cost.

- b. Given that the total revenue (TR) of a firm is given by the equation,

$R = 100 + 2Q^2 + Q$, find marginal revenue when $Q = 1$.

Solution

- a. $TC = 3Q^3 - 2Q^2 + 60Q + 8$

$$MC = \frac{dTC}{dQ} = 9Q^2 - 4Q + 60$$

If $Q = 1\text{Kg}$

$$MC = 9X1 - 4(1) + 60$$

$$MC = 9 - 4 + 60$$

$$MC = 69 - 4$$

$$MC = 65$$

$$b. \quad TR = 100 + 2Q^2 + Q,$$

$$MR = \frac{dTC}{dQ} = 4Q + 1$$

$$\text{If } Q=1, MR = 4(1) + 1$$

$$MR = 5$$

Lesson 5: Fractions in economics

a) Learning objective:

- Solve economic problems using fractions.
- Use fractions in analysing economic phenomenon /situation.

b) Teaching resources:

Relevant Text books, stationery (papers), computers, internet access, calculators, rulers and other geometrical materials.

c) Prerequisite/Revision/introduction:

Freshen your skills in Mathematics and instruct your students to do the same. Ensure you have ample examples, in relation to economics units that will help students do sufficient practice. This lesson requires more practice by the student teacher so as to develop relevant competences from the unit. However, the tutor must be aware of time management.

The tutor should guide the student teachers on how to calculate and interpret these mathematical calculations in regard to economics sense. They should not be diverted from an economic sense rather to a mathematical one. They should therefore, interpret the calculations in relation to any economic issue or phenomena.

d) Learning activities:

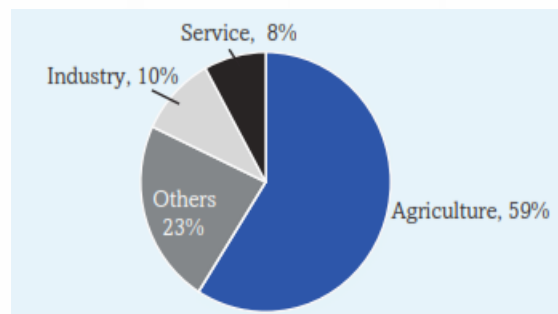
i) Guidance to the learning activity 19.6:

Put student teachers in groups to discuss and share views on how to solve the **fractions** given in the activity. Move around different groups facilitating the discussions. Thereafter, tutor invites some sampled groups to present in plenary their findings. Tutor summarizes the lesson by clarifying on the student teacher's findings.

Answers to activity 19.6.

The annual budget for Rwanda was 550,000,000,000 RWF, it was allocated as shown below.

Sectoral budgetary allocation



Use the figures above to answer the questions that follow:

- Determine how much was allocated to the service sector.
- Express the agricultural allocation in billions as a ratio of the total Budget
- What fraction of the budget went to other sectors?
- What proportion of the 550b \$ was allocated to the industrial sector?
- Agriculture was allocated a lion's share of the budget. In your own view, why do you think could have been the reason for this.
- Identify the sectors that may be included in the 'others'.
- Would you take the above to be a good budgetary allocation to suit your country? Support your answer.

Answers

- Suppose St is the total budget allocated to the service sector:

$$ST = \frac{550,000,000,000 \times 8}{100}$$

$$ST = 44,000,000,000 \text{ RWF}$$

- b. Suppose TA is total budget allocated to Agriculture

$$TA = \frac{550,000,000,000 \times 59}{100}$$

$$TA = 324,500,000,000 \text{ RWF}$$

- c. Suppose TO, is the total budget allocated to other sectors

$$TO = \frac{550,000,000,000 \times 23}{100}$$

$$TO = 126,500,000,000$$

- d. Suppose SI, is the total budget allocated to industrial sector

$$SI = \frac{550,000,000,000 \times 10}{100}$$

$$SI = 55,000,000,000$$

$$ST = \frac{550,000,000,000 \times 8}{100}$$

$$ST = \frac{550,000,000,000 \times 8}{100}$$

- e. **Agriculture was allocated a lion's share of the budget. In your own view, why do you think could have been the reason for this.**

For this question, let student teachers express their views on what they think. However, it may be because Agriculture is the most important sector in which the largest population depends on and it is the major export sector in Rwanda.

- f. Identify the sectors that may be included in the 'others.'

Fishing, mining, infrastructure, etc.

- g. **Would you take the above to be a good budgetary allocation to suit your country? Support your answer.**

Let student teachers express themselves as far as this is concerned. The tutor also must give his views accordingly.

a) Answers to application activity 19.6

Simon, a large-scale farmer, has the following livestock on his farm:

- 1) 50 dairy cattle, 40 of which are currently being milked;
- 2) 100 beef cattle, 60 of which are cows;
- 3) 200 goats, 40 of which are he- goats.

Required:

b) Determine:

- i) The total number of livestock is 50 dairy cattle + 100 beef cattle + 200 goats = 350
- ii) The total number of male livestock is (100 beef cattle – 60 cows = 40 bulls) + 40 he-goats = 80
- iii) The total number of cattle = 50 dairy + 100 beef cattle = 150 cattle.

c) Determine the fraction of;

- i) She goats to the total goats on his farm. = $\frac{160}{200}$ or $\frac{4}{5}$
- ii) Beef cattle to the total cattle. = $\frac{100}{150}$ or $\frac{2}{3}$
- iii) He goats to total goats = $\frac{40}{200}$ or $\frac{1}{5}$
- iv) Dairy cattle to the total cows. = $\frac{50}{110}$ or $\frac{5}{11}$

d) The reasons that may have made Simon to:

Keep more goats than cattle on his farm because

- Strong market, there is a strong demand for goat meat
- Goats are small and safer to work around than cattle, and because of their size and ease of handling, there is no need for expensive working facilities
- Goats are one of the cheapest livestock enterprises to start-up, because they do not require much capital to purchase or feed. Also, as stated above, facilities are cheaper than for cattle.

ii) Keep more beef cattle than dairy cattle.

- The beef industry provides many jobs
- The life of dairy cattle in production is short. At around four years

old, dairy cattle are considered “spent” and sent to slaughter. “Milk Life” for a cow is defined by strain, fear, and loss.

ii) Guidance to the learning activity 19.7:

Put student teachers in groups to discuss and share views on how to solve the equations on **ratios** given in the activity. Move around different groups facilitating the discussions. Thereafter, tutor invites some sampled groups to present in plenary their findings. Tutor summarizes the lesson by clarifying on the student teacher’s findings.

Answers to activity 19.7:

- For a sugar-producing firm, the ratio of total fixed costs to total costs is 4:10. Determine value of its total variable costs if it spends 40 million FRW as fixed costs.
- In a class, the ratio of girls to boys is 7:3 and the ratio of day scholars to boarders (both girls and boys) is 2:8. If the number of boarders is 400 students, determine the number of and girls in this class.
- Christine works with Rwanda Environment Authority and consumes 400,000 FRW of her net salary per month. If the ratio of her savings to net salary is 6:20, determine how much she saves.

Answers :

- The ratio of fixed costs for sugar -producing firm is 4/10 which is 40% of the total cost,

The total cost $TC = FC + VC$ (TC =Total cost, FC = Fixed cost, VC =variable cost)

If $FC=40,000,000$ which are 40%, the total cost will be 100,000,000

$$\frac{4 \times TC}{10} = 40,000,000$$

$$TC = \frac{10 \times 40,000,000}{4}$$

$$TC = 100,000,000$$

$$VC = TC - FC$$

$$VC = 100,000,000 - 40,000,000$$

$$VC = 60,000,000$$

$$VC = 60M$$

- b. For a ratio girl to boys is 7:3, this means for 10 scholars, 7 are girls and 3 are boys

For a ratio day scholar to borders is 2: 10, means that of 10 students 2 are day scholars and 8 are borders, this means 20% are day scholars and 80% are borders.

If boarders' scholars are 400, then total scholars are $= \frac{10 \times 400}{8}$,

Total scholars are 500, day scholars are 100

The total of girls is $= \frac{7 \times 500}{10} = 350$, the total of boys is 150,

- c. Christine consumes 400,000 FRW of her net salary per month. If the ratio of her savings to net salary is 6:20, determine how much she saves, this means 6/26 of the net salary is the saving and 20/26 of the salary are consume

The salary is $= \frac{400,000 \times 26}{20} = 520,000$,

The savings are $= \frac{520,000 \times 6}{26} = 120,000$

Answers to application activity: 19.7:

From the information given in the activity,

- The ratio of beef cattle to the total number of cattle in the farm. **100:150 or 1:15**
- The ratio of bulls to cows in the farm. **40: 110 or 4:11**
- The ratio of cattle to goats in the farm. **150: 200 or 3:4**
- The ratio of the he goats to the she goats. **40:160 or 1: 4**

iii) Guidance to the learning activity 19.8:

Put student teachers in groups to go to the library or internet; discuss, calculate and share views on how to solve the equations on **proportions** given in the activity. Move around different groups facilitating the discussions. Thereafter, the tutor invites some sampled groups to present in plenary their findings. The tutor summarizes the lesson by clarifying on the student teacher's findings.

Answers to activity 19.8.

Let student teachers answer depending on the figures they researched about, basing on how proportions are calculated.

iv) Guidance to the learning activity 19.9:

Put student teachers in pairs to discuss, calculate and share views on how to solve the equations on percentages based on the data given in the activity. Move around different groups facilitating the discussions. Thereafter, tutor invites some sampled groups to present in plenary their findings. The tutor summarizes the lesson by clarifying on the student teacher's findings.

Answers to activity 19.9.

Work out the following:

- a. Umuhuza spent 20000 FRW of her monthly salary on transport. Express this as a percentage of her salary if she earns 250000 FRW monthly.

$$\frac{20000}{250000} \times 100 = 8\%.$$

- b. In a class of 40 students, 25 are girls. Express the number of boys as a percentage of the whole class.

$$40 - 25 = 15$$

$$\text{Boys} = 15$$

$$\frac{15}{40} \times 100 = 37.5\%$$

- c. Given that the price of commodity X increased from 500 FRW to 850 FRW per unit, what is the percentage change in price of commodity X?

Price increased from 500 to 850

$$\frac{850 - 500}{500} \times 100$$

$$\frac{250}{500} \times 100 = 50\%$$

- d. Twahirwa and Umuhuza work for KSW Ltd. Their salaries were increased last month. Twahirwa now earns 200000 FRW up from 100000 FRW. On the other hand, Umuhuza now earns 500000 FRW up from 370000 FRW. Compare their increments and discuss who got a bigger increase. Explain your answer.

Twahirwa = 100000 to 200000

$$\frac{200000-100000}{100000} \times 100$$

$$\frac{100000}{100000} \times 100 = 100\%$$

$$\text{Umuhoza} = 370000 \text{ to } 500000$$

$$\frac{500000-370000}{370000} \times 100$$

$$\frac{130000}{370000} \times 100 = 35.13\%$$

Twahirwa got a bigger percentage increase (100%) than Umuhoza (35.13%) because 100 is greater than 35.1%.

Answers to Application activity 19.9

Referring to Application activity 19.7 of this unit, we determine:

a) *The percentage of the he-goats to total number of goats on the farm*

$$\frac{40}{200} \times 100 = 20\%$$

b) The percentage of the bulls to the total number of beef cattle on the farm.

$$\frac{40}{100} \times 100 = 40\%$$

c) Interpret the percentages calculated in (a) and (b) above.

In 'a' the percentage of the he-goats (20%) to the total number of goats in the farm is smaller than the percentage of she goats (80%).

In 'b' the percentage of bulls (40%) to the total number of beef cattle on the farm is small compared to the total number of cows for beef (60%).

v) Guidance to the learning activity 19.10:

Put student teachers in pairs to discuss, calculate and share views on how

to solve the equations on averages based on the data given in the activity. Move around different groups facilitating the discussions. Thereafter, tutor invites some sampled groups to present in plenary their findings. The tutor summarizes the lesson by clarifying on the student teacher's findings.

Answers to activity 19.10.

If a cement firm employs 60 people in production of 4200 sacks of cement, calculate personal contribution of labour in that production process in terms of sacks.

Solution:

Total output = 4200 sacks of cement

Units of labour used = 60 people

$$\text{Average output} = \frac{TP}{L} = \frac{4200}{60} = 70$$

Average output = 70 sacks of cement. This means that each person (unit of labour), produced 70 sacks of cement.

Answers to application activity 19.10:

Given that the price of a commodity increased from 200rwf to 500rwf and quantity demanded increased from 2kg to 5kgs per day. Calculate the Price elasticity of demand.

Solution:

Price increased from 200 to 500 quantity demanded increased from 2 to 5.

$$\begin{aligned} PED &= (-) \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} \\ &= (-) \frac{5-2}{500-200} \times \frac{200}{2} \\ &= (-) \frac{3}{300} \times \frac{200}{2} \\ &= (-) 0.001 \times 100 = -0.1 \\ PED &= | 0.1 | \end{aligned}$$

Since price is never negative, we are interested in the magnitude of the number without considering the sign i.e. | 0.1 |.

19.6. Summary of the unit:

In this unit, the following were covered:

Linear equations and graphs: A linear equation is any equation involving one or two variables whose exponents are one. In the case of one variable, one solution exists for the equation. For example, with $2x = 6$, x can only be 3.

Non-linear equations: Non-linear algebraic equations are polynomial equations of a degree that is greater than one, the following main non-linear equations: Polynomials, Logarithmic equations, Conic equations and exponential equations

Simultaneous equations: these are two equations, each with the same two unknowns and are “simultaneous” because they are solved together.

- Differential equations and graphs (refer to subunit 19.1.4 student book)
- Ratios, proportions and percentages, reciprocals, averages and index numbers, absolute values (refer to subunit 19.2 student book).

19.7. Additional information for the teacher.

Economics employs mathematical and logical tools to model and analyze markets, national economies, and other situations where people make choices. Understanding of many economic issues can be enhanced by careful application of mathematical methods. This course, therefore, reviews concepts and techniques usually covered in algebra, geometry, and calculus, focusing on those elements most relevant to economic analysis. The course applies these mathematical concepts and techniques to model economic behavior and outcomes. As a tutor, thus, any examples used or any information in this unit must be directed towards understanding, analysing and interpreting economics issues.

Linear equations contain only linear terms. This means there are no square, cube or higher order terms in the equation. The slope of a line describes the steepness of a line, indicating how much the y coordinate changes with respect to x coordinate. The slope has many applications in economics, among other fields.

Exponential equations are distinguished from polynomials in that they have variable terms in the exponents. An example of an exponential equation is $y = 3^{(x - 4)} + 6$. Exponential functions are classified as

exponential growth if the independent variable has a positive coefficient and exponential decay if it has a negative coefficient. Exponential growth equations are used to describe the spread of populations and diseases as well as financial concepts such as compound interest (the formula for compound interest is $Pe^{(rt)}$, where P is the principal, r is the interest rate and t is the amount of time)

19.8: Answers to end unit assessment:

1. For this question, take students for research to get the information.
2. What is the difference between linear and non-linear equations?

Linear Equations	Non- Linear Equations
It forms a straight line or represents the equation for the straight line	It does not form a straight line, but form a curve.
It has only one degree. Or we can also define it as an equation having the maximum order of 1.	A nonlinear equation has the degree as 2 or more than 2, but not less than 2.
All these equations form a straight line in XY plane. These lines can be extended to any direction but in a straight form.	It forms a curve and if we increase the value of the degree, the curvature of the graph increases.
The general representation of linear equation is; $y = mx + c$ Where x and y are the variables, m is the slope of line and c is a constant value.	The general representation of nonlinear equations is; $a x^2 + b x^2 = c$ Where x and y are the variables and a , b and c are the constant values.
Examples: $10x = 1$ $9y + x + 2 = 0$ $4y = 3x$ $99x + 12 = 23 y$	Examples: $X^2 + y^2 = 1$ $X^2 + 12xy + y^2 = 0$ $X^2 + x + 2 = 25$

The linear equation has only one variable usually and if any equation has two variables in it, then the equation is defined as a Linear equation in two variables. For example, $5x + 2 = 1$ is Linear equation in one variable. But $5x + 2y = 1$ is a Linear

equation in two variables.

3. Solve the linear equation $3x+9 = 2x + 18$

Solution: Given, $3x+9 = 2x + 18$

$$\Rightarrow 3x - 2x = 18 - 9$$

$$\Rightarrow x = 9$$

4. Solve the nonlinear equation $x+2y = 1$ and $x = y$

Solution: Given, $x+2y = 1$

$$x = y$$

By putting the value of x in the first equation we get,

$$\Rightarrow y + 2y = 1$$

$$\Rightarrow 3y = 1$$

$$\Rightarrow y = \frac{1}{3}$$

$$\therefore x = y = \frac{1}{3}.$$

19.9: Additional activities.

19.9.1: Remedial activities.

Given the equation below, answer the questions that follow.

$$Q_d = 60 - 2p.$$

Price in Rwf	Quantity demanded (Q_d) in kgs
0	
1	
2	
3	
4	
5	
6	

i) Calculate quantity demanded levels given the prices above.

ii) Calculate the price levels in case quantity was 20, 25 and 30 respectively.

Answers.

Given $Q_d = 60 - 2p$.

In case price is 0

$$Q_d = 60 - 2(0).$$

$$Q_d = 60 - 0$$

$$Q_d = 60$$

In case price is 1.

$$Q_d = 60 - 2(1)$$

$$Q_d = 60 - 2$$

$$Q_d = 58$$

In case price is 2

$$Q_d = 60 - 2(2)$$

$$Q_d = 60 - 4$$

$$Q_d = 56$$

In case price is 3

$$Q_d = 60 - 2(3)$$

$$= 60 - 6$$

$$Q_d = 54$$

in case price is 4

$$Q_d = 60 - 2(4)$$

$$= 60 - 8$$

$$Q_d = 52$$

in case price is 5

$$Q_d = 60 - 2(5)$$

$$60 - 10$$

$$Q_d = 50$$

In case price is 6.

$$Q_d = 60 - 2(6)$$

$$Q_d = 60 - 12$$

$$Q_d = 48$$

iii) **When price was 20;**

Given $Q_d = 60 - 2p$.

$$Q_d = 60 - 2(20)$$

$$Q_d = 60 - 40$$

$$Q_d = 20$$

when price was 25

$Q_d = 60 - 2p$.

$$Q_d = 60 - 2(25)$$

$$Q_d = 60 - 50$$

$$Q_d = 10$$

when price was 30

$Q_d = 60 - 2p$.

$$Q_d = 60 - 2(30)$$

$$Q_d = 60 - 60$$

$$Q_d = 0$$

19.9.2: Consolidation activities:

Activity:

The cost of producing tomatoes is $\frac{3}{4}$ of the total revenue (**TR**) got from its sales. If the total cost (**TC**) incurred by the producer to produce 5 sacks of tomatoes was Rwf. 20,000, what was his/her profit?

Solution:

$$\text{Total cost} = \frac{3}{4} \text{TR}$$

$$20,000 = \frac{3}{4} \text{TR}$$

Cross multiply

$$20,000 \times 4 = 3\text{TR}$$

$$80,000 = 3\text{TR}$$

$$\frac{80,000}{3} = \frac{3\text{TR}}{3}$$

$$26666.666667 = \text{TR}$$

$$\text{Profits} = \text{TR} - \text{TC}$$

$$\text{Profits} = 26666.666667 - 20,000$$

$$\text{Profits} = \mathbf{6666.666667\text{frw.}}$$

19.9.3: Extended activities:

Activity 1.

1. The cost of producing maize is $\frac{1}{4}$ of the total revenue (**TR**) got from its sales. If the total cost (**TC**) incurred by the producer to produce 8 sacks of maize was Rwf. 40,000, what was his/her profit?

$$\text{TC} = \frac{1}{4} \text{TR}$$

$$40,000 = \frac{1}{4} \text{TR}$$

Cross multiply

$$40,000 \times 4 = 1 \times \text{TR}$$

$$160,000\text{frw} = \text{TR}$$

$$\text{Profits} = \text{TR} - \text{TC}$$

$$\text{Profits} = 160,000 - 40,000.$$

$$\mathbf{\text{Profits} = 120,000\text{frw.}}$$

Activity 2:

In spending her income Uwase shares it into consumption and savings. The ratio of her monthly savings to her disposable income is 6: 20. If her

ratio of tax to disposable income is 1: 4, what is her gross income given that she spends Rwf140,000 on consumption every month after paying tax?

Let S = savings

G = Gross income

Y = disposable income

C = Consumption expenditure.

T = Tax

$$GY = Tax + DY$$

$$Dy = C + S$$

$$S = \frac{3}{10} (Dy) \text{ from } 6:20$$

$$Dy = C + \frac{3}{10} (DY) \text{ but } C = 140,000$$

$$DY = 140,000 + \frac{3}{10} (Dy)$$

$$DY - \frac{3}{10} (Dy) = 140,000$$

$$\frac{10Dy - 3Dy}{10} = 140,000$$

$$\frac{7}{10} (Dy) = 140,000$$

$$7(Dy) = 1,400,000$$

$$Dy = 200,000$$

Total ratio of dy & tax = 5 (from 1:4, 1+4)

Tax = $\frac{1}{5}$ (Gy) while $Dy = \frac{4}{5}$ (Gy)

$$200,000 = \frac{4}{5} Gy$$

$$5 \times 200,000 = 4Gy$$

$$1,000,000 = 4Gy$$

$$Gy = 250,000$$

OR

From the data above, $C = \text{Rwf } 140,000$ after taxes

Given that $y_d = C + S$

$$y_d = 140,000 + S$$

If her S: $y_d = 3: 10$ then her C: $y_d = 7: 10$

Such that $\frac{C}{y_d} = \frac{7}{10}$ $7y_d = 10C$

$$y_d = \frac{10C}{7} = \frac{10}{7} \times 140,000 = \text{Rwf } 200,000$$

$$S = y_d - C = 200,000 - 140,000 = 60,000$$

Therefore, $S = \text{Rwf } 60,000$.

Her disposable income (is Rwf 200,000

But T: y_d , 2:8 thus, $\frac{T}{y_d} = \frac{2}{8}$ or $\frac{1}{4}$

$$y_d = 4T$$

$$T = \frac{1}{4} y_d \quad T = \frac{1}{4} (200,000)$$

$$T = 50,000$$

$$G = y_d + T \quad G = 200,000 + 50,000$$

$$G = \text{Rwf } 250,000.$$

● UNIT: 20

THEORY OF DEMAND.

20.1. Key unit Competency:

Be able to analyze the determinants and value of demand in allocation resources in the market.

20.2 . Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related subjects like entrepreneurship S.2 where the student teachers studied about demand. However, they may not have the capacity to apply it in the field of economics without the guidance of the tutor. It is vital to note that, student teachers already have a handful of skills from entrepreneurship of S.2 from the unit of market. Therefore, the tutor should help the student teachers to understand deeply the concept of demand and its applicability. The tutor has to make the student teachers realize the value of demand in resource allocation.

Demand theory is a central pillar in Economics. To understand how the economy functions, one has to understand demand because to a larger extent, the level of demand determines how much the producers produce for the market and the prices that prevail in the market. While lack of demand presents an economic problem, excess demand is also a problem that must be contended with. In this unit, demand is defined, its types and determinants discussed and its relationship with the price analyzed.

In this unit, the main sub topics covered are: Types of prices and markets, price determination in the market, law of demand, types of demand and its determinants, demand schedules and curves.

20. 3 Cross cutting issues.

Cross-cutting issues in view of the recent financial crisis that affected the global demand for goods and services and hence slowing down the economic growth of African countries including Rwanda. The demand of goods on the world market can easily affect the demand and price of a commodity even at the village level. Take an example if the price for coffee on the world market increase this may cause the demand of coffee

from village level to increase and may also increase on the demand of other goods in the same locality. The tutor has to take time to assist the student teachers to appreciate the role of demand in the economy and the interrelationship of the countries of the world (globalization) and how this eventually affect the local demand. If America has a financial crisis, this may affect the tourism sector to the extent of affecting even the one selling fish at certain restaurant at Akagera National park.

20.4: Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity, that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and in real life and the new unit title and subject they are to study. In this case, it tests the level of student teacher's understanding of the subject matter of economic understanding they may be already having. In order for student teachers to appreciate the relationship between price and demand encourages them to make a field trip in the nearby market or documentary research about the prices and demand, and then introduces the lesson with the introductory activity.

Answers to the introductory activity

- a. Student teachers list down commodities commonly used in people's daily life
- b. The student teachers may mention any current price of different commodities mentioned above.
- c. They express how they would react in case prices doubled.
- d. Prices determination will be covered in the due course of the unit.

20.5: List of lessons

List of subheading and lessons

	Lesson titles	Learning objective	Number of periods
1	Introduction to Price theory	• Explain how prices are determined in markets in the economy. • Analyse the factors that determine prices in the market.	2

2	Demand	• Explain and illustrate the law of demand. • Explain the factors that determine demand in an economy. • Use the demand schedule and curve to illustrate the law of demand. • Show the difference between change in demand and change in quantity demanded by use of illustrations	3
3	Assessment	• Be able to analyze the determinants and value of demand in allocation resources in the market.	1

Lesson 1: Introduction to Price theory

a) Learning objectives.

- Explain how prices are determined in markets in the economy.
- Analyze the factors that determine prices in the market.

b) Teaching resources

Economics text books, fieldwork reports, newspapers and internet and other necessary materials.

c) Prerequisites / revision/ introduction.

With reference to markets in S.2 entrepreneurship, student teachers have information about what happens in markets. They relate with unit 16 about economic systems, then, they explain how prices may be determined. They too, relate with real life experience about prices for the commodities they normally purchase.

d) Learning activities

i) Guidance to activity 20.1:

In small groups, student teachers undertake documentary research from the library or the internet and research about price theory. Basing on activity 20.1 questions they discuss and share their views, thereafter,

make presentations in class. The tutor harmonises their findings.

Answers to activity 20.1:

- a. The following are the effects of scarcity of fuel on:
- i) The pump price of fuel will increase.
 - ii) The price of commodities in the markets countrywide will increase because of increase in transport costs due to the increase in the price of fuel.
 - iii) The amount of goods and services that people can be able to purchase from markets will reduce because as transport costs increase even the sellers increase their prices.
- b. The ways in which the government may have used 'to address the situation above is through using price control by fixing maximum prices (price ceiling)
- c. Other than the government determining prices, other method of determining prices include the following;
- *Fixing prices by signing treaties:*
 - *Sales auctioning:*
 - *Resale price maintenance:*
 - *Market forces of demand and supply:*
 - *Price cartels:*
 - *Price leadership:*
- d. From the passage, the price levels in markets are determined by the government through price controls

d) Answers to application activity (20.1)

Benefits of Resale Price Maintenance (RPM):

- A customer need not be too much alert or is not in a position suffering from the idea that he/she has been charged higher price. He/she can safely buy his needed goods from any retailer.
- Unhealthy price competition among dealers is prevented. It must be admitted that all the dealers have not the same financial soundness to face price competition. So, uniform price in the market is also good for them.
- Small retailers are protected and because of their greater numerical strength, total sales of the product also increase; the manufacturer also stands to gain.

- The problem of loss leader selling is absent. Well known widely advertised leading brands are used as loss leaders deliberately by dealers. For customers' attraction, these brands are sold at a lower price. The loss thus incurred can be more than compensated due to additional sales of many other products.
- R.P.M. has a notable contribution to market expansion. Because of 'no fear' from competitors, new retailers venture to sell the particular product.

Drawbacks of R.P.M:

Undoubtedly R.P.M. is an accepted market strategy but it does not mean that this pricing technique is free from criticism and does only good to both the producer and the consumers.

- Healthy competition is always desirable, but R.P.M. eliminates competition.
- Highest low volume retailers form the basis of R.P.M, so, it amounts to premium on inefficiency.
- R.P.M. strategy prevents distributors to sell their private brands at lower prices. These brands are in no way inferior to national brands. However, R.P.M. is expected to be fair trading to ensure price stability in retail trade.
- Consumers, in general, may not feel satisfied with R.P.M. strategy. Most of them are in favour of low price, rather than different types of services. Competition among the dealers can only assure lowering of price. So, R.P.M. may be to the liking of the rich consumers who are more interested in better services than higher prices.
- It can also be criticized that R.P.M. subsidizes inefficiency, so it has no economic justification also. The R.P.M. wanted to substitute non-price competition for price competition.

Lesson 2: Demand.

a) Learning objectives:

- Explain and illustrate the law of demand.
- Explain the factors that determine demand in an economy.
- Use the demand schedule and curve to illustrate the law of demand.
- Show the difference between change in demand and change in

quantity demanded by use of illustrations

b) Teaching resources teaching;

Economics textbooks, newspaper/ magazines articles, internet and graphs/ demand curve.

c) Prerequisites / revision/ introduction.

Student teachers have knowledge, understanding, skills, and attitudes gained in S.2 Entrepreneurship unit about markets, where they studied about demand. They saw in unit 19 in about equations and fractions in economics, how to draw curves, this will be very helpful in illustrating the law of demand using the demand curve. Therefore, they base on that to analyse the law of demand, its illustration, determinants of quantity demanded.

d) Learning activities

i) Guidance to activity 20.2:

Through documentary research from the library or the internet, student teachers either in groups, pairs or as individuals, base on the case study about Dushime, carry out research on demand and are able to define it, state and express the law of demand on a schedule and curve.

Answers to activity 20.2;

- a. Refer to the definition of demand in the student teacher's book.
- b. Refer to the law of demand in the student teacher's book
- c. Refer to the demand schedule in the student teacher's book.

ii) Guidance to activity 20.3:

Student teachers as individuals or pairs, use the knowledge and skills gained in the lesson about activity 20.2 and on their own formulate and illustrate both individual and market demand schedules and curves.

Answers to Activity 20.3

- (i) Let every student teacher come up with his/her own demand schedule and then draw the curve.
- (ii) Every student teacher has to come up with his /her own market schedule and illustrate it on the curve.

iii) Guidance to Activity 20.4

Student teachers either in small groups, or pairs or as individuals, analyse the case study about Mukunzi and Muriza and the answer the questions that follow. Tutor gives a consenting conclusion to the whole class, based on the student teacher's views.

Answers to activity 20.4:

- a) The reason as why the units of clothes bought go on increasing as prices reduce and vice versa is simply because of the law of demand.
- b) The reasons as to why Mukunzi bought many units of clothes than Muriza at the same prices is simply because of differences in the way they, both, are influenced by other factors that affect demand other than price like
 - Differences in levels of income
 - Differences in tastes and preference
 - Differences in levels of advertisements. etc
- c) Other than price changes, other factors that would make the two not to buy the same units of clothes include all those factors that affect demand. Refer to the factors that affect demand in the student's book 20.2.4:

iv) Guidance to Activity 20.5

Student teachers either in small groups, or pairs or as individuals, analyse the set of commodities, share their views amongst themselves, after they discuss as a whole class. Tutor gives a consenting conclusion to the whole class, based on the student teacher's views.

Answers to activity 20.5.

- (a). The economic name given to the demand for each set of commodities A, B, C & D?
 - A- Substitute goods
 - B- Complementary goods
 - C- Composite demand commodities
 - D- Not related.

b) The relationship between commodities in each set A, B & D.

i) Commodities in A serve the same purpose.

ii) Commodities in B are demanded together.

iii) Commodities in C serve a variety of functions.

iv) Commodities in D are not related at all.

(c). How Price changes affect demand of commodities in each set.

A- When the price of one increase, the quantity demanded of another increases.

B- When the price of one increase, the quantity demanded of another reduce.

C- If the price composite demand commodity increases one reduces the quantity demanded to only vital purposes.

D - If the price of one increases, it doesn't affect the demand of another commodity.

e) Answers to application activity 20.5

The following are some of the **reasons as why people demand goods**

- *Impulsive effect*: Some people demand for goods because they have come across the commodity or seen the commodity.
- *Functional effects*: Some people demand for goods because of their functions or uses e.g. you buy a radio for music.
- *Band wagon effects*: Some people demand for goods because they have seen others buying them.
- *Snob effect*: some people demand for goods in order show off.
- *Speculative effects*: Some people demand for goods in order to make profits out of them in future.

Guidance to skills Lab 20:

Guide student teachers on how to form a club. Let them come up with different items that they can produce and sell in the school and outside community based on the demand analysis made.

20.6: Summary of the unit.

Different ways through which prices are determined.

- Haggling/bargaining.
- Fixing prices by signing treaties.
- Sales auctioning.
- Resale price maintenance.
- Fixed prices by Government.
- Market forces of demand and supply.
- Price cartels (Perfect collusion)
- Price leadership (Imperfect collusion)

Factors that determine price in the market.

- Cost of production.
- Level of competition in the market.
- Government policy.
- Demand and supply of the commodity.
- The type of the product.

Demand is the desire backed by the ability and willingness of a consumer to buy a commodity in a particular market at a given price in a given period of time.

Effective demand refers to the actual buying of the commodities.

Latent demand is the demand that is not backed by ability to pay (money).

The law of demand states that *ceteris paribus*, the higher the price of a commodity, the lower the quantity demanded and the lower the price of commodity, the higher the quantity demanded.

The demand schedule is a numerical representation or table showing quantities demanded of a given commodity at different price levels.

The demand curve is the graphical representation of the quantities of a commodity demanded at various prices in the market at a given period of time.

Factors that determine quantity demanded of a commodity.

- Price of the commodity.
- Price of other commodities.
- Substitute commodities.
- Price of Complementary commodities.

- Level of consumer's income.
- For a normal good.
- For inferior goods.
- For essential commodities or necessities.
- Government policy.
- Price expectation.
- Seasonal factors.

Types of demand

- Joint/complementary/twin demand.
- Competitive demand.
- Composite demand.
- Derived demand.
- Independent demand.
- Direct demand.
- Latent demand.
- Effective demand.

Change in quantity demanded refers to an increase or decrease in quantity demanded of a commodity due to a change in price of that commodity, other factors held constant.

Change in demand refers to an increase or decrease in quantity demanded of a commodity due to change in other factors that affect demand holding price of that commodity constant.

20. 7 Additional information for the Tutor.

Normal demand curves; Under normal circumstances, the demand curve is downward sloping from left to right and obeys the law of demand. This clearly shows the law of demand. The reasons for this downward slope from left to right are as follows:

- The law of diminishing marginal utility
- Real income effect
- Substitution effect
- Price effect
- Presence of low-income earners
- Many uses of the commodity.

Abnormal / regressive /exceptional demand curves: These are demand curves which disobey or do not conform to the law of demand i.e. they do not slope from left to right down words. These curves arise in the following circumstances

- Goods of ostentation (luxury)
- Giffen good

- Ignorance effect
- Effect of depression
- Price expectations
- Case of necessities such as salt
- Inferior goods:

20.8: Answers to end unit assessment:

1. a) Refer to the student teacher's book in 20.1.1. for the methods of price determination in markets.
2. Refer to the student's book in 20.1.2. for the factors that determine levels of demand for the commodities
3. (a) The circumstances when more of a commodity is demanded at constant prices include;
 - Increase in population size
 - Increase in levels of advertisement
 - Favourable season for a commodity.
 - Increase in consumer's income
 - Favourable fashion for commodity
 - Favorable price expectation (price speculation).
 - When the price of a substitute good increases.
 - When the price of a compliment reduces etc.
- (b).The circumstances when less of a commodity is demanded at constant prices include;
 - Decrease in population size
 - Decrease in levels of advertisement
 - Unfavorable season for a commodity.
 - Decrease in consumer's income
 - Unfavorable fashion for commodity
 - Unfavorable price expectation (price speculation).
 - When the price of a substitute good reduces.
 - When the price of a compliment increases etc
4. Refer to factors that affect demand in student's book for all other factors that affect demand except price.
5. (a) Taxation increases prices of commodities which reduces the quantity demanded of a commodity and subsidization reduces the

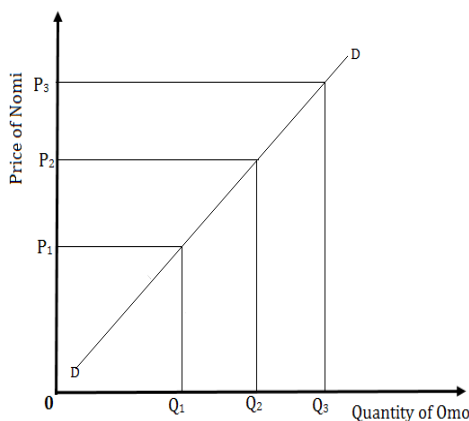
prices of the commodities which increase the quantity demanded.

- b) If the prices of fuel increase even the price of food staffs will increase which reduces the quantity demanded of food staffs and if the prices of fuel reduce, the price for food reduces and the quantity demanded of food staffs will increase.

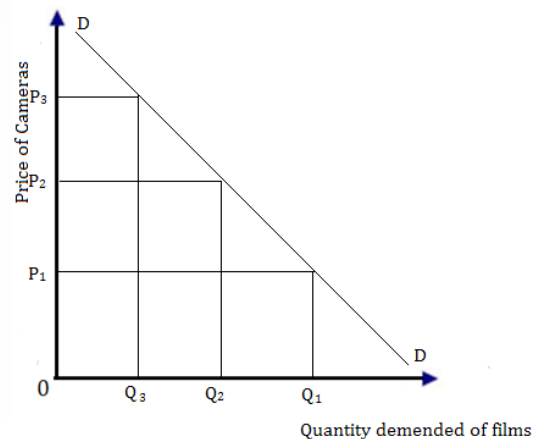
6. (i). Cameras and films are jointly demanded goods and Nomi and omo are substitute goods.

ii)

curve for substitutes



curve for complements.



20.9 Additional activities

20.9.1: Remedial activities.

1. The actual demand of commodity is known as
2. What special name is given to situation where the demand for a commodity is not backed by ability to buy the commodity.
3. With different example explain different forms of interrelated demand:

Answers to remedial activities.

1. Effective demand.
2. Latent demand
3. Refer to the types of demand in the student's book in 20.2.5:

20.9. 2. Consolidation activities;

Question: If commodity A and B are joint supplied, if there is increase in the quantity demanded of commodity A, explain what will happen on the price of commodity B.

Answers to consolidated activities

If there is an increase in quantity demanded of A, it means that even the quantity supplied of B will increase leading to its fall in price, causing it to be highly demanded.

20.9. 3: Extended activities.

1. How is market demand for a commodity obtained?
2. Give two examples of commodities which are jointly demanded.
3. Why may people demand less of a commodity when prices are increasing?

Answers to the extended activities

1. It is obtained by adding up the total amount of a commodity demanded by all consumers in the market at given price.
2. Examples of jointly demanded commodities.
 - Cars and tyres
 - Phone and battery
 - Pen and ink etc.
3. Why people demand less when prices are
 - Because of the law of diminishing marginal utility.
 - Because of income effect.
 - Because of substitution effect.
 - Presence and behavior of low-income earners, different uses of commodities.



UNIT: 21

THEORY OF SUPPLY

21.1. Key unit Competence:

By the end of the unit the student teachers should be able to analyze the determinants of supply in the market.

21. 2. Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related subjects like entrepreneurship S.2 where the student teachers studied about demand and supply. It is vital to note that, student teachers already have a handful of skills from entrepreneurship of S.2 from the unit of market. Therefore, the tutor should help the student teachers to understand deeply the concept of supply and its applicability in resource allocation. The tutor has to make the student teachers realize the value of supply in resource allocation to even reach the levels of advising suppliers of commodities in their localities based on variations in determinants of supply in the market.

Introduction Just like the theory of demand, the theory of supply is very important in the analysis of market behaviors and the economy. Low quantities supplied cause shortage in the market and subsequent scarcity increase the price of goods making them unaffordable by consumers. Excess supply may also overwhelm the demand hence reducing the prices for the commodities which cause losses to the producers. The economy requires a balance and hence the need to understand the theory of supply. Suppliers in this case may be individuals, firms and government agencies. Homogeneity of the diverse types of suppliers is assumed. In this unit, the main sub topics to be covered are:

- i. Concept of market supply.
- ii. Determinants of market supply.
- iii. Law of supply.
- iv. Supply schedules and curves.

21.3: Cross cutting issues.

While teaching this unit, stress the issue of environment and sustainability because suppliers in a bid to supply much, they normally over utilize resources to produce and sell much for profit maximisation. Also, stress the issue of Standardisation culture, where, as future producers, they should mind much about quality if they want to earn much from their sales.

21.4: Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity, that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and in real life and the new unit title and subject they are to study. Using the background information, the student teacher have on the supply in S.2 on markets, make the student teacher realize and appreciate the role of supply in resource allocation, and also get to understand that the supply of the commodities doesn't only depend on prices but also many other factors at micro and macro levels. Take student teachers through this introductory activity, they make research on supply, where they will discover in the due course of the unit, factors that may affect supply of a commodity and how supply can be increased.

21.5: List of subheading and lessons

	Lesson titles	Learning objective	Number of periods
1	Law of Supply, supply schedule and curve:	• Explain and illustrate the law of supply. • Use the supply curve to illustrate the relationship between price and quantity supplied.	2

2	Determinants and types of supply	- Identify possible determining factors of supply in the market. - Evaluate the determinants of the quantity supplied in the market.	2
3	Change in supply and change in quantity supplied.	Show the difference between change in supply and change in quantity supplied by use of illustrations.	1
Assessment		Be able to analyse the determinants of supply in the market.	1

Lesson 1: Law of Supply, supply schedule and curve:

a) Learning objectives.

- Explain and illustrate the law of supply.
- Use the supply curve to illustrate the relationship between price and quantity supplied.

b) Teaching resources teaching:

Use economics textbooks, newspaper articles, prepared supply curves, internet and audio-visual resources.

c) Prerequisites / revision/ introduction.

As a tutor ensure you have done research on supply so as to be able to guide student teachers.

The student teacher is required to use the knowledge, skills, values and attitudes from the previous units of the theory of demand and then related to the theory of supply and then be able to come up with definition, types and the law of supply.

d) Learning activities

i) Guidance to activity 21.1:

In small groups, student teachers undertake documentary research on supply. **Basing on activity 21.1**, they share their knowledge, either in pairs or small groups and then present to the class.

Answers to activity 21.1

- a. Refer to 21.1 for the definition of supply.
- b. Refer to 21.5 for the factors that determine supply

Answers to Application activity 21.1.

Student teachers base on the research about supply to draw their own individual and market supply schedules.

ii) Guidelines to activity 21.2

Here student teachers, in groups, pairs or as individuals, are required to use the same skills from the theory of demand and from application activity 20.1, to come up with individual supply curve and market supply curve.

Answer to activity 21.2:

Each student teacher is asked to try on their own to formulate their individual and market supply curve.

iii) Guidance to activity 21.3:

Student teachers in groups, pairs or as individuals, analyse the case study provided in activity 21.3, in the student teacher's book, answer the questions that follow amongst themselves, thereafter, they make presentation in class.

Ishingiro Bakery Ltd, a producer of bread in Rwanda, uses wheat flour and sugar as the main ingredients. From your own understanding, examine what will happen to the price and amount of bread supplied in markets in Rwanda if the following events took place;

- a. The price of bread will reduce but quantity supplied of bread will increase due to other bakeries in the market.
- b. The price of bread will reduce, but quantity supplied increase due cheap supply of cheap supply of wheat.

- c. As a result of environmental degradation like deforestation and silting of water bodies, there are long spells of drought that affect wheat and sugar plantations. The price of bread will increase but supply of bread will reduce due to the shortages in wheat supply.
- d. The price of bread will increase and quantity supplied reduces due to increased cost of labour caused by the parliamentary bill passed.
- e. The price of bread will reduce and quantity supplied increase due to introduction of new and more efficient machines in the bakery industry.
- f. The price of bread will reduce and quantity supplied increase due to reduction on taxes on the inputs.
- g. The price of bread will reduce and quantity supplied increase due to promotion of young entrepreneurs, more youth form their cooperatives and start up their own bakeries
- h. The price of bread will increase due to the increase demand of bread and the quantity supplied will increase due to increased demand and prices.
- i. The demand for cakes shall increase leading to decrease in demand and price of bread.

Lesson 2: Determinants and types of supply

a) Learning objectives.

- Identify possible determining factors of supply in the market.
- Evaluate the determinants of the quantity supplied in the market.

b) Teaching resources teaching:

Use economics textbooks, newspaper articles, prepared supply curves, internet and audio-visual resources.

c) Prerequisites / revision/ introduction.

As a tutor ensure you have done research on the various factors that determine supply, and types of supply The student teacher is required to use the knowledge, skills, values and attitudes from the previous units to come up with the analysis of determinants of supply in the market. It will also be important to bring out the aspect of types of supply.

In small groups, student teachers undertake documentary research or a field trip in the nearby market to discover the determinants of supply in the market. Other learning activities that the tutor uses include Class discussions, taking notes, class presentations and supply curves and then deduce the law of supply from them.

Guidance to activity 21.5

It is good for the tutor to first allow the student teachers to first come up with their own views and directs them to the right answers. In this activity student teachers are required to apply their skills of applications of change in supply and change in quantity supplied and the factors that influence change in supply and change in quantity supplied.

iv) Guidance to the answers in activity 21.5

Student teachers in pairs or as individuals visit the library or internet, research on types of supply, thereafter, analyse the sets of commodities given and discuss in class about their views. Tutor guides them after.

- a. The economic term given to the sets in each category
 - A- Joint supply commodities
 - B- Competitive supply.
- b. The relationship between the commodities in each set. For jointly supplied commodities, if the supply of one increase, quantity supplied of another increases automatically. For competitive supply if the supply of one increase, the quantity supply of another reduces.
- c. Based on the above examples, a student teacher is required to come up with other examples of each set.

e) Answers to application Activity 21.1:

Guidance to application; Student teachers are required to use their skills and understanding of the concept of the law of supply and market supply schedules to formulate individual and market supply schedules.

Guidance to the skills lab 21:

Let the student teachers come up with their suggestions on how they are going to increase the supply of goods they sell in the school-based club.

- By reducing costs of production through working on their own to provide cheap labor

- By employing an appropriate technology as to increase the quality and quantity of good supplied.
- By establishing garden that produce agricultural products which have low gestation period which can be sold in school.
- By looking at commodities which can be supplied at high price in school setting and outside.
- By seeking for assistance from the school administration.

21.6. Unit Summary.

Supply refers to the willingness and ability of a producer or seller to bring to the market certain amounts of a commodity at a given price in a given period of time.

Quantity supplied refers to the amount of a particular commodity that producers/suppliers are able and willing to bring to the market for sale at a certain price in a given period of time.

The Law of Supply states that “Ceteris paribus, the higher the price the higher the quantity supplied and the lower the price the lower the quantity supplied”.

Supply Schedule is a table that shows different quantities of a commodity that a producer can supply at different prices per period of time.

A supply curve is a graph that shows different quantities of a commodity that suppliers/producers are able and willing to bring to the market at different prices over a given period of time

Factors that determine quantity supplied of a commodity.

1. Price of the commodity
2. Number of firms or producers:
3. Goals or objective of a firm
4. Cost of production
5. The level of technology
6. Demand for the commodity
7. Government policy
8. Seasonal factors
9. Degree of freedom of entry of new firms in production

10. Time
11. Political climate
12. Gestation period
13. Level of infrastructural development
14. Size of the population/market

Types of supply

1. **Joint supply**- where two commodities are supplied together
2. **Competitive supply**- where supply of one competes with supply of the other.

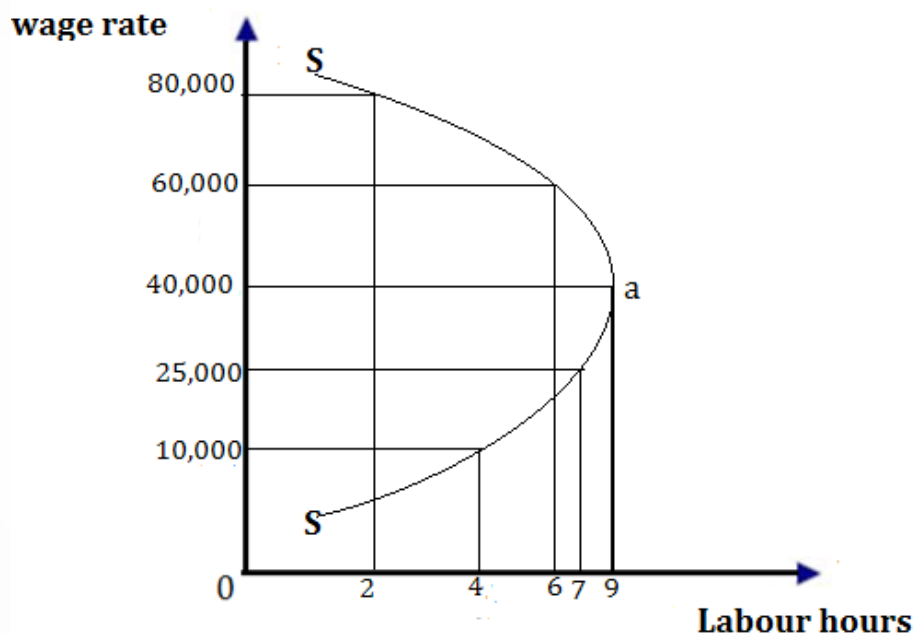
Change in supply refers to increase or decrease in the amount of a commodity supplied in the market at a particular time due to other factors that affect supply holding prices constant.

Change in quantity supplied refers to increase or decrease in the amount of a commodity supplied to the market as a result of changes in its price holding other factors that in determine supply constant.

21. 7Additional information for the Tutor.

Abnormal/regressive/exceptional supply curves: These are curves which do not obey or conform to the law of supply which states that” ceteris paribus the higher the price the higher the quantity supplied and the lower the price, the lower the quantity supplied and they include the following:

1. Fixed supply curve of land i.e. this is where the supply of land cannot change at whatever price offered.
2. Expectations of future price changes
3. During periods of catastrophes
4. Ignorance of producers of the prevailing market prices
5. Seasonal changes
6. Backward bending supply curve of labour where the supply curve of labour looks abnormal at high prices



Reasons for regressive / abnormal supply curve for labour;

- **Effect of target workers** who may not work after attaining an income level required for a particular purpose.
- **Preference of leisure to work at high wages** i.e. Someone would require a certain period of time to enjoy out of what he has earned.
- **The case of supply of migrant labour** i.e. even if wages increase labour supply will not increase with migrant labour.
- **The effect of old age** thus increase in wages may not attract labour supply.
- **Cases of absenteeism:** when work is hard, dangerous or unpleasant even when wages are increased workers may be few.
- **Substitution of labour by capital at high wages** thus less labour may be supplied with increase in wages where substitutability of labor by machines is possible.
- **Political instability in the area** i.e. this normally discourages people from working therefore even if wages increase labour supply may not increase.

- **Cultural and political factors requiring one to work less hours** i.e. even if wages increase where they are cultural hindrances labour supply may not increase.
- **High rate of taxation** i.e. as taxes increase with increase in wages workers may be discouraged from working for more hours because more incomes are taxed heavily.
- **Poor health of workers** i.e. one cannot increase on hours of work due to poor health or ill health.

21.8. End of unit assessment:

All questions in the end of unit assessment can be answered by using the knowledge, skills and attitude and values gained from the theory of supply concept.

1. Refer to factors that affect supply in the student's book under sub heading 21.5.
2. Student teachers give their own views jointly and competitively supplied commodities.
3. i) More of a commodity be supplied at constant prices due to
 - Improved technology.
 - Favourable political climate.
 - Increased demand for the commodity.
 - Well-developed infrastructure.
 - Expanded market.
 - Well-developed infrastructure.
 - Government subsidisation
 ii) Less of a commodity be supplied at constant prices due to;
 - Poor technology
 - Unfavourable political climate.
 - Fall in demand for the commodity.
 - Undeveloped infrastructure.
 - Limited market.
 - Undeveloped infrastructure.
 - High government taxes.
4. How government may regulate supply of commodities to compromise environmental sustainability through;
 - Subsidize producers to reduce cost of production.
 - Anti-pollution policies.
 - Efficient allocation of resources.
 - Develop infrastructure.

- Price control.
- Taxing those that misuse the resources.

21. 9. Additional activities

21.9.1. Remedial activities.

1. Distinguish between increase in supply and increase in quantity supplied

Answers to remedial activities.

Increase in supply refers to an increase in quantity supplied caused by favourable factors that determine supply of a commodity when price is constant while increase in quantity supplied refers to an increase in quantity supplied caused by to increase in the price of the commodity when other factors are constant.

21.9. 2: Consolidation activities;

Question: Explain the reasons as to why the supply of fresh beans in market may have vertical supply curve.

Answers to the consolidation activity:

- The supply of fresh beans may be provided by a monopolist firm that has determined the quantity that maximizes its profits and the monopoly firm only supplies that amount.
- Supply may be artificially limited.
- Supply may be for a short period of time

21.9. 3: Extended activities.

Qn: Under what circumstances may labour withdraw supply even when their wages increase?

Answers to the extended activity:

- Effect of target workers who may not work after attaining an income level required for a particular purpose.
- Preference of leisure to work at high wages i.e. Someone would require a certain period of time to enjoy out of what he has earned.
- The case supply of migrant labour i.e. even if wages increase labour supply will not increase with migrant labour.

- The effect of old age thus increase in wages may not attract labour supply.
- Cases of absenteeism: when work is hard, dangerous or unpleasant even when wages are increased workers may be few.
- Substitution of labour by capital at high wages thus less labour may be supplied with increase in wages where substitutability of labor by machines is possible.
- Political instability in the area i.e. this normally discourages people from working therefore even if wages increase labour supply may not increase.
- Cultural and political factors requiring one to work less hours i.e. even if wages increase where they are cultural hindrances labour supply may not increase.
- High rate of taxation i.e. as taxes increase with increase in wages workers may be discouraged from working for more hours because more incomes are taxed heavily.
- Poor health of workers i.e. one cannot increase on hours of work due to poor health or ill health.
- Deterioration of real wage i.e. Nominal wage may increase but real wage is falling which discourages worker from submitting in more hours of work.
- Poor labour management relations that do not motivate labour to increase on hours of work though wages may increase.

● UNIT: 22

EQUILIBRIUM AND PRICE DETERMINATION

22.1: Key Unit Competence:

Be able to determine the equilibrium position in the market.

22.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related subjects. Student teachers should integrate the knowledge, skills, values and attitudes acquired prior in other units like unit 19 (Equations and fractions in economics), unit 20 (Theory of demand) unit 21 (theory of supply) in understanding and analysis of equilibrium and price determination. Together with the knowledge and skills student teachers have from mathematics in S.1- unit 3 (linear functions, equations and inequalities), S.2- unit 3 (simultaneous equations), S.3- unit 6 (linear and Quadratic equations), and from entrepreneurship S.2 unit 4 about markets, they can be able to determine equilibrium position of firms. Student teachers already have some knowledge about equilibrium upon which the tutor can build.. The tutor though, needs to have a good understanding and skills on this unit so as to motivate student teachers towards the interpretation of economic phenomena.

22.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the student teachers. It may be direct in the explanation or in the due course of learning the unit as a whole or it may be indirectly tackled. For example, in the learning activity 22.1, when explaining the relationship between changes in demand and supply in response to prices, which brings about excess and shortages in the market, stress the issue of peace and values, where student teachers as consumers or suppliers need to always be modest in reaction to any change in market and look for home grown solutions for any effect that may happen (in case of excess supply or shortage of commodities) than resorting to chaotic solutions. Where government does not intervene, producers should not

want to make profits by supplying less at high prices or when there are low prices, they should not hoard commodities.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other cross-cutting issues. E.g. Inclusive education like engaging all student teachers in class activities and discussion without discrimination, gender education like using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other data that may be related to a given cross-cutting issue that he or she needs to integrate.

22.4: Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity, that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and units in this subject as seen in the introduction above and the new unit title. This Unit deals with the interactions between the demand and supply in the market. A state of equilibrium exists where the quantity demanded and the quantity supplied is equal. This conclusion assumes that there is no interference in the market operations by the government. In reality, the government does interfere with the market operations for the purpose of advancing the consumer welfare and in such situations the price is not determined by the market operations and there exists no market equilibrium. It should be noted that, as student teachers get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. For, example from the introductory activity in this unit, as the student teacher carries out research he or she may discover that:

- a. The economic term given to the price that is in the market at any given time is ***market price***
- b. The economic term given to that price in situation in the market where all what has been brought for sale by sellers has been bought by buyers is called ***equilibrium price***.

This unit has a single lesson of equilibrium determination but can be taught in sub-lessons as below:

- i) Meaning of equilibrium price and equilibrium quantity.
- ii). Deriving market equilibrium using joint demand and supply schedules

iii) Deriving market equilibrium using joint demand and supply and curves.

iii. Equilibrium conditions and equations.

22.5: List of lessons/ subheadings:

#	Lesson title	Lesson objectives	Number of periods
1.	Equilibrium and price determination:	• Identify the equilibrium position using schedules and curves. • Calculate and interpret equilibrium equations. • Illustrate the equilibrium point by use of demand and supply schedules and curves.	3
End unit assessment.		• Be able to determine the equilibrium position in the market.	1

Lesson 22.5.1: Equilibrium and price determination:

a) Learning objectives:

- Identify the equilibrium position using schedules and curves.
- Calculate and interpret equilibrium equations.
- Illustrate the equilibrium point by use of demand and supply schedules and curves.

b) Teaching resources:

Use Economics textbooks, economics journals, internet and geometrical materials.

c) Prerequisites / revision / introduction.

Basing on the knowledge skills, values and attitudes gained by the student teachers on demand and supply, tutor reviews the previous lesson to connect it with the new unit, through brain storming. After reviewing the previous unit, tutor helps to guide student teachers to discover that

as demand and supply meet, it makes equilibrium. Thus, introduce them into a new lesson about equilibrium.

d) Learning activities:

i) Guidance to learning activity 22.1:

Tutor presents activity 22.1 to student teachers in groups, they analyse the images there in and answer the questions that follow amongst themselves. Briefly, tutor samples out some groups for presentation, thereafter he/she concludes by harmonizing the student teacher's views.

Answers to activity 22.1:

- a. The difference between the two images is that Image 1 is balanced while image 2 is unbalanced.
- b. For image 2 to balance, there should policies put forward by the government towards increasing consumers incomes so that they can increase on what they buy. This will make supply balance with demand.
- c. Supposing object A represented the number of kilograms brought to market by suppliers and object Z represented the number of kilograms demanded by buyers of a particular commodity in a market, prices will fall because there is excess supply compared to what is demanded. So, for suppliers to dispose off their surplus, they lower the price.
- d. Where the two sides balance, it is called ***equilibrium*** and where they don't balance it is called ***disequilibrium***.

ii) Guidance to learning activity 22.2:

Tutor presents activity 22.2 to student teachers in pairs or groups or individual work (whichever way seems appropriate), they study the figures therein and answer the questions that follow. Briefly, the tutor samples out some groups/pairs/individuals for presentation, thereafter he/she concludes by harmonizing the student teacher's views.

Answers to learning activity 22.2:

Price (frw)	Quantity demanded (kgs)	Quantity supplied (kgs)	Surplus (kgs)	Shortage (kgs)
100	5	50	45	
90	12	41	29	
80	18	35	17	

70	22	28	6	
60	25	25	0	
50	34	22		12
40	41	18		23
30	47	14		33
20	50	9		41
10	55	5		50

c)

i) When what is demanded is greater than what is supplied, it leads to shortage while when what is supplied is greater than what is demanded, it leads to a surplus.

ii) The equilibrium price is 60 while equilibrium quantity is 25.

i) **Guidance to learning activity 22.3:**

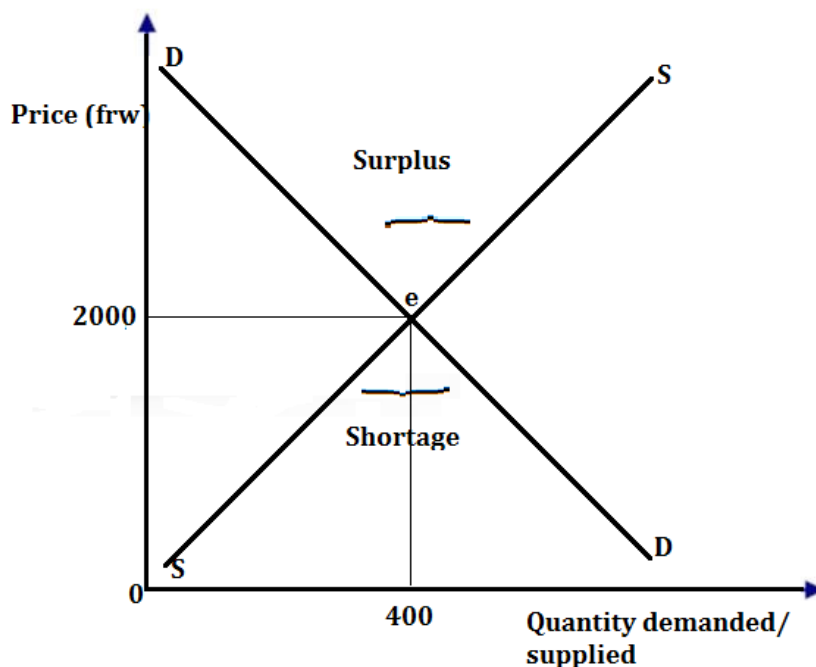
The tutor presents activity 22.3 to student teachers in pairs or groups or individual work (whichever way seems appropriate), they study the figures therein and answer the questions that follow. Briefly, tutor samples out some groups/ pairs/ individuals for presentation, thereafter he/she concludes by harmonizing the student teacher's views.

Answers to learning activity 23.2:

Basing on the demand and supply schedules in student teacher's book under sub heading 22.2 (i),

i) Sketch a curve that shows equilibrium price and quantity.

ii) Indicate, on the graph, areas of shortage and surplus.



ii) **Guidance to learning activity 22.4:**

The tutor presents activity 22.4 to student teachers in pairs or groups or individual work (whichever way seems appropriate), they study the figures therein and answer the questions that follow. Thereafter, briefly, tutor samples out some groups/ pairs/ individuals for presentation;

Tutor concludes by harmonizing the student teacher's views.

Answers to activity 22.4;

Solution:

i) Determine the equilibrium quantity and price.

$$Q_s = 20 - 3P$$

$$Q_d = 5 + 2P$$

At equilibrium, $Q_s = Q_d = Q_e = p_e$

$$Q_e = 20 - 3P_e$$

$$Q_e = 5 + 2P_e.$$

Equate the 2 equations

$$20 - 3P_e = 5 + 2P_e$$

$$20 - 5 = 2p_e + 3p_e$$

$$15 = 5p_e$$

$$\frac{15}{5} = \frac{5p_e}{5}$$

$$3 = p_e$$

Substitute in any equation

$$Q_e = 20 - 3P_e$$

$$Q_e = 20 - 3(3)$$

$$Q_e = 20 - 9$$

$$Q_e = 11.$$

Therefore, equilibrium price is 3 while equilibrium quantity is 11.

ii) Assuming that the equilibrium price changed to 5, describe the market condition with a clear justification.

$$Q_s = 20 - 3P$$

$$Q_d = 5 + 2P$$

Substitute 5 for P .in each equation

$$Q_s = 20 + 3p \quad Q_d = 5 + 2p$$

$$Q_s = 20 + 3(5) \quad Q_d = 5 + 2(5)$$

$$Q_s = 20 + 15 \quad Q_d = 5 + 10$$

$$Q_s = 35 \quad Q_d = 15$$

There is a surplus in the market because quantity supplied (35) is greater than quantity demanded (15). ($Q_s > Q_d$).

Answers to application activity 22.4

i) $Q_e = 38 - 6p_e$

$$Q_e = 18 + 4p_e$$

Solution:

$$38 - 6p_e = 18 + 4p_e$$

$$38 - 18 = 4p_e + 6p_e$$

$$20 = 10p_e$$

$$P_e = 2$$

For Equilibrium quantity, substitute 2 for P

$$Q_e = 38 - 6p_e$$

$$Q_e = 38 - 6(2)$$

$$Q_e = 38 - 12$$

$$Q_e = 26$$

ii) a) $Q_s = 24 - 2p_e$

$$Q_d = 4 + 3p_e$$

a) In case price changed to 8, describe the condition in the market and support your answer.

Solution:

$$24 - 2p_e = 4 + 3p_e$$

$$24 - 4 = 2p_e + 3p_e$$

$$20 = 5p_e$$

$$P_e = 4$$

To get equilibrium Quantity;

Substitute 4 for p in any of the equations.

$$Q_e = 24 - 2p_e$$

$$24 - 2(4)$$

$$24 - 8$$

$$Q_e = 16$$

Substitute 8 in both equations.

$$Q_s = 24 - 2p_e$$

$$Q_d = 4 + 3p_e$$

$$Q_s = 24 - 2(8)$$

$$Q_d = 4 + 3(8)$$

$$Q_s = 24 - 16$$

$$Q_d = 4 + 24$$

$$Q_s = 8$$

$$Q_d = 28$$

There was a shortage because quantity supplied is less than quantity demanded. ($Q_d > Q_s$).

22.6: Summary of the unit:

In the whole unit we tackled:

- Meaning of equilibrium, equilibrium price and quantity.
- Deriving market equilibrium using joint demand and supply schedule and curves.
- Equilibrium equations.

22.7: Additional information for the tutor.

To solve for equilibrium price and quantity one should perform the following steps:

1. Solve for the demand function and the supply function in terms of Q (quantity).
2. Set Q_s (quantity supplied) equal to Q_d (quantity demanded). The equations will be in terms of price (P)
3. Solve for P, this is going to be your equilibrium Price for the problem.
4. Plug your equilibrium price into either your demand or supply function (or both--but most times it will be easier to plug into supply) and solve for Q, which will give you equilibrium quantity.

When solving for equilibrium price and quantity, you need to have a demand function, and a supply function. Sometimes you will be given an inverse demand function (i.e. $P = 5 - Q$) in this case you need to solve for Q as a function of P. Once you have both your supply and demand function, you simply need to set quantity demanded equal to quantity supplied, and solve.

In short,

1. Get functions solved for Q_s (quantity supplied) and Q_d (quantity demanded).
2. Set Q_s equal to Q_d

3. Solve for P (equilibrium price)
4. Substitute your P back into your Q_s and Q_d functions to get equilibrium quantity.

22.8: End unit assessment

This can be done as a class test, groupwork or homework or as research questions to be discussed later in class. Apply whichever appropriate methodology you would want to employ as a tutor.

Answers:

1. a) The necessary condition for equilibrium state in the market is $Q_d = Q_s$
 b) Describe the cause of;
 - i) Excess demand may be due to low prices in the market holding other factors constant.
 - ii) Excess supply in the market may be due to high prices holding other factors constant.
2. a) Use the schedules below to answer the questions that follow.

Demand schedule

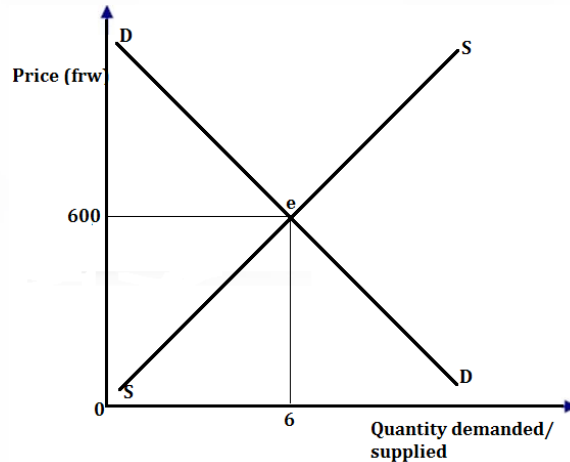
Price (frw)	Quantity demanded. (kgs)
1000	2
800	4
600	6
400	8
200	10

Supply schedule

Price (frw)	Quantity supplied (kgs)
200	2
400	4
600	6
800	8
1000	10

Required:

- i) Equilibrium price is 600 while and equilibrium quantity is 6.
- ii) Plot the information on graph to show equilibrium position.



3. a) Given that $Q_s=10$; $Q_d=2P-6$: Determine;

i) Equilibrium price

$$Q_s=10; Q_d=2P-6$$

$$10 = 2p - 6$$

$$10+6 = 2p$$

$$16 = 2p$$

$$P = 8$$

ii) Equilibrium quantity.

Substitute in any of the equations:

$$Q_d = 2p - 6$$

$$Q_d = 2(8) - 6$$

$$Q_d = 16 - 6$$

$$Q_d = 10.$$

b) Suppose equilibrium price is 10, show whether there is shortage or surplus, support your answer.

Substitute 10 for p

$$Q_d = 2p - 6$$

$$Q_d = 2(10) - 6$$

$$Q_d = 20 - 6$$

$$Q_d = 14.$$

There is shortage because quantity supplied is less than quantity demanded. ($Q_s < Q_d$).

4. Given the functions that $Q_d + 4p = 136$ and $Q_s = 6p + 124$,

i) Determine equilibrium price

$$Q_d = 136 + 4p = Q_s = 6p + 124$$

$$136 + 4p = 6p + 124$$

$$136 - 124 = 6p - 4p$$

$$12 = 2p$$

$$P = 6$$

ii) Equilibrium quantity.

Substitute 6 for p

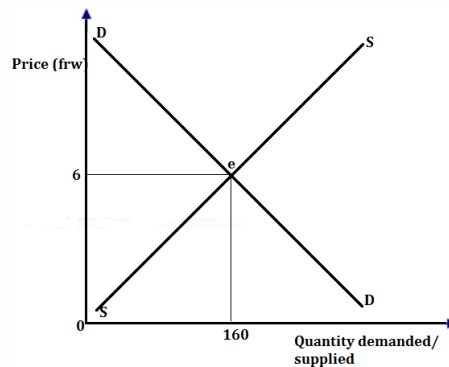
$$136 + 4p$$

$$136 + 4(6)$$

$$136 + 24$$

$$Q_d = 160$$

c) Illustrate your findings on a curve



22.9. Additional activities

22.9.1. Remedial Questions

Question: 1. Suppose your monthly quantity demand function for a product is $Q_d = 10,000 - 80P$, and your monthly quantity supply function for a product is $Q_s = 20P$,

Using equilibrium equation as $Q_d = Q_s$

Then, $10,000 - 80P = 20P$

We then bring together like terms by adding up $80P$ onto $20P$,

$$10000 = 20P + 80P$$

$$10000 = 100P$$

Then divided both sides by 100 to get P

$$\frac{10000}{100} = \frac{100P}{100}$$

$$P = 100$$

Our equilibrium price (P) = 100.

Now to find equilibrium quantity we can substitute our equilibrium price (100) into either our demand or supply function. If we substitute it into our demand function we get:

$$Q_d = 10,000 - (80 \times 100) = 2,000$$

We get 2,000 because $80 \times 100 = 8,000$... and $10,000$ minus $8,000 = 2,000$.

If we substitute it into our supply function we get:

$$Q_s = 20 \times 100 = 2,000.$$

Therefore, our equilibrium price = 100 while equilibrium Quantity (Q) = 2000.

2. Suppose that demand is given by the equation $Q_D = 500 - 50P$, where Q_D is quantity demanded, and P is the price of the good. Supply is described by the equation $Q_S = 50 + 25P$ where Q_S is quantity supplied. What is the equilibrium price and quantity?

So here we get:

$$Q_d = Q_s = 500 - 50P = 50 + 25P$$

Correct like terms together:

$$500 - 50 = 25P + 50P$$

$$450 = 75P$$

Divide both sides by 75 to get P

$$\frac{450}{75} = \frac{75P}{75} = 6$$

$$P = 6.$$

Substitute $P = 6$ into both quantity functions:

$$Q_d = 500 - 50(6) = 200$$

and

$$Q_s = 50 + 25(6) = 200$$

Therefore, equilibrium Quantity = 200.

22.9.2. Consolidation activities:

a) Solve for equilibrium price and quantity using the following equations:

Quantity demanded	Quantity supplied
i) $24 - 6p$	$P + 10$
ii) $P + 36$	$4p + 21$

b) Using i) In case price was 4, describe the market condition and why?

c) Using ii) In case price was 3, describe the market condition and why?

Answers:

$$\text{i) } 24 - 6p = P + 10$$

$$24 - 6p = p + 10$$

$$24 - 10 = p + 6p$$

$$14 = 7p$$

$$2 = p$$

Equilibrium price = 2

Substitute 2 in all sides

$$24 - 6 (2) = 2 + 10$$

$$12 = 12$$

Equilibrium quantity = 12

b) In case price was 4, describe the market condition and why?

$$24 - 6 p \qquad P + 10$$

$$24 - 6 (4) \qquad 4 + 10$$

$$24 - 24 \qquad 14$$

$$Q_d = 0 \qquad Q_s = 14.$$

There was a surplus since Q_d is less than Q_s

$$i) 36 + p = 4p + 21$$

$$36 - 21 = 4P - P$$

$$15 = 3P$$

$$5 = P$$

Equilibrium price = 5

Substitute in 5 for P

$$36 + 5 = 4 (5) + 21$$

$$41 = 41$$

Equilibrium Quantity = 41

c) In case price was 3, describe the market condition and why?

$$36 + p \qquad 4p + 21$$

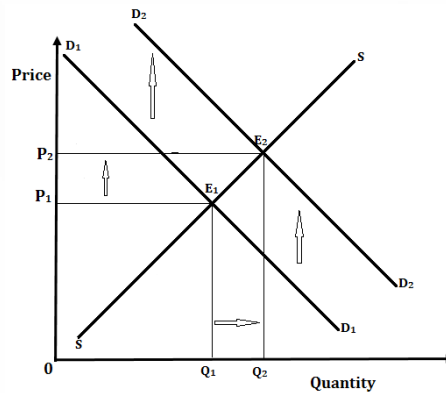
$$36 + 3 \qquad 4 (3) + 21$$

$$Q_d = 39 \qquad Q_s = 33$$

22.9.3: Answers to extended activity

Question: Examine the effects of changes in demand and supply on equilibrium:

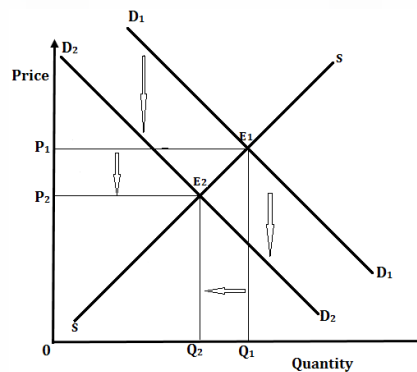
a. Effect of increase in demand



Increase in demand shifts the demand curve to the right e.g. from D_1 to D_2 . It may be due to favourable factors that determine quantity demanded of a commodity. This leads to

- An increase in the equilibrium point from E_1 to E_2
- Increase in equilibrium price from P_1 to P_2 .
- Increase in quantity supplied from Q_1 to Q_2 .

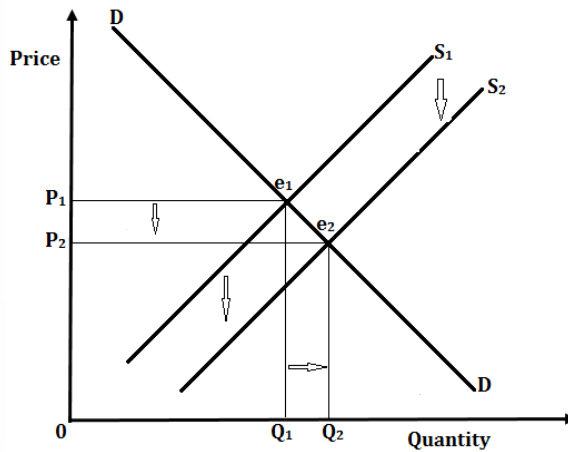
b. Effect of decrease in demand



Decrease in demand shifts the demand curve to the left e.g. From D_1 to D_2 . It may be due to unfavorable factors that determine quantity demanded of a commodity. This leads to

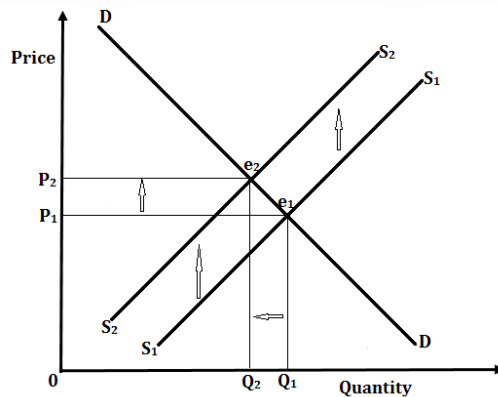
- Decrease in the equilibrium point from E_1 to E_2
- Decrease i.e. equilibrium price from P_1 to P_2 .
- Decrease in quantity supplied from Q_1 to Q_2 .

c. Increase in supply



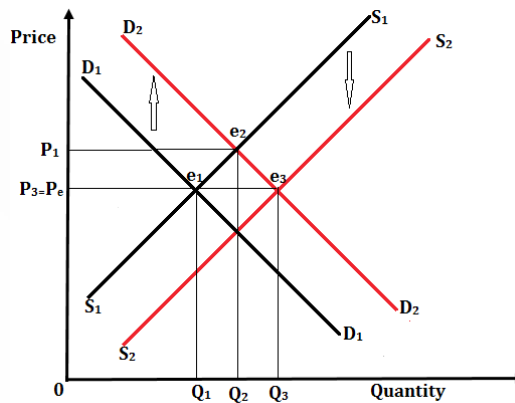
Increase in supply shifts the supply curve to the right e.g. From S_1 to S_2 . It may be due to favourable factors that determine quantity supplied of a commodity. This leads to

- A fall in the equilibrium point from e_1 to e_2
 - A decrease in equilibrium price from P_1 to P_2 .
 - Increase in quantity demanded from Q_1 to Q_2 .
- d. Decrease in supply

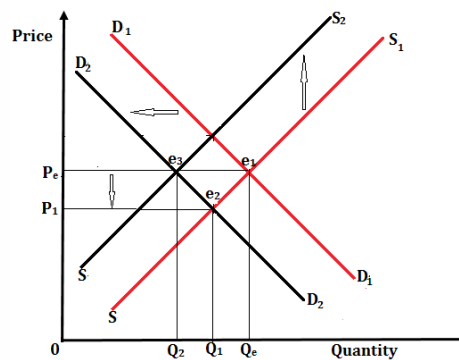


A decrease in supply shifts the supply curve to the left e.g. From S_1 to S_2 . It may be due to unfavourable factors that determine quantity supplied of a commodity. This leads to

- An increase in the equilibrium point from e_1 to e_2
 - An increase in equilibrium price from P_1 to P_2 .
 - A decrease in quantity demanded from Q_1 to Q_2 .
- e. Increase in demand and increase in supply.

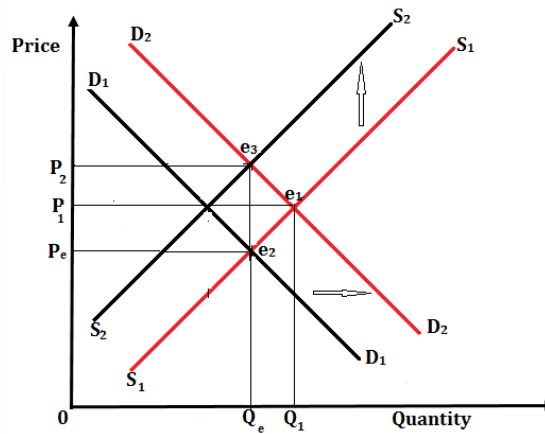


- The above curves show that an increase in demand will cause increase in supply from Q_1 to Q_2 .
 - Where demand increases, prices will rise too and supply will also increase along the original supply curve.
 - A new price OP_1 may attract new firms to the industry.
 - This will cause supply curve to shift to the right i.e. S_1 to S_2 thus leading price to fall back to $OP_e = OP_3$ and demand to extend to $0Q_3$.
- f. A decrease in demand and decrease in supply.



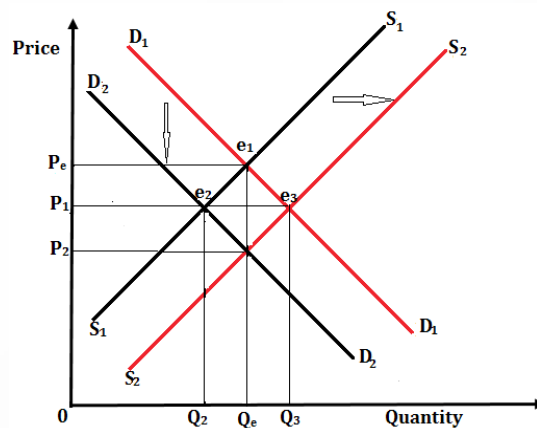
A decrease in demand from D_1 to D_2 causes fall in price from P_e to P_1 and quantity supplied to contract from $0Q_e$ to $0Q_1$. This causes some firms to close or leave the industry, causing the supply curve to shift to the left from S_1 to S_2 . The price rises again from OP_1 to OP_e and demand contracts to $0Q_2$.

- g. An increase in demand and a decrease in supply



Increase in demand leads to increase in quantity supplied from Q_e to Q_1 , an increase in equilibrium price from P_e to P_1 . As a result, demand will fall leading to a further increase in price from P_1 to P_2 .

h. A decrease in demand and an increase in supply:



This leads to decrease in equilibrium price from P_e to P_1 and as a result, quantity demanded increases from Q_e to Q_3 . The reduction in price results into fall in supply from Q_e to Q_2 .

● UNIT: 23

ELASTICITY

23.1: Key Unit Competence:

Be able to interpret the variations in percentages of quantity demanded and supplied due to changes in their determinants.

23.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related subjects. Student teachers should integrate the knowledge, skills, values and attitudes acquired prior in other units like unit 19 (Equations and fractions in economics), unit 20 (Theory of demand) unit 21 (theory of supply) in understanding and analysis of equilibrium and price determination. Together with the knowledge and skills gained from mathematics in S.1- unit 3 (linear functions, equations and inequalities), S.2- unit 3 (simultaneous equations), S.3- unit 6 (linear and Quadratic equations), and entrepreneurship S.2 unit 4 about markets, student teachers can be able explain, calculate and interpret different elasticities. Student teachers already have some knowledge about equilibrium upon which the tutor can build. The tutor though, needs to have a good understanding, skills and attitude on this unit so as to motivate student teachers towards its understanding and interpretation while analysing economics phenomena.

23.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the tutor. It may be direct in the explanation or in the due course of learning the unit as a whole or it may be indirectly tackled. For example, analysing the case study, about Kagabo, in the introductory activity, when explaining the changes in demand and supply in response to the factors that determine them, stress the issue of varying their budgets in response to varying prices and incomes and to always consume or sell with regard to how important the commodity is. This avoids wastage of both resources and money.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other

cross-cutting issues. E.g. Inclusive education like engaging all student teachers in class activities and discussion without discrimination, gender education like using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other data that may be related to a given cross-cutting issue that he or she needs to integrate.

23.4: Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired from other subjects and units in this subject. This unit is important in explaining economic behaviour, especially how demand and supply respond to factors that affect them. It should be noted that, as student teachers get engaged in the lessons of this unit, they themselves discover answers to the questions they were asking at the beginning. For, example from the introductory activity in this unit, as the student teacher carries out research, he or she may discover that;

- a. The specific name given to the response of quantity demanded and supply to the different factors that affect them as stated in the case study above is ***Elasticity***.
- b. The special name given to the changes in demand and in supply respectively in response to the factors that affect each is ***elasticity of demand and elasticity of supply respectively***.

23.5: List of lessons/ subheadings:

#	Lesson tittle	Lesson objectives	Number of periods
1.	Meaning and types of elasticity.	Explain the concept of elasticity and the different types.	1
2	Elasticity of demand:	• Discuss the different types of elasticity of demand. • Be aware that commodities can be demanded basing on variations in their determining factors.	6

3	Elasticity of supply:	• Discuss the different types of elasticity of supply. • Be aware that commodities can be supplied basing on variations in their determining factors.	4
End unit assessment.		• Be able to interpret the variations in percentages of quantity demanded and supplied due to changes in their determinants.	1

Lesson 23.5.1. Meaning and types of elasticity

a) Learning objectives:

Explain the concept of elasticity and the different types.

b) Teaching resources:

Use Economics textbooks, economics journals, internet, and geometrical materials.

c) Prerequisites / revision / introduction.

Basing on the knowledge skills, values and attitudes gained by the student teachers on demand and supply in unit 20 and 21 respectively, tutor reviews on them to make student teachers recall the factors that affect demand and supply so as to connect them with the new unit about elasticity. This can be done through brain storming, cabbage game or pair and share work (whichever convenient way for tutor and student teachers as well). After reviewing the previous unit, tutor helps to guide student teachers to discover that as determinants of demand and supply change, their quantities also change either in the same or different directions or remain constant, depending on the type of commodity. Thus, introduce them into a new lesson about elasticity.

d) Learning activities:

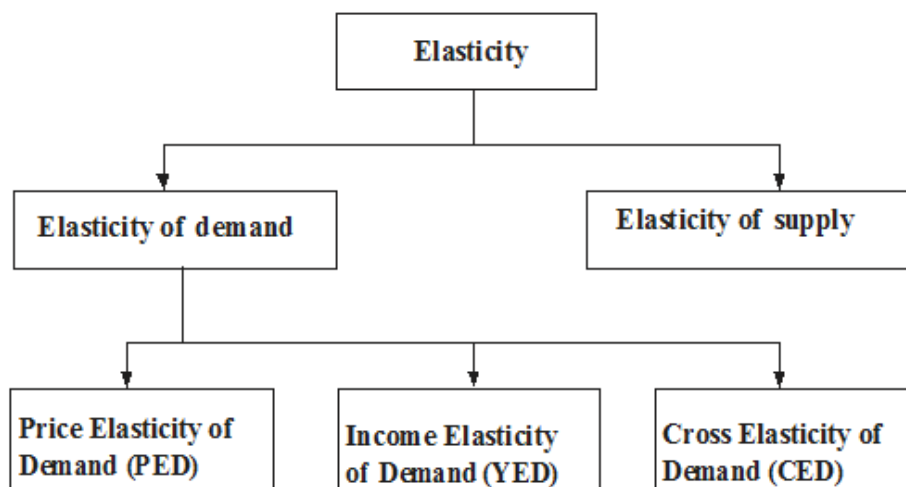
i) Guidance to learning activity 23.1:

The tutor presents activity 23.1 to student teachers in groups, pairs or individual work, they make research as required and discuss amongst themselves. Thereafter, briefly, tutor samples out some groups or pairs

or individuals for presentation in class. Tutor concludes by harmonizing the student teacher's views or findings.

Answers to activity 23.1:

- a. Refer to the definition of elasticity in the student's book under subheading 23.1.
- b. Refer to the types of elasticity in the student's book under subheading 23.2



Break down of elasticity

- c. Description of each type of elasticity is seen in the due course of studying lesson 2 and lesson 3 of this unit.

Answers to application activity 23.1:

For all the points in there, refer to the factors that determine demand and supply respectively.

Lesson 2: Elasticity of demand:

a) Learning objective:

- Discuss the different types of elasticity of demand.
- Be aware that commodities can be demanded basing on variations in their determining factors.

b) Teaching resources:

Use Economics textbooks, economics journals, internet, and geometrical materials.

c) Prerequisites / revision / introduction.

Basing on the knowledge skills, values and attitudes gained by the student teachers on demand, tutor reviews on the lesson about determinants of demand to connect it with the new unit. This can be done through brain storming or pair and share work. After reviewing the previous unit about demand, tutor helps to guide student teachers to discover that as determinants of demand change, quantity demanded for a given commodity (ies) respond either positively or negatively or doesn't respond at all. Thus, introduce them into a new lesson about elasticity of demand.

d) Learning activities:**i) Guidance to learning activity 23.2:**

Tutor presents activity 23.2 to student teachers in groups or pairs or as individual homework activity to research about and discuss the questions amongst themselves. Briefly, tutor samples out some groups for presentation, thereafter he/she concludes the lesson by harmonizing the student teacher's findings.

Answers to activity 23.2:

Refer to the student teacher's book under subheadings 23.2.1. and 23.2.2 for the two questions in the activity.

- a. **Elasticity of demand** is a measure of the degree of responsiveness of quantity demanded of a commodity to changes in factors that affect demand.
- b. Refer to the descriptions in sub headings 23.2

ii) Guidance to learning activity 23.3:

Tutor presents activity 23.3 to student teachers in groups or pairs or as individual homework activity to discuss about basing the previous research carried out on elasticity of demand, share their findings amongst themselves. Briefly, tutor samples out some groups or pairs or individuals for presentation, thereafter he/she concludes the lesson by harmonizing the student teacher's findings.

Answers to activity 23.3:

Refer to student's book on 23.2.2 a)

- Price elasticity of demand refers to a measure of the degree of the responsiveness of quantity demanded of a commodity to changes in the price of that commodity.
- Refer to the calculations in sub headings 23.2

iii) Guidance to learning activity 23.4:

Tutor presents activity 23.4 to student teachers in groups or pairs or as individual work to share their views on how to calculate elasticity of demand basing on the previous research carried out on elasticity of demand, share their findings amongst themselves. Briefly, tutor samples out some groups or pairs or individuals for presentation, thereafter he/she concludes the lesson by harmonizing the student teacher's findings.

Answers to activity 23.4:

Use the given formulas above and calculate the following questions;

- The quantity demanded of commodity Y increased from 400kgs to 600kgs as a result of a 30 % decrease in its price. Determine its price elasticity of demand and identify the type of elasticity and then support your answer.

Solution:

$$PED = \frac{\% \Delta Q}{\% \Delta P} \text{ where } \% \Delta Q = \frac{600-400}{400} \times 100 = 50\%$$

$$\% \Delta p = 30\%$$

$$PED = \frac{50}{30} \mathbf{1.667}$$

Commodity Y is a normal good because its PED is positive.

- Given that the price of commodity X reduced from 800 FRW to 750 FRW as a result of increase in its quantity demanded from 240kgs to 420kgs. Determine its price elasticity of demand.

$$PED = (-) \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d} \text{ where } \Delta Q = 420-240 = 180 \text{ and } \Delta p = 750 - 800 = -50\text{frw, } Q_d = 240\text{kgs}$$

&

$$P = 800\text{frw}$$

$$PED = (-) \frac{180}{-50} \times \frac{800}{240} = 12$$

$$\mathbf{PED = 12}$$

c) The price of commodity K increased from 20,000 FRW to 30,000 FRW leading to a decrease in its quantity demanded by 50%. Find the price elasticity of demand.

$$PED = \frac{\% \Delta Q}{\% \Delta P} \text{ where } \% \Delta P = \frac{30000 - 20000}{20000} \times 100 = 50\%$$

$$\% \Delta Q = 50\%$$

$$PED = \frac{50}{50} = 1$$

$$PED = 1$$

d) The price of a commodity remained constant at 3,000 FRW per unit but its quantity demanded increased from 120 units to 200 units. Determine its price elasticity of demand and also identify the category of price elasticity of demand and support your answer.

$$PED = (-) \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d}; \text{ where } \Delta Q = 200 - 120 = 80 \text{ and } \Delta p = 3000 - 3000 = 0 \text{frw, } Q_d = 120 \text{kgs}$$

&

$$P = 3000 \text{frw}$$

$$PED = (-) \frac{80}{0} \times \frac{3000}{120} = \infty$$

$$PED = \infty.$$

The category of price elasticity of demand is perfectly elastic since ***PED is equal to infinity.***

e) The price of commodity N increased from 1,000 FRW to 1,800 FRW but its quantity demanded remained constant at 50kgs. Find its price elasticity of demand and describe the form of elasticity and type of commodity N is.

$$PED = (-) \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d}; \text{ where } \Delta Q = 50 - 50 = 0 \text{ and } \Delta p = 1800 - 1000 = 800 \text{frw, } Q_d = 50 \text{kgs \&}$$

$$P = 1000 \text{frw}$$

$$PED = (-) \frac{0}{800} \times \frac{1000}{50} = 0$$

$$PED = 0.$$

The form of elasticity is perfectly inelastic since PED is equal to zero (0) and commodity 'N' is a necessity since $PED = 0$.

iv) Guidance to learning activity 23.5:

Tutor presents activity 23.5 to student teachers in groups or pairs or as individual work to research, discuss and share their findings on categories of elasticity of demand amongst themselves. Briefly, tutor samples out some groups or pairs or individuals for presentation, thereafter he/she concludes the lesson by harmonizing the student teacher's findings.

Answers to 23.5:

Refer to the content in the student's book under subheading 23.2.4.

Answers to application activity 23.5

1. Given that the price of a commodity increased from 15000-20,000frw per kg and quantity demanded of commodity decreased from 50-40 per day. Calculate the P.E.D and state the type of commodity with a reason.

Solution

$$\text{P.E.D} = (-) \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$\Delta Q = Q_2 - Q_1$$

$$\Delta P = P_2 - P_1$$

P= Original price

Q= Original quantity

$$\text{PED} = (-) \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$\Delta Q = Q_2 - Q_1 = 40 - 50 = -10$$

$$\Delta P = 20,000 - 15,000 = 5,000$$

$$P = 15,000$$

$$Q = 50$$

$$\text{P.E.D} = (-) \frac{-10}{5000} \times \frac{15000}{50} = \frac{150,000}{250000} = 0.6$$

It is a normal good because elasticity of demand is positive. And the form of elasticity is inelastic since PED is less than 1 but greater than zero (0)

2) When the price of a given commodity increased from 8000-9000frw, quantity demanded by 20%. Calculate the price elasticity of demand. And state the type of commodity and form of elasticity with a reason.

$$\text{P.E.D} = \frac{\% \Delta \text{ qty dd}}{\% \Delta \text{ price.}}$$

$$= \frac{20\%}{\frac{9000 - 8000 \times 100}{8000}}$$

$$\frac{9000 - 8000 \times 100}{8000} = \frac{1000 \times 100}{8000}$$

$$= \frac{100000}{8000} = 12.5$$

Therefore, $\% \Delta \text{ price} = 12.5\%$

$$\text{P.E.D} = \frac{\% \Delta \text{ qty demanded}}{\% \Delta \text{ price.}} = \frac{20}{12.5} = 1.6$$

$$\text{P.E.D} = 1.6.$$

The commodity is a normal good because PED is positive and the form of elasticity is elastic since PED is greater than 1 but less than infinity.

v) Guidance to learning activity 23.6:

Tutor presents activity 23.6 to student teachers in groups or pairs or as individual work as home work to analyse, explain and share their findings on categories of elasticity of demand amongst themselves. Briefly, tutor samples out some groups or pairs or individuals for presentation, thereafter he/she concludes the lesson by harmonizing the student teacher's views.

Answers to 23.6:

Refer to the content in the student's book under subheading 23.2.5 on determinants of PED that include the following.

- Consumer's income.
- Availability of substitutes.
- Price expectations.
- Price of the commodity.
- Degree of urgency involved.
- Consumer's ignorance.
- Habit forming commodities.
- Advertising.
- Durable commodities.
- Several uses of the commodity.

vi) Guidance to learning activity 23.7:

Tutor presents activity 23.7 to student teachers in groups or pairs or as individual work as home work to research, explain, calculate, interpret and share their findings on income elasticity of demand amongst themselves. Briefly, tutor samples out some groups or pairs or individuals for presentation, thereafter he/she concludes the lesson by harmonizing the student teacher's findings.

Answers to 23.7:

Visit the library or the internet to research, calculate and interpret about income elasticity based on the following questions;

- a) Refer to the definition in the student's book on income elasticity of demand (22.2.6).
- b) Given that the income of the consumer increased from 40,000FRW to 50,000FRW, leading to a reduction in the quantity demanded of commodity X from 80 kgs to 60kgs,
 - (i) Find the income elasticity of demand.

$YED = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$, where $\Delta Q = 60 - 80 = -20$, $\Delta Y = 50000 - 40000 = 10000$, $Q = 80$ kgs and $Y = 40000$ frw

$$YED = \frac{-20}{10000} \times \frac{40000}{80} = -1$$

YED = -1

ii) What kind of commodity is X?

Commodity X is inferior since YED is negative.

b) The quantity demanded of commodity P increased from 300 litres to 500 litres as a result of a 30% increase in consumer's income. Determine the income elasticity of demand and the type of commodity P.

$$YED = \frac{\% \Delta \text{ qty demanded}}{\% \Delta \text{ Income.}}$$

$$\text{Where } \% \Delta Q = \frac{500 - 300}{300} \times 100 = 66.67\%$$

$$\% \Delta Y = 30\%$$

$$\text{Therefore, } YED = \frac{66.67}{30} = 2.22$$

$$YED = 2.22$$

The type of commodity 'P' is normal since YED is positive.

c) The income of consumers changed by 40% but the quantity demanded of commodity N remained constant at 50 kgs. Find the income elasticity of demand and state the type of the commodity.

$$YED = \frac{\% \Delta \text{ qty demanded}}{\% \Delta \text{ Income.}}$$

$$\text{Where } \% \Delta Q = \frac{50 - 50}{50} \times 100 = 0\%$$

$$\% \Delta Y = 40\%$$

$$\text{Therefore, } YED = \frac{0}{40} = 0$$

$$YED = 0$$

The type of commodity 'N' is a necessity since YED is zero.

Answers to application activity 23.7:

Work out the following;

1. Given that a consumer's income increased from 25000rwf to 40,000rwf the quantity demand of the commodity X decreases from 5kg to 8kg. Calculate YED and interpret your answer.

Solution:

i) $\frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$ where $\Delta Q = Q_2 - Q_1$
 $\Delta Y = Y_2 - Y_1$,
 $Y = \text{Original/ old income.}$
 $Q = \text{Original/ old quantity.}$

$$\frac{8-5}{40,000-25,000} \times \frac{25,000}{5} = \frac{3}{15000} \times \frac{25000}{5} = \frac{75000}{75000} = 1$$

YED = 1

ii) The commodity is a normal good because YED is positive.

2. Given that a consumer's income increased from 5000-9,000frw, as a result his demand for commodity K reduced from 10kgs to 6kgs,

iii)

i) Calculate YED.

$$\frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q} = \frac{6-10}{9000-5000} \times \frac{5000}{10} = \frac{-4}{4000} \times \frac{5000}{10} = -0.5$$

YED = -0.5

iv) The commodity is an inferior good because YED is negative.

3. Given that a consumer's income increased from 15000rwf to 20,000frw, as a result his/her demand for commodity M remained at 9kgs,

v) Calculate YED.

$$YED = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q} = \frac{0}{5000} \times \frac{15000}{9} = \frac{0}{45000} = 0$$

$$YED = 0$$

The commodity is a **necessity good** because YED is **zero**.

vii) Guidance to learning activity 23.8:

Tutor presents activity 23.8 to student teachers in groups or pairs or as individual work as home work to research, explain, calculate, interpret and share their findings on cross elasticity of demand amongst themselves. Briefly, tutor samples out some groups or pairs or individuals for presentation, thereafter he/she concludes the lesson by harmonizing the student teacher's findings.

Answers to activity 23.8

a) Given that the price of commodity Y increased from 2,000 FRW to 3,000 FRW leading to a reduction in the quantity demanded of commodity X from 60 kgs to 40 kgs,

i) Find the cross elasticity of demand.

$$CED = \frac{\Delta Q_x}{\Delta P_y} \times \frac{P_y}{Q_x} \quad \text{where, } \Delta Q_x = 40 - 60 = -20, \Delta P_y = 3000 - 2000 = 1000, Q_x = 60 \text{ kgs}, P_y = 2000$$

$$CED = \frac{-20}{1000} \times \frac{2000}{60} = -0.667$$

ii) Commodity Y and X are complementary commodities since *CED* is *negative*. This means that increase in price of “Y” will lead to reduction in quantity demanded of commodity “X”.

(b) The quantity demanded of commodity A increased from 400 litres to 600 litres as a result of a 40% increase in price of commodity B. Determine the cross elasticity of demand and the relationship between commodity A and B.

$$CED = \frac{\% \Delta Q_A}{\% \Delta P_B} \quad \text{where } \% \Delta Q_A = \frac{600 - 400}{400} \times 100 = 50\%; \% \Delta P_B = 40\%$$

$$CED = \frac{50}{40} = 1.25$$

Commodity A & B are substitutes since CED is positive. This means that an increase in price of commodity “A” leads to an increase in quantity demanded of another commodity “B”.

(c) The price of commodity K changed by 50% but the quantity demanded of commodity L remained constant at 2000 litres. Find the cross elasticity of demand and state the relationship between the two commodities

$$CED = \frac{\% \Delta Q_L}{\% \Delta P_K} \quad \text{where } \% \Delta Q_L = \frac{200 - 200}{200} \times 100 = 0\%; \% \Delta P_K = 50\%$$

$$CED = \frac{0}{50} = 0$$

Commodity K & L are not related since CED is zero. This means that increase or decrease in price of “K” does not affect the quantity demanded of “L”.

Answers to application activity 23.8:

Tutor can give this activity as home work to either, group, pairs or individuals to practice what the student teachers had in the lesson about

cross elasticity of demand.

Application activity 23.8:

1. Given that price of commodity E increased from 500frw to 550frw, and as a result, quantity demanded of commodity F increased from 5kgs to 10kgs.

i) Calculate CED

$$CED = \frac{\Delta Q_F}{\Delta P_E} \times \frac{P_E}{Q_F} \quad \text{where, } \Delta Q_F = 10 - 5 = 5, \Delta P_E = 550 - 500 = 50, Q_F = 5\text{kgs}, P_E = 500$$

$$CED = \frac{5}{50} \times \frac{500}{5} = 10$$

ii) E & F are substitutes since CED is positive. This means that an increase in price of E leads to an increase in quantity demanded of another commodity "F".

2. Given that price of commodity H increased from 1200frw to 1500frw, and as a result, quantity demanded of commodity R decreased from 6kgs to 3kgs.

iii) Calculate CED.

$$CED = \frac{\Delta Q_R}{\Delta P_H} \times \frac{P_H}{Q_R} \quad \text{where, } \Delta Q_R = 3 - 6 = -3, \Delta P_H = 1500 - 1200 = 300, Q_R = 6\text{kgs}, P_H = 1200$$

$$CED = \frac{-3}{300} \times \frac{1200}{6} = -2$$

iv) Commodities R & H complements since CED is negative. This means that increase in price of "H" will lead to reduction in quantity demanded of commodity "R".

3. Given that price of commodity C decreased from 1000frw to 800frw, and as a result, quantity demanded of commodity D remained at 90kgs.

v) Calculate CED.

$$CED = \frac{\Delta Q_D}{\Delta P_C} \times \frac{P_C}{Q_D} \quad \text{where, } \Delta Q_D = 90 - 90 = 0, \Delta P_C = 800 - 1000 = -200, Q_D = 90\text{kgs}, P_C = 1000$$

$$CED = \frac{0}{-200} \times \frac{1000}{90} = 0$$

vi) Commodities C & D not related since CED is zero. This means that increase or decrease in price of "C" does not affect the quantity demanded of "D".

Lesson 3: Elasticity of Supply:

a) Learning objective:

- Discuss the different types of elasticity of supply.
- Be aware that commodities can be supplied basing on variations in their determining factors.

b) Teaching resources:

Use Economics textbooks, economics journals, internet, and geometrical materials.

c) Prerequisites / revision / introduction.

Basing on the knowledge skills, values and attitudes gained by the student teachers on elasticity of demand, tutor reviews the lesson about elasticity of demand to connect it with the new unit. This can be done through brain storming or pair and share work. After reviewing the previous unit, tutor helps to guide student teachers to discover that as determinants of supply change, quantity supplied for given commodity(ies) respond either positively or negatively or doesn't respond at all. Thus, introduce them into a new lesson about elasticity of supply.

d) Learning activities:

i) Guidance to learning activity 23.9:

The tutor presents activity 23.9 to student teachers in groups or pairs or as individual homework activity to research about and discuss the questions amongst themselves. After, tutor samples out some groups / pair / individuals for presentation. He/she then concludes the lesson by harmonizing the student teacher's findings.

Answers to activity 23.9, refer to content summary in the student's book under 23.3.

ii) Answers to application activity 23.9

- a. *Quantity supplied of commodity X increased from 100kgs to 300kgs as a result of a 20% increase in its price. Determine its price elasticity of supply.*

$$PES = \frac{\% \Delta Q_s}{\% \Delta P} \text{ where } \% \Delta Q_s = \frac{300 - 100}{100} \times 100 = 200\%, \% \Delta P = 20\%$$

$$PES = \frac{200}{20} = 10$$

- b. Given that the price of commodity Y reduced from 600 FRW to 450 FRW resulting into a decrease in its quantity supplied from 800kgs to 700kgs. Determine its price elasticity of supply.

$$PES = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q} \quad \text{where } \Delta Q_s = 700 - 800 = -100; \Delta P = 450 - 600 = -150; Q_s = 800; P = 600$$

$$PES = \frac{100}{150} \times \frac{600}{800} = \frac{1}{2}$$

- c. The price of commodity Z increased from 1000 FRW to 1,300 FRW leading to an increase in its quantity supplied by 30%. Find the price elasticity of supply.

$$PES = \frac{\% \Delta Q_s}{\% \Delta P} \quad \text{where } \% \Delta P = \frac{1300 - 1000}{1000} \times 100 = 30\%, \% \Delta Q_s = 30\%$$

$$PES = \frac{30}{30} = 1$$

- d. The price of a commodity remained constant at 2,500 FRW per unit but its quantity supplied increased from 100 litres to 300 litres. Determine its price elasticity of supply.

$$PES = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q} \quad \text{where } \Delta Q_s = 300 - 100 = 200; \Delta P = 2500 - 2500 = 0; Q_s = 100; P = 2500$$

$$PES = \frac{200}{0} \times \frac{2500}{100} = \infty$$

- e. The price of commodity S increased from 3,000 FRW to 4,500 FRW but its quantity supplied remained constant at 70. Find its price elasticity of supply.

$$PES = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q} \quad \text{where } \Delta Q_s = 70 - 70 = 0; \Delta P = 4500 - 3000 = 500; Q_s = 70; P = 3000$$

$$PES = \frac{0}{500} \times \frac{3000}{70} = 0$$

ii) Guidance to learning activity 23.10:

Tutor presents activity 23.10 to student teachers in groups or pairs or as individual homework activity to research about and discuss the questions amongst themselves. After, tutor samples out some groups / pair / individuals for presentation. He/she then concludes the lesson by harmonizing the student teacher's findings.

Answers to activity 23.10:

Refer to content on categories of price elasticity of supply in the student teacher's book under subheading 23.3.2.

Price elasticity of supply may be categorized as follows:

- Perfectly inelastic supply.
- Inelastic supply.
- Unitary elastic supply.
- Elastic supply.
- Perfectly elastic supply.

Answers to application activity 23.10

Refer students to application activity 23.9, let them share their views in pairs and share to the class in plenary, about what they think on the categories of price elasticity of supply are based on the answers in application activity 23.9.

- a) $PES = 10$ which is elastic supply since PES is greater than one but less than infinity.
- b) $PES = \frac{1}{2}$ which is in elastic supply since PES is greater than zero but less than one.
- c) $PES = 1$ which is unitary supply since PES is equal to one.
- d) $PES = \infty$ which is perfectly elastic supply since PES is equal to infinity.
- e) $PES = 0$ which is perfectly inelastic supply since PES is equal to zero.

ii) Guidance to learning activity 23.11:

Tutor presents activity 23.11 to student teachers in groups or pairs or as individual homework activity to research about and discuss the about the determinants of price elasticity of supply amongst themselves. After, tutor samples out some groups / pair / individuals for presentation. He/ she then concludes the lesson by harmonizing the student teacher's views.

Answers to activity 23.11:

Refer to the content on determinants of price elasticity of supply in the student teacher's book under 23.3.3.

- Cost and availability of factors of production
- Nature of the commodity
- Gestation period (maturity period)
- Time
- Method of production used

- Government policy
- Freedom of entry of new firms into the industry
- **Mobility of factors of production**

Answers to application activity 23.11:

Let student teachers categorize the points given into inelastic and elastic supply. It can be through brain storming by show of hands or pair and share. There after teacher guides them toe following;

Elastic supply	Inelastic supply.
Developed technology	Small market size
Government subsidization	Political insecurity
Short gestation period	Underdeveloped infrastructure.
Freedom of entry of new firms	
Immobility of factors of production	

Guidance to skills lab 23.

Let the student teachers come up with different commodities which have inelastic demand and those that have elastic demand. Let them choose the price levels that can maximise profits from commodities with inelastic and elastic demand.

- Goods with Inelastic demand will be able to sell at high prices and make more profits
- Goods with elastic demand will be able to sell large quantities at low prices and make profits through high sales.

23.6: Summary of the unit.

In the unit, we covered the following,

Meaning and types of Elasticity.

Elasticity of demand

- Price elasticity of demand
- Categories of price elasticity of demand.
- Income elasticity of demand
- Cross elasticity of demand
- Determinants of price elasticity of demand

Elasticity of supply

- Price elasticity of supply
- Categories of price elasticity of supply.
- Determinants of price elasticity of supply.

23.7: Additional information for the tutor:

The value of elasticity of demand ranges from 0 to ∞ . Since elasticity of demand ranges from 0 to ∞ , the answer in negatives is an absolute value e.g. if $PED = -2$, we don't consider the negative sign thus the absolute value is 2. This is normally used for comparison purposes. An absolute value is the measure of quantity irrespective of the sign of direction or nature. For absolute values we don't consider the sign i.e. negative or positive but we look at only the value.

Summary of forms of P.E.D.

$PED > 0 < 1 = \text{inelastic demand}$

$PED > 1 < \infty = \text{elastic demand}$

$PED = 1 = \text{Unitary demand}$

$PED = 0 = \text{perfectly inelastic}$

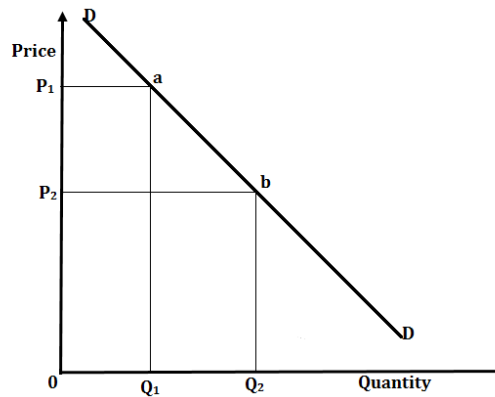
$PED = \infty = \text{perfectly elastic}$

Measurement of price elasticity of demand:

P.E.D can be measured in two major ways i.e.

A) Point elasticity of demand: This is the elasticity at a specific point on demand curve. It is a proportionate change with quantity demanded resulting from a very small proportionate change in price. It occurs somewhere along the demand curve. e.g.

Illustration



If prices reduce from p_1 to P_2 , we measure elasticity of demand at Point “a” i.e. the starting point and if prices change from p_2 to p_1 , we measure elasticity of demand at point “b” i.e. point elasticity is measured for the point that represents the initial price before the change.

Point elasticity is given by;

$$\text{Point of elasticity of demand} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Arc elasticity of demand: This is the average elasticity between two points on the demand curve e.g. point “a” and “b”.

$$\text{Arc elasticity of Demand} = \frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2 / 2}{Q_1 + Q_2 / 2}$$

23.8: Answers to End Unit assessment

1. Study the table below and answer the questions that follow;

Price of commodity Z (frw)	Quantity demanded of commodity Z
5,000	25
7500	20

Calculate the price elasticity of demand for commodity Z.

$$\text{PED} = (-) \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} = \frac{-5}{2500} \times \frac{5000}{25} = 0.4$$

The category of elasticity for commodity Z is inelastic demand since its coefficient is greater than zero but less than one.

2. The quantity demanded of commodity M reduced from 70kgs to 65kgs as a result of a 20% increase in the price of another commodity Z

Determine the cross elasticity of demand between commodities M and Z

$$CED = \frac{\% \Delta Q_M}{\% \Delta P_Z} \text{ where } \% \Delta Q_M = \frac{65-70}{70} \times 100 = -7.14\%$$

$$CED = \frac{-7.14}{20} = -0.35$$

- a. Commodities M and Z are complements since CED is negative.
- b. Two examples of such commodities may include car and fuel, pen and ink, radio and batteries, car and tyres, phone and battery etc.
3. The income of the consumer increased by 60% leading to a decrease in the quantity demanded of commodity S from 100 units to 70 units. Find the income elasticity of commodity S and its type.

$$YED = \frac{\% \Delta Q}{\% \Delta Y} \text{ where } \% \Delta Q = \frac{70-100}{100} \times 100 = -30\%$$

$$YED = \frac{-30}{60} = -0.5.$$

Commodity S is an inferior commodity since its YED is negative.

4. Given that the price of a commodity reduced from 3,000 FRW to 1,500 FRW leading to a decrease in its quantity supplied from 100kgs to 50kgs, determine the elasticity of supply for this commodity and give its category of elasticity.

$$PED = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q_s} = \frac{-50}{-500} \times \frac{3000}{100} = 3$$

The commodity has elastic supply since its PES is greater than 1 but less than infinity meaning that a small reduction in price leads to a greater reduction in its quantity supplied.

5. What is measured by the following?
 - i. Elasticity of supply – we measure the degree of responsiveness of quantity supplied of a commodity to changes in factors that affect supply.
 - ii. Cross elasticity of demand- we measure the degree of responsiveness of quantity demanded of a commodity to changes in price of another commodity.
 - iii. Price elasticity of demand - we measure the degree of responsiveness of quantity demanded of a commodity to changes in price of that commodity.
 - iv. Income elasticity of demand- we measure the degree of responsiveness of quantity demanded of a commodity to changes in consumer's income.

- v. Elasticity of demand - we measure the degree of responsiveness of quantity demanded of a commodity to changes in factors that affect demand.

23. 9: Additional activities.

23.9.1: Remedial activities.

The price of the commodity reduced from 300rwf to 250frw and quantity demanded increased from 50rwf to 55kgs. Calculate the price Elasticity of demand. State the type of price elasticity with a supporting reason.

$$PED = (-) \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} = \frac{5}{-50} \times \frac{300}{50} = 0.6$$

The commodity has inelastic demand because PED is less than one but greater than zero.

23.9.2: Consolidation activities

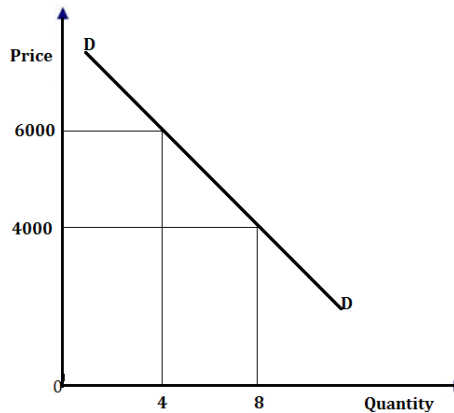
Qn: Muberarugo always buys Onions in Kayonza market for her restaurant. Last year she spent 4000frw per 8kgs per day. With the shortage of onions this year, she spent 6000frw for 4 kg

- Calculate the price elasticity of demand for onions in Kayonza market.
- Using graphical representation draw a demand curve for the onions in Kayonza market
- What form of elasticity do the onions have?

Answers:

$$PED = (-) \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} = \frac{-4}{2000} \times \frac{4000}{8} = 1$$

i) Graphical representation



ii) The form of elasticity is unitary elastic since $PED = 1$.

23.9.3: Extended activities

Question: Describe the applicability of price elasticity of demand.

Answer:

Elasticity is a practical concept that has many applications among which the following are.

a. To the consumers

PED helps the consumers to determine what to consume and what to pay i.e. high prices for inelastic and low for elastic.

b. The producer;

The concept of PED helps the producers when;

- Fixing prices of products i.e. high prices for inelastic demand commodities and low prices for elastic commodities so as to determine their revenue.
- When to sell in case of price expectations i.e. more inelastic commodities to be sold when
- expecting price increase and less of elastic commodities.
- How much to produce in order to keep reasonable output limit in case of elastic demand.
- When determining prices for jointly supplied commodities.

- When making decisions accurately on prices and supply as peoples income change.
- Monopolists in practicing price discrimination.
- When determining wage changes.

The government:

- It helps in taxation of commodities i.e. high taxes on inelastic goods and low taxes on
 - elastic commodities so as to raise revenue.
 - When determining incidence of taxation (burden of taxation) if demand is elastic, its felt by a producer and inelastic demand its felt by a consumer and if unitary its equally shared by both.
 - To determine which industries to nationalize i.e. government should nationalize those industries which produce inelastic demand commodities but not controlled by monopolies.
 - Helps the government in devaluation process i.e. it helps to know the PED of exports and imports that should be elastic for successful devaluation.
 - Helps government to discourage the development and consumption of certain commodities especially those with elastic demand.
 - Helps in determining wages for its workers i.e. high wages for inelastic demand workers and low wages for elastic demand commodities.
 - It helps in determining incidence of a subsidy i.e. when demand is elastic the producer benefits more from a subsidy than a consumer.
- c. Trade unions.
- PED helps in collective bargaining e.g. bargain for high wages if the demand for the commodity is inelastic such that high wages can be passed onto the consumer in form of high prices without reduction in demand.



UNIT: 24

CONSUMER THEORY

24.1 Key unit Competence:

Be able to discuss the concept of utility and how it influences consumer's choice in the allocation of their spending.

24.2 Prerequisite (knowledge, skills, attitude and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related units like theory of demand and consumption where the student teachers studied about the units of quantity demanded at a certain price. This topic provides an analysis of the behavior of individual consumer. It provides a basis of the consumer decisions that each individual consumer makes based on a set of assumptions. The key assumption is that the consumer seeks to maximize the utility (satisfaction) derived from the consumption of a bundle of goods on which he/she spends all his/her income. The unit therefore uses the concept of graphs and mathematical applications to analyses the consumer behavior and therefore it is important to ensure student teachers are familiar with their use.

The main focus of the student teachers should be the consumer and not the supplier. Reasons for their behavior need to be well catalogued by the in the field study. Before proceeding in this subtopic, ensure that the term utility and its elements such as total utility and marginal utility are well explained to the student teachers. Show them the appearance of the total utility and the marginal utility curves and let them carry out that shows these element

24.3 Cross cutting issues to be addressed.

In view of financial education in S.2 entrepreneurship and life skill education; the student teacher is able to draw knowledge, understanding, values and attitude from such subjects to realize how consumers' choice is essential in allocating expenditures. The tutor has to take time to assist the student teachers to appreciate the role of such education disciplines towards shaping one's consumption habits and utility derived in consumption of good and services.

24.4 Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects like financial education and life skills education. In this case, it tests the level of student teacher's understanding about consumer choices in allocating resources they may be already having.

In order for the student teacher to appreciate the role of consumer's choice in allocating expenditures the tutor has to begin with an introductory activity that encourages them to realize role of consumer's choice in allocating expenditures.

Answers to introductory activity

- a. The economic term given to Kalisa's act of purchasing school shoes and hens to satisfy his desires is known as Consumption.
- b. The aim of Kalisa as he tries to purchase the two items was maximize utility.
- c. He could buy two shoes and he could buy only 10 hens
- d. Because of differences in taste and preference.

24.5. List of subheading and lessons

	Lesson titles	Learning objective	Number of periods
1	Utility	By the end of this lesson the student teacher should be able to appreciate the relationship between utility and consumer's spending habits.	4
2	Consumer's and producer's surplus: Meaning and calculations.	By the end of this lesson the student teachers should be able to integrate the law of diminishing marginal utility in their daily spending habits.	1
3	Assessment	To discuss the concept of utility and how it influences consumer's choice in the allocation of their spending.	1

Lesson 1. Utility

a) Learning objectives;

By the end of this lesson the student teacher should be able to appreciate the relationship between utility and consumer's spending habits.

b) Teaching resources;

Student teacher economics textbooks, journal, internet and market research.

c) Prerequisites/Revision/Introduction

This sub-topic will introduce new concepts such as utility, marginal utility and will also require student teachers to have a better understanding of differential equations skills. As a tutor make sure that you have clear knowledge about the topic. The consumer equilibrium discussed in this topic just means the point of utility maximization. It does not mean the state of balance as seen in the theory of equilibrium discussed earlier. Further, utility and its analysis may seem abstract and therefore you need to improvise as you teach this unit so that student teachers do not encounter difficulties in internalizing key concepts presented.

d) Learning activities;

In small groups, student teachers undertake documentary research on consumer theory and explain relationship between total utility and marginal utility, the law of diminishing marginal utility and make a Class presentations. Other activities include taking notes, calculating and solving problems, drawing budget line and interpreting. Such activities are used in different activities.

Answers to activity: 24.1

- a. Each person's position in the conversation was;
 - Ishimwe was the whole seller.
 - Shyaka was the middle man /retailer
 - Ntare was the final consumer.
- b. Ntare was the final consumer because he bought for consumption but not for selling.
- c. People consume in order to maximize utility from the commodities consumed.

Guidance to the activity 24.2

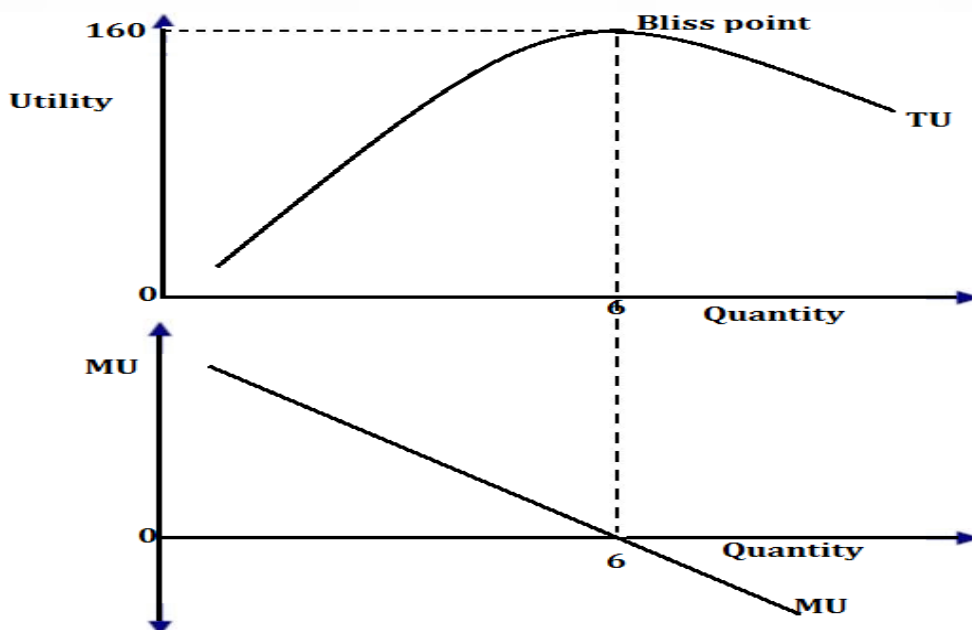
- To Calculate Marginal utility, the student teachers should refer to the worked out example.
- (b) To illustrate the total utility and marginal utility on graphs, the student teachers should refer to graphs of total utility and marginal utility in the student teacher text book.

Answers to activity 24.2

a.

UNITS	TU	MU
1	50	
2	80	30
3	100	20
4	110	10
5	110	0
6	100	-10
7	80	-20
8	50	-30

b.



Answers to the activity 24.3

- a. The glass that took less time to finish was the first glass because he was thirsty.
- b. The glass which was enjoyed most; was the first when he/she was so thirsty,
- c. The glass was paid highly was the first glass, the person it seems that the person was so thirsty, and the glass which was paid less was the 6th glass because the levels of satisfaction had gone in negatives.

e) Application activity 24.1

This activity is aiming at checking whether the student teachers are in position to apply well the concepts studied in the lesson.

Answers to the application activity 24.1

- a. Q1 shows when total utility is at maximum because when total utility is at maximum marginal utility is at zero (point Q1)
- b. At point Q2 total utility is declining because as total utility begins to decline, marginal utility is in negatives at point Q2.

Lesson 2: Consumer's and producer's surplus

a) . Specific learning outcome:

By the end of the sub-topic, the learner should be able to distinguish between the consumer and producer surplus.

b) . Learning resources:

Newspapers, magazines, economics and mathematics textbooks, economics journals, internet access and audio media and field study.

c) Prerequisites/Revision/introduction;

After student teachers gain knowledge and skills from unit 22 **equilibrium and price determination** conduct a research, possibly with the involvement of the student teachers on the prevailing market prices of the commodities and the prices that the consumers are actually willing to pay. Do the same with producers. In case the field study is not possible select suitable examples to use in class.

d) Learning activities

In small groups, student teachers undertake documentary research or a field study in a given market. They come up with different quantities of a commodity a consumer was willing to buy at a certain price and what was purchased, and the same to the producers. Then student teachers calculate and illustrate consumer's and producer's surplus. Then they make class room presentation.

Answers to activity

Activity 24.4

Analyze the case study below and answer the questions that follow:

Mukamana went to a shop to buy a dress. She was ready to pay 10,000frw for it. As she reached, she was told that it costs 12,000frw, but she negotiated with the seller till they reached a consensus and paid 8000frw.

Required:

- a. $10,000 - 8000 = 2000..$
- b. $10,000 - 8000 = 2000$: Her extra utility was 2000.
- c. Consumers' surplus

Answers to a activity 24.5

- a. What was Manzi's surplus from his sales? $18,000 - 15,000 = 3000$. Manzi got a surplus of 3000 because he expected to sell at 15,000frws but he actually sold at 18,000.
- b. Because demand was higher than supply at the time. .
- c. His major aim was profit maximization
- d. It was 15000frw

e) Application activities.

This helps to check whether the student teacher is able to apply the concepts studied.

Answers to application activity 24.2

- The consumers' surplus occurs when supply is greater than demand and the consumer has high bargaining power. This puts him/her in position of paying less than what he/she expected.

- Producers' surplus occurs when demand is greater than supply and the producer has a higher bargaining power than the consumer. This puts him/her in the position of selling at higher price than the price he/she expected to sell at.

24.6. Summary of the unit.

Consumer theory is the study of how people decide to spend their money, given their preferences and budget constraints.

*A **consumer** is the final user of a commodity. i.e. person or household that buys a final product for use.*

***Utility** refers to the satisfaction that is derived from consuming a product. It is measured in units called **UTILS**.*

***Saturation point / bliss point/ point of satiety of a consumer** refers to the maximum point of satisfaction received from the units of the commodity consumed by consumers.*

***Total utility (TU)**, refers to the overall satisfaction derived by a consumer from consumption of various units of a good or service, at a certain point or over a period.*

***Disutility** is when the total utility received from the consumption of a given units of commodity start declining.*

***Marginal utility (MU)** is the additional/extra satisfaction received by a consumer, on the consumption of an extra unit of a commodity.*

$MU = \frac{\Delta TU}{\Delta Q}$ Where MU =Marginal utility.

Δ = change; TU= Total utility; Q = units consumed

Relationship between TU and MU

- When TU is increasing, MU is decreasing.
- When TU is at maximum, MU is zero.
- When TU is decreasing, MU is negative (disutility).

***The law of diminishing marginal utility** states that *as a consumer consumes more and more units of a specific commodity, the utility from the successive units goes on diminishing*".*

Assumptions of the law of Diminishing MU

- Consumer is rational and aims at utility maximization.

- Commodity is taken in suitable and reasonable units.
- Constant tastes of a consumer.

Relationship between MU and demand curves.

When a consumer derives high marginal utility from a unit of a commodity, he will be willing to pay a high price for it.

Consumer's surplus is defined *as the difference between the total amount that consumers are willing and able to pay for a good or service and the total amount that they actually do pay (i.e. the market price).*

Consumer's surplus = Price consumer is willing to pay – market price.

Or

Consumer's surplus = total utility – consumer's expenditure. $T.U - T.E$

Producer's surplus is defined *as the difference between the amount the producer is willing to supply goods for and the actual amount received by him when he makes the trade. Producer's surplus = total of what a producer receives – total of what he/she was willing to charge (receive).*

Or Producer's Surplus = actual earning – expected earnings.

24.7. Additional information for the teacher.

Since this sub-topic has new concepts such as utility, marginal utility and will also require student teacher to have a better understanding of differential equations skills. Therefore, it requires a teacher to have made enough skills and also calculated some questions before entering the class. It also good for the tutor to make the student teachers to realize that the consumer surplus is the difference between the price that consumers are willing and able to pay and the price that they actually pay. Therefore, consumer surplus represents savings of consumers (increasing consumer welfare). And the producer surplus on the other hand is the difference between the price that the producer is ready and willing to accept for his/her commodity and what he/she actually receives. It therefore, represents the wind fall profits; the profits which the producer did not expect due abrupt increase in prices.

24.8 End of unit assessment

Guidance to end of unit assessment.

The student teacher can still use the worked out examples and the notes to answer the end of unit assessment.

1.

Quantity	TU	MU
1	300	
2	350	50
3	380	30
4	390	10
5	390	0
6	380	-10
7	350	-30

2.

- (i) TU is increasing.
- (ii) TU is at its maximum.
- (iii) TU is reducing.

24.9. Additional activities

Here a tutor come up with some questions for all categories of learners; the slow learners and quick learners in order to have a good class room management.

24.9.1 Remedial activities.

These activities are set to compensate the slow learners to move at the same levels with others bright student teachers. Such student teachers need to be attended to, it is good to set simple questions for them so as to help them to understand the key concepts from the unit. For example

- Distinguish between utility and marginal utility
- How is producer's surplus different from consumer's surplus?
- How is bliss point different from disutility?

24.9.2 Consolidation activities;

These activities are meant help quick learners not to be bored and relaxed as others are studying. Therefore, provide additional questions to the fast learning student teachers. There is also a need to set some challenging question to such student teachers from the unit, and this helps to tutor on class room management and also to keep fast learners busy.

24.9.3 Extended activities

As a tutor you can still get some additional questions which you feel that they help the student teacher to understand the unit, and also include some few concepts that look important but were not included in the unit studied.

For example,

Qn. When does a consumer attain his/ her equilibrium under?

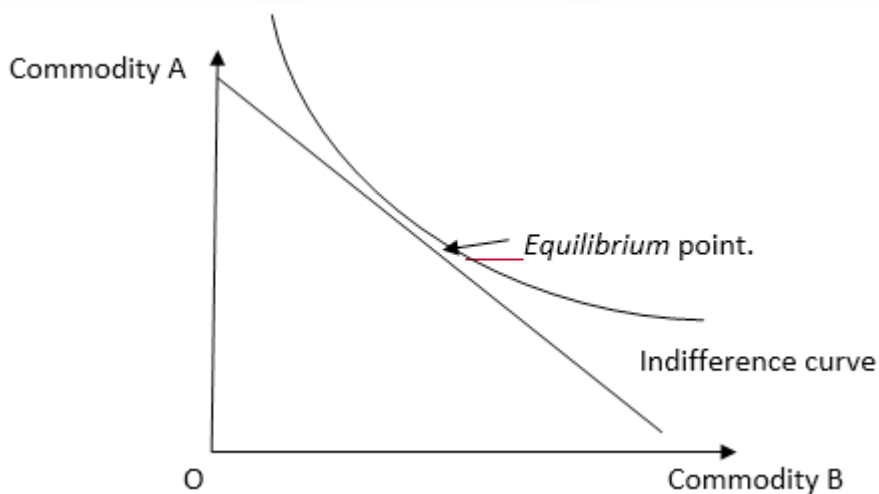
- a. The marginal utility approach
- b. Under the indifference curve approach.

Answers to the extended activities

- a. A consumer reaches equilibrium under marginal utility approach when a consumer gets equal additional utility from the extra money spent of each of the two commodities.

$$\frac{MU_1}{P_1} = \frac{MU_2}{P_2}$$

- b. Here the consumer reaches the equilibrium at the point where the indifference curve meets the budget line.



The tutor can still go ahead and explain definition and some of the characteristics of indifference curves.

● **UNIT: 25****PRICE MECHANISM.****25.1: Key Unit Competence:**

Be able to analyse the role of price mechanism in the allocation of resources.

25.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related subjects. Student teachers should integrate the knowledge, skills, values and attitudes acquired prior in other units like unit 16 on economic systems, unit 20 on price determination in the markets, in understanding and analysis of price mechanism. Together with the knowledge and skills student teachers have from entrepreneurship S.2 unit 4 about markets, they can be able to analyse the role of price mechanism in allocation of resources. . The tutor though, needs to have a good understanding and skills on this unit so as to motivate student teachers towards the interpretation of economic phenomena using the knowledge and attitudes gained in here.

25.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the student teachers. It may be direct or indirect in the explanation of unit lessons. For example, when explaining the role of price mechanism in allocation of resources, tutor stresses the issue of *environment and sustainability*, where student teachers have to learn that, whereas producers allocate resources where they are more profitable, they should keep in mind that over utilisation of resources depletes them quickly and reduces their availability for the future generation. Therefore, as responsible citizens, they should balance profit maximisation vis a vis environmental sustainability. Also, where government does intervene in resource allocation, it promotes regional balance and income redistribution which promotes good living and fraternity among the citizens, which shows *inclusiveness* of the disadvantaged members of the society hence promoting *peace and harmony*.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other cross-cutting issues. E.g. Inclusive education like engaging all student teachers in class activities and discussion without discrimination, using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other related information that may be tackling a given cross-cutting issue that he or she needs to integrate.

25.4: Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and units in this subject. This unit deals with the role of price mechanism in allocation of resources. The student teachers in groups or pairs read through and analyse this activity, so as to enable them gain the curiosity to research about price mechanism. Therefore, it should be noted that, as student teachers get engaged in the lessons of this unit, they discover answers to the questions they were asking at the beginning. For, example from the introductory activity in this unit, as the student teachers carry out research, they may discover that;

- a. The economic term given to the situation where prices determine the direction of Mutoni and Gihozo's business is *price mechanism often called price system*.
- b. The role of prices in determining the levels of profits of both Mutoni and Gihozo's business is discovered in the due course of describing how price mechanism allocates resources.

25.5: List of lessons/ subheadings:

N0.	Lesson title	Lesson objectives	Number of periods
1.	Price mechanism	- Describe the operation of the price mechanism in the allocation of resources. - Identify the advantages and disadvantages of price mechanism.	4

2	Price fluctuations	• Explain the causes and effects of price fluctuations. • Analyse the impact of price fluctuations in an economy. • Justify government interference in price mechanisms.	4
3	Price control:	• Explain the methods and effects of price control. • Justify the various methods of price controls. • Examine the effects of various price controls in Rwanda. • Advocate for government interference in the allocation of resources.	4
End unit assessment.		• Be able to analyse the role of price mechanism in the allocation of resources.	2

Lesson 1: Price mechanism

a) Teaching objectives.

- Describe the operation of the price mechanism in the allocation of resources.
- Identify the advantages and disadvantages of price mechanism

b) Teaching resources.

Economics textbooks, regulatory bulletin, newspaper articles, government websites, economics journal and internet.

c) Prerequisites /revision/introduction.

This lesson seeks to analyse how the price system works, and its outcomes. Students are equipped with the knowledge and understanding of unit 16 on free enterprise economy, therefore, tutor reflects on them as he/she reviews the previous units / lessons. Student teachers base on

this background to analyse the operation of price mechanism. We saw in unit 22 that where demand is greater than supply, there is shortage and where supply is greater than demand there is surplus in the market. All these relate to limited government interference hence operation of the forces of demand and supply in automatic allocation of resources.

d) Learning activities:

i) Guidance on learning activity 25.1:

Tutor sends student teachers, in groups, pairs or individual work, for research based on the activity requirements, may be in the library or internet. They research on the meaning of price mechanism as they analyse its role in resource allocation. After the set time for research, tutor calls them back for general class discussion and consensus about the activity findings all together.

Answers to activity 25.1:

Refer to the student teacher's book under subheading 25.1.1 and 25.1.2 respectively

Application activity 25.3 (a)

Answers

- (i) The technical term is price mechanism
- (ii) In A supply had risen and was greater than demand and so prices reduced while in B supply had reduced and demand was high forcing prices up
- (iii) Refer to unit 25.1.3 in student teacher's book.

ii) Guidance on learning activity 25.2:

Tutor tosses 2 pieces of paper written on proposers and opposers and allows student teachers time to discuss amongst themselves the points supporting the side they have chosen on the provided motion. They base on the research knowledge gained in activity 25.1 about the meaning and operation of price mechanism. After the set time for the debate, tutor calls them back for general class discussion and consensus about the activity views all together.

Answers to activity 25.2:

Refer to the student teacher's book under subheading 25.1.3 (a) and (b) respectively, which show the advantages and disadvantages of price mechanism.

iii) Guidance on learning activity 25.3:

Tutor guides student teachers on group formation or pairs for them to discuss amongst themselves on the reasons why government needs to interfere with price mechanism. They base on the research knowledge gained about the meaning, operation and disadvantages of price mechanism. After the set time for the discussion in pairs or groups, tutor calls them back for general class discussion and consensus about the activity views all together.

Answers to activity 25.3:

Government interferes in price mechanism due to the following reasons:

- To bring about economic stability
- To provide for the poor and disadvantaged groups in the society
- To regulate resource utilization by fighting over exploitation and exhaustion of resources
- To provide public utilities which cannot be provided by private producers.
- To protect consumers against exploitation by the profit motivated private
- To control exploitation of either consumers or producers
- To control the emergency of monopoly firms .
- To provide cheap and essential commodities
- To redistribute income and resources
- To curb down unemployment

e) Application activity 25.3 (b)

Tutor gives out a research question, either in groups, pair and share or individual work, on how government can interfere in the operation of price mechanism. Thereafter they make presentation in class.

Answers:

1. *Price controls:* This is where the government legislates or fixes prices of commodities administratively so that they are no longer solely determined by the forces of demand and supply. Price controls involve fixing minimum and maximum prices etc.

2. *Taxation policy (progressive taxation) i.e.* Taxing the rich more than the poor and government revenue is raised to provide public utilities to the poor at reduced prices.
3. *Nationalization.* Taking of control and ownership of firms formerly owned by private individuals especially those producing essential commodities as well as weak firms which may be outcompeted if the price mechanism is left to operate.
4. *Government offers.* i.e. assistance to firms by giving subsidies, credit facilities price supports (regulate prices by buying the commodity when there is surplus and selling it in the market where there is shortage) tax holidays etc. all these aim at enabling weak firms to operate as well as those producing cheap but essential commodities.
5. *Antimonopoly laws/legislations.* These are laws enacted by government to control the activities by private profit motivated monopoly firms thus reducing over exploitation.
6. *Forming consumer associations.* This helps to educate consumers on their rights responsibilities and market issues so as to reduce consumer exploitation through ignorance.
7. *Rationing of essential commodities by government* which enables the consumers to get essential commodities at reasonable prices. (sale of government commodities cheaply at first come first served.)
8. *Establishment of buffer stocks i.e.* to reduce on price fluctuations and regulate price and supply.
9. *Operating stabilization fund policies* to reduce price fluctuations.
10. *Government legislations* i.e. laws and regulations issued by the government e.g. government may issue licenses and permits to businessmen before commencing operations or may offer Quotas restrictions. This is mainly done to prevent over exploitation and exhaustion of resources.
11. *Joining international commodity Agreement* through which prices of given commodities are stabilized.

Lesson 2: Price fluctuations:

a) Teaching objectives.

- Explain the causes and effects of price fluctuations.
- Analyse the impact of price fluctuations in an economy.
- Justify government interference in price mechanisms.

b) Teaching resources.

Economics textbooks, regulatory bulletin, newspaper articles, government websites, economic journal and internet

c) Prerequisites /revision/introduction.

This lesson seeks to analyse how the price fluctuation comes about and its outcomes. We shall also look at the means the government can use to correct the defects of price fluctuation. Students are equipped with the daily life experience on as far as how prices of most commodities change and the resultant effects in the economy. We saw in unit 22 that where demand is greater than supply, there is shortage and where supply is greater than demand there is surplus in the market. All these relate to causes of price fluctuation hence the new unit about Price fluctuation.

d) Learning activities:**i) Guidance on learning activity 25.4:**

Tutor guides student teachers on how to form new groups or pairs so that they analyse the provided case study, in activity 25. 4. They research based on the activity requirements, may be in the library or internet, there-after make presentations in class.

Answers to activity 25.4:

- a. The general name of what was worrying the farmers is price fluctuation.
- b. Refer to content summary in 25.2.2 in the student's book.
- c. Refer to content summary in 25.2.3 in the student's book.
- d. Refer to content summary in 25.2.4 in the student's book.

e) Application activity 25.4:

This activity is just to make student teachers to relate price fluctuation with what actually is on the ground in Rwanda. Give in groups or pairs or individual work for research and to be discussed later in plenary. Refer to 25.2.2, 25.2.3, 25.2.4 for the answers.

Lesson 3: Price Control:**a) Teaching objectives.**

- Explain the methods and effects of price control.

- Justify the various methods of price controls.
- Examine the effects of various price controls in Rwanda.
- Advocate for government interference in the allocation of resources.

b) Teaching resources.

Economics textbooks, regulatory bulletin, newspaper articles, government websites, economics journal and internet etc

c) Prerequisites /revision/introduction.

This lesson seeks to analyse how the government, producers or producers and consumers try to provide solutions to control the effects of price fluctuation in an economy. We shall look at the various means that can be employed in any given economy to correct the defects of price fluctuation. Students are equipped with the daily life experience on as far as how prices of most commodities change and through lifelong learning and news on different media, are aware of government control of certain prices of certain commodities. We saw in unit 20 on how prices are determined in the market. All this can be used to relate to this lesson and understand it better.

d) Learning activities:

i) Guidance on learning activity 25.5:

Tutor guides student teachers on how to form new groups or pairs so that they undergo research on price controls, analyse and discuss the provided questions, in activity 25. 5. They research based on the activity requirements, may be in the library or internet, thereafter make presentations in class.

Answers to activity 25.5:

- Present your arguments for and against the motion that

“It is important for the government to fix low prices to favor consumers and high prices to favor producers”.

This question requires learners to discuss the advantages of maximum price and minimum price together with their disadvantages. Refer to advantages and disadvantages of maximum and minimum prices in 25.5.2.a and b.

- b. The specific name given to the prices fixed in favor of consumers is maximum price legislation while for producers is minimum price legislation.
- c. Government may set either low or high prices because of the following;

Why set low;

- To reduce consumers' exploitation by producers.
- To reduce inflationary tendencies by maintaining price stability.
- To give chance to low income earners to get access to commodities.
- It reduces monopoly powers.
- To help to reduce industrial peace or stability where prices of products and prices of factors of production are controlled.
- To improve standards of living of people because they will be able to purchase various commodities at a low price.

Why set high prices

- To protect producers from being under exploited/ paid by the buyers.
 - To increase production and creation of employment opportunities.
 - To enable the producers to receive stable incomes.
 - To discourage consumption of unwanted or undesired commodities.
 - To help the economy to offset a depression or recession.
 - To reduce strikes by workers who complain of low wages.
 - To increase the purchasing power of those who remain employed hence increased aggregate demand.
 - To reduce wage differentials and the gap between the rich and the poor.
- d. Other than government setting prices to control price fluctuations, other ways in which prices can be controlled are;
- Resale price maintenance
 - Rent control
 - Rationing
 - Buffer stock and stabilization fund policies

- International Commodity Agreement (ICA)

ii) Guidance on learning activity 25.6:

Tutor guides student teachers on how to form 2 groups for debate, one opposition and another proposition sides respectively, so that they carry out debate on effects of price controls. Using the question provided in activity 25.6 as the motion, they discuss the advantages and disadvantages of price controls. Tutor harmonises student teacher's views in conclusion of the lesson.

Answers to activity 25.6: *Refer to effects of price controls in student's book subheading 25.3.3.*

e) Application activity 25.6:

For answers, refer to disadvantages of minimum price legislation in 25.3.2. (b).

Guidance on of skill lab 25

Tutor guides student teachers on how to relate the knowledge, skills, values and attitudes gained on price fluctuations with the views farmers are giving. They base on the causes of price fluctuations to advice farmers on how to avoid it and its unpleasing effects.

For example,

- Forming agricultural cooperatives.
- Signing commodity agreements with the buyers of their commodities over price and amount to be supplied.
- Using irrigation
- Making agricultural diversification
- Adding value to their products

And many others ideas the student teachers may be having and let them share them with commercial farmers and tutor has to make sure that students do it effectively.

25.6: Summary of the unit.

In this unit we saw the following;

- Price mechanism is a system of economic organization in a free enterprise economy where resource allocation and prices in the

economy are determined by the forces of demand and supply with little or no government interference.

Operation of price mechanism:

- Prices are determined by the forces of demand and supply.
- High demand will give rise to high prices.
- As demand falls, prices also fall and as prices fall, profits will also lower.
- High prices create high incomes and profits for producers
- In addition, profits will be highest in that line of production where costs are minimized.
- Changes in tastes and preferences of the consumer will be reflected in what he's willing buy.
- Reasons for government intervention in the operation of the price mechanism which include
 - To provide for the poor and disadvantaged groups in the society
 - To regulate resource utilization
 - To provide public utilities which cannot be provided by private producers,
 - To protect consumers against exploitation by producers
 - To control exploitation of either consumers or producers
 - To control the emergency of monopoly firms
 - To provide cheap and essential commodities,
 - To redistribute income and resources,
 - To bring about economic stability

Price fluctuations are changes in price in form of ups and downs (rise and fall) over a period of time because of changes in demand and supply.

Causes of price fluctuation of agricultural products i.e,

• Time lag and gestation period.	• Presence of many producers
• Effect of natural factors	• Inelastic demand for agricultural products.
• Perishability of agricultural products	
• Bulkiness of agricultural products	

Effects of price fluctuations which include:

- Fluctuation of farmers' incomes
- Less savings of the producer.
- Producers will be discouraged to produce.
- It will lead to fluctuation of revenues of the government
- Leads to unstable or fluctuating foreign exchange earnings leading to BOP problems.
- Employment levels will tend to fluctuate

Measures to control price fluctuations include,

- Diversification of agriculture
- Improvement in storage facilities
- Price control in form of minimum and maximum prices
- Formation of international commodity agreement (ICA)
- Improvement in transport network
- Establishing of agro-processing industries
- Improvement in production methods and technology
- Encourage the role of cooperatives
- Research in agriculture
- Operating buffer stock policy.
- Stabilization fund policy

Price controls refer to the methods that can be used to interfere with the forces of demand and supply in determining prices **Methods of price control include;** Minimum and maximum price legislation, rationing, resale price maintenance, rent control, buffer stock and stabilization fund policies, international commodity agreement etc. Effects of price controls which include;

- Resale price maintenance stabilizes producer's incomes
- Maximum price controls monopoly power.
- Price controls maintain price stability.
- Price control protects consumers from being exploited by profit motivated producers.

Minimum wage increases purchasing power of workers.

25.7. Additional information for the tutor.

In developing countries including Rwanda and all the countries of the East Africa community, the operation of the price mechanism is impaired by too much participation of government agencies in the market which distorts the market. Presence of the government in sectors like agriculture may be justified by need to reduce the market fluctuations and therefore protect both the consumers and producers as well as prevent devastating food shortages occasioned by frequent droughts. The government subsidies are also important in reducing the cost of production hence mitigate the effects of high food prices on inflation and the welfare of the poor citizens. The government is therefore justified to interfere in the market. Operation of the price mechanism is what is called market liberalisation.

25.8: Answers to End unit assessment:

1. The assumptions underlying Price mechanism include, among others the following.
 - Prices are determined by forces of demand and supply.
 - There is no government interference
 - There are many buyers and sellers in the market with a lot of independence.
 - There is stiff competition such that inefficient firms will be knocked out of production.
 - Producers aim at profit maximization while consumers aim at utility maximization.
 - There is consumer sovereignty i.e. the consumer is the boss or king. A consumer has freedom or power to choose what should be produced. i.e. every time a consumer buys a commodity, he's indirectly casting a vote for its production and every time a commodity isn't bought a consumer is rejecting its production.
 - There is free entry and exit of firms into the market. i.e. when profits are high, new firms will be free to enter the line of production and when they are low, firms will be free to leave the line of production.
 - There is perfect mobility of factors of production. i.e. factors of production freely move from one place to another (geographical mobility) and or job to another (occupational mobility).
 - There is perfect knowledge in the market prices, quality of products and other aspects of the market.

2. Refer to content in the student's book under subheading 25.1.3 a and b for advantages and disadvantages of price mechanism.
3. Refer to the student's book under subtitle 25.1.4 for the reasons why government comes in to interfere with price mechanism in the long run.
4. Reasons why agricultural product prices fluctuate more than those of industrial ones, include among others the following;
 - Most agricultural products are perishable while industrial products are durable.
 - Agriculture products have long gestation periods while industrial have short gestation period.
 - Agricultural production mostly in developing economies largely depends on natural conditions or factors which bring about difference between planned output and actual output. Industrial output isn't affected by natural factors.
 - Most producers in agriculture use old methods of production. Regulating output to equate it with demand is difficult. This causes fluctuations in prices. While industrial producers use efficient methods that fetch high and stable output and prices as well.
 - Agricultural producers in developing countries produce similar products. They compete for the available market. Thus, in case of surplus output, it may not be absorbed by the market which in turn forces selling prices to go down, which isn't the case with industrial producers.
 - Absence of effective commodity programs. Most developing economies lack programs that can be used to regulate supply and then stabilize prices. This isn't the case with industrial producers/manufacturers.
 - Agricultural products have low market in industrial production. This reduces the market for surplus output in developing countries. While industrial products have high demand everywhere.
 - Agricultural products have inelastic demand. This is because most of them are food stuffs. For instance, even if the price for food reduces, the amount of food eaten by an individual almost remains constant. While industrial have elastic demand.
 - Regulating supply of agricultural products through arbitrage is difficult. This is because agricultural products are bulky. This isn't the case with industrial products which are easy to transport.

5. Refer to the effects of price fluctuations in the student's book under subtitle 25.5.3.
6. Describe how the following measures help in controlling price fluctuations:

i) **International commodity agreement.**

These are treaties or agreements set up either by producers or by the producers and consumers mainly set up to control prices and supply of their commodities. This stabilizes prices through its objectives which include;

- To stabilize consumer prices in the importing country.
- To offer buffer stock facilities to member countries through price stabilization.
- To rise and stabilize export earnings of producer countries through price stabilization.
- To promote cooperation between exporting and importing countries.
- To increase bargaining power of producer countries especially LDC's
- To eliminate competition between member countries and non-member countries of the commodity in agreement.
- To regulate quantity supplied to the market through quotas system so as to reduce surplus and wastage.
- To improve the terms of trade for LDCs through bargaining for better exchange conditions especially for primary products which they export.
- To assist LDCs solve problems of BOP position which arise from export price fluctuations.
- To reduce price fluctuation of primary products involved by controlling supply.

ii) **Buffer stock and stabilization fund policies.**

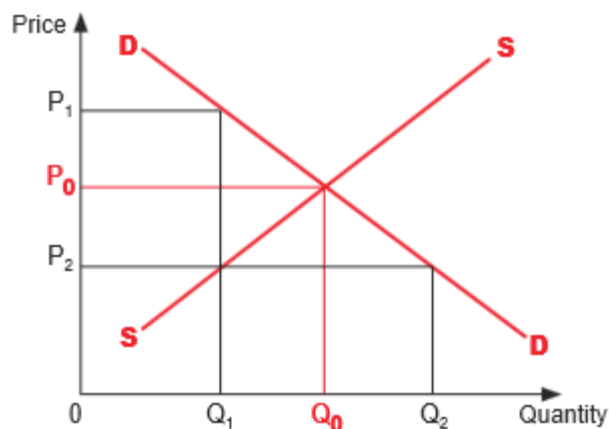
Based on its assumptions which include the following,

- Farmers planned output isn't always equal to actual output.
- Agricultural output depends on natural factors that are beyond the control of farmers.
- There is a time lag between time when decisions to produce are taken and time when products are produced.

- All prices are determined along the demand curve RH (Rectangular hyperbola) ($PED=1$) give the same total revenue, therefore.

Buffer stock as a system/situation where the government buys up a surplus (excess output) from producers, stores it and sells/supplies it to the market during the shortage period; involves the government in the physical buying and selling of the commodity. This can also be used to stabilise price in order to stabilise producer's revenue in the following way; In a case where a smaller quantity $0Q_1$ comes onto the market, the government ensures a price of $0P_0$ (the stabilized price) by selling an extra output of Q_1Q_0 to the consumers. When there is a shortage with output $0Q_1$ which forces up the prices to $0P_1$, the government will release output equivalent to Q_1Q_0 . The price will then move $0P_0$. Once there is a surplus, the government can buy up the surplus of Q_0Q_2 in order to stabilise the price at $0P_0$. The withholding of Q_0Q_2 will force up the price to $0P_0$. The government should always ensure that output $0Q_0$ comes onto the market.

Illustration of Buffer stock with price stabilization.



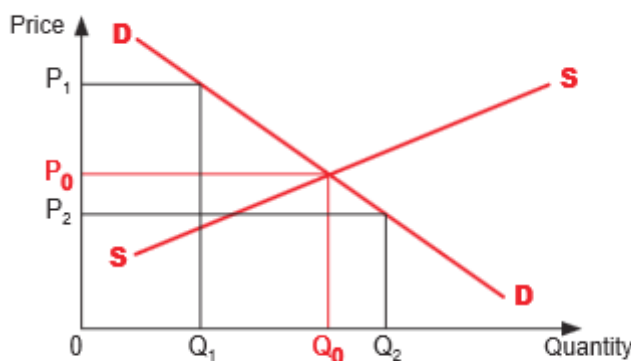
While based on its assumptions which include the following,

- Farmers planned output isn't always equal to actual output.
- Agricultural output depends on natural factors that are beyond the control of farmers.
- There is a time lag between time when decisions to produce are taken and time when products are produced.

- All prices are determined along the demand curve RR (PED=1) give the same total revenue, therefore,

A stabilization fund as a mechanism set up by a government or central bank to insulate (protect) the domestic economy from large influxes of revenue as from commodities can be used to stabilise prices. In this case the agency should buy whatever comes onto the market at a stabilized price OP_0 . If a smaller output OQ_1 comes onto the market, the agency buys at a price of OP_0 instead of OP_1 . With a greater output OQ_2 , the agency buys at OP_0 instead of a lower price, OP_2 .

Illustration of Stabilization fund with price stabilization.



iii) *Resale maintenance.*

This is a price set by the producer of a given commodity to the consumer. The price paid by the consumer is the same at different retail outlets and therefore this reduces price fluctuations in an economy. It is set to protect the producer or seller in order to cover costs of production. Examples include the price of newspapers, price of airtime. This price is non-inflationary, increases sales and profits of producers and eliminates exploitation of consumers through high prices.

Examine the role of price controls towards economic growth. Refer to the advantages and disadvantages of price controls in the student's book, 25.3.3.

25.9. Additional activities:

25.9.1: Remedial activities:

1. Identify any commodities where prices are indicated for the consumer on buying them and no bargaining.

Airtime cards, newspapers, magazines etc.

2. Who determines prices under price mechanism?

Forces of demand and supply.

Etc.

25.9.2. Consolidation activities.

Question: Analyse the rationale behind government setting minimum price:

Answers:

- To encourage producers to use to increase production,
- To discourage labour mobility especially from rural to urban areas
- To satisfy the workers' needs and raise standard of living.
- To protect the producers from consumer's exploitation.
- To increase the purchasing power of the producers
- Minimum prices tend to reduce labour unrest and maintain industrial peace.
- It reduces relative geographical and industrial wage differential.

25.9.3. Extended activities.

1. Examine the advantages and problems of International Commodity Agreement.
 - It helps to fix buying and selling prices of the commodity in question.
 - They help diversify crops so as to reduce dependency on one or few crops.
 - Help process agricultural products so as to increase their value and fetch high prices.
 - Educate farmers through agricultural extension staff so as to produce high quality products and learn storage methods.

- Improve transport and communication facilities so as to solve the problem of bulkiness.
- Improvement and construction of storage facilities thus enable commodities to last longer.
- Introduction of technological innovations so as to reduce reliance on nature e.g. use of fertilizers, irrigation etc.
- Helps in formation of producer cooperatives which helps to increase their bargaining power and provide storage and transport facilities.
- It helps in setting up of stabilization fund and compensates farmers in times of losses.
- Help to allocate quota restrictions to each member country i.e. physical quantities to export to avoid wastage.
- Helps producer countries to stabilize export earnings through bargaining for higher prices.
- Helps LDCs to improve their terms of trade through bargaining for better exchange conditions for their primary products which they export.
- Assist LDCs to solve their BOP problems which arise from export price fluctuations.

Problems of ICA

- Sometimes members agree on a fixed quota that each member should produce. However, some member countries over produce beyond the fixed quota.
- Countries do not produce proportionately equal amounts. Members that produce large amounts dominate others the agreement tends to favour large producers than small ones.
- Different countries have different interests and difficulties. Conflicting interests of members especially producers against consumers limit successful functioning of commodity agreements.
- Different countries are endowed differently with resources. This brings about differences in costs of production which may bring about disagreements on prices.
- If members contribute a small share on world output, they cannot influence the price of the world market. This comes when some producers of a particular commodity are not members.

- The functioning of these agreements requires independent organs to effectively operationalize them. There is lack of effective supervision to implement the established quotas. Some countries may violate the established quotas.
- It's difficult to forecast world demand and supply of commodities.
- It's expensive to finance buffer stocks
- Competition from non-member countries which leads to price wars.
- Natural factors adversely affect member states by affecting their supply.
- Commodities produced have substitutes from synthetic fibers which reduce on their demand.

Describe the advantages and problems by government operating buffer stock and stabilization funds.

Advantages of a buffer stock

- Producer's revenue is stabilized. One can then plan effectively and this ensures a stable development.
- The Producer is encouraged to supply the commodity since the market is assured. Once there is a surplus, the government is ready to buy.
- The consumer gains from the operation of a buffer stock in the sense that once there is a shortage, the government comes in to sell what it had stored during the surplus period.

Problems of operating buffer stock

- A buffer stock is very expensive to operate. i.e. It is very costly. It involves the government in the actual buying and selling of the commodities and setting up of storage facilities.
- Perishability of products creates storage and marketing problems especially if there is prolonged period of bumper harvests.
- A buffer stock requires a lot of market research. For the government to decide when to buy or sell, it must first carry out market research, which is costly.
- Corruption and embezzlement of funds meant for buying of products in case of buffer stocks and reserve funds in case of stabilization fund policy.

- Inadequate statistics or data about supply and demand conditions necessary for further success of both policies.
- Poor transport especially in rural areas which hinders smooth implementation of the policies.
- Progressive surpluses season after season and decline in commodity prices may lead to exhaustion of reserve funds.
- Inadequate storage facilities due to lengthy periods of excess production and continuous surpluses which fails the buffer stock policy.

Advantages of a stabilization fund;

- Producer's revenue is stabilized.
- It is cheap to operate.
- The producer is encouraged to supply the commodity.

Disadvantages of a stabilization fund;

- The consumer suffers from a shortage.
- It is possible for the marketing board to be faced with a permanent loss because prices of agricultural products on the world market are ever falling.

UNIT: 26

INTRODUCTION TO THE THEORY OF PRODUCTION:

26.1. Key unit Competence:

Be able to assess the role of the factors of production in the economy.

26.2. Prerequisite (knowledge, skills, attitudes and values)

Production involves transforming raw materials into finished that can satisfy peoples' needs. This is quite a familiar topic on which the student teachers may have prior knowledge from other units like theory of demand and supply, nature and scope of economics, price mechanism and others. Therefore tutor should introduce unit by using questions and can help the student teacher to link this topic to other units they have already studied so that they may be able to realize the role of factors of production in the economy.

26.3 Cross-cutting issues:

When teaching this unit, it is important to consider the effect of genocide on production and standardization culture. On genocide, consider the fact that genocide resulted into loss of manpower causing a reduction in the country's output. Standardization culture involves developing a culture of fairness, correctness and accuracy. Emphasize to the student teacher the fact that producing quality products is very important and being fair to the consumers and employees for one's production enterprise to be competitive. It is also good to realize that because good governance in the country there is high production of goods and services and this has put Rwanda to be one of the countries in Africa with the fastest growing economies. The tutor should also help the student teachers to appreciate the fact that he /she can use knowledge on production from other subjects such as production in Geography and agribusiness in Entrepreneurship and use it to develop his understanding in this lesson.

26.4 Guidance on the introductory activity:

The introductory activity in the student teacher's book is a basic tool used as orientation activity that enables the student teachers to connect the

knowledge, skills, attitudes and values already acquired in other subjects and other units to this new unity of the theory of production. In this case, it tests the level of student teacher's understanding of the subject matter about the theory of production. In order to for student teacher to realize the role of the factors of production in the economy encourages them to make a field trip in the nearby market or documentary research about production and then introduces the lesson with the introductory activity.

Answers to the introductory activities

- a. The name given to the process of daily business operations named is production
- b. The major component of production process include; land, capital, labour and entrepreneur
- c. The rewards of each resource used in the production process of the firm include;
 - Rent for land
 - Profits for entrepreneurs
 - Interest for capital
 - Wages for labour
- d. This is no factor of production that is more important than others, because they are all important and they complement each equally.

26.5: List of lessons.

	Lesson titles	Learning objective	Number of periods
1	Production:	Explain the purpose, types and levels of production. Acknowledge the levels through which production passes and specialise accordingly.	2
2	Factors of production: Land:	Identify the different factors of production. Identify the characteristics and role of labour as a factor of production.	2

3	Labour as a factor of production	Identify the characteristics and role of labour as a factor of production. Examine the role of specialisation in resource utilisation for efficiency in production.	2
4	Capital as a factor of production	Identify the characteristics and role of capital as a factor of production. Contribute to the capital accumulation process in Rwanda.	3
5	Entrepreneur as a factor of production.	Identify the characteristics and role of entrepreneur as a factor of production. Analyse the functions of entrepreneurs in an economy	2
Assessment		Be able to assess the role of the factors of production in the economy.	1

Lesson 26.1: Production

a) Learning objectives;

- Explain the purpose, types and levels of production.
- Acknowledge the levels through which production passes and specialise accordingly.

b) Learning resources;

Recommended student teachers' books, internet access, newspaper articles on Economics, economic journals

c) Prerequisites/revision/introduction

The tutor should guide the student teachers to find out the definition of production, purpose, types and levels of production. This is done by asking them to first give their own views on what they think about production, purpose, type and level of production. Then after, allow them carry out research about production from the textbook or internet, as you compare with what they had in their minds.

d) Learning activities:

i) Guidance to activity 26.1:

Organize student teachers in groups or pairs to analyse the case study about Mwiza and Muhizi and they base on it to research about production, and answer the questions that follow. They discuss their findings from the research, and make presentations.

Answers to activity 26.1:

- a. Muhizi's act is direct production.
 - Mwiza's act is indirect production.
- b. Characteristics of direct production:
 - Simple tools are used.
 - Mostly family labour is used.
 - Low productivity since it is mainly for home use.
 - Exchange is not encouraged since production is mainly for home use.
 - Poor quality output produced since simple tools are used thus low human welfare.
 - Does not involve competition thus no need of research.
 - Depend entirely on nature.
 - Does not require a lot of skills and skill development.
 - Production is on small
- c. Characteristics of indirect production:
 - Wage labour is used thus creating employment opportunities to most people.
 - Production is on large scale.

- Encourages a lot of research innovations and inventions to improve quality.
- Aims at producing in plenty since production is for market.
- Use of modern tools.
- High levels of productivity.
- Profit motivated/ oriented.
- Requires use of skilled labour and thus enhances skill development.
- High rates of specialisation normally concentrating on a particular commodity.
- Production is for both domestic and foreign markets

Answers to application activity 26.1

(i) What technical terms used to refer to the kind of production identified

A is direct/subsistence production.

B is indirect/commercial production.

Reason: Allow student teachers to give their own reasons.

(ii) Differences between direct and indirect production.

Direct production	Indirect production
Operates on small scale	Operates on large scale
Mostly family labour is used.	Uses hired labour
Low productivity because of use of poor technology	High productivity because of use of high technology
Produces for own consumption	Produces for the market
Etc	etc

(iii) Suitable examples producers involved in direct and indirect production.

Allow student teachers to give their own examples.

(iv) How to change from direct to indirect production.

- Provide quick and cheap loans to subsistence producers.
- Avail resources

- Train subsistence producers to improve skills.
 - Offer subsidies to subsistence producers.
 - etc
- (v) Allow student teachers to make their choices and support them with reasons generated on their own .

ii) Guidance to activity 26.2:

Organize student teachers in groups or pairs or as individuals to analyse information in the table given and thereafter, using the questions that follow, they visit the library to research about factors of production, discuss and share their views in plenary thereafter.

Answers to 26.2:

a.

Person	Occupation	Categories / level of production
Rwagasana	Agriculturalist, Fisherman	Primary production
Akacu	Processes yoghurt, Tailor	Secondary production
Butera	Driver, local defense officer.	Tertiary production

b. Characteristics of primary production.

- Extraction of natural resources.
- Almost all life on Earth relies directly or indirectly on primary production
- The main source of this energy is sunlight.
- Firms which produce natural resources are called primary firms
- The output of the primary industries is usually input for the secondary industries.

Characteristics of secondary production:

- Secondary sector involves in the use of raw materials to make other goods.
- Secondary production is also known as ‘manufacturing and construction’.

Characteristics of tertiary production.

- This involves bringing of primary and secondary products to the

consumers once primary and secondary industries complete their production of goods,

- Tertiary sector involves in giving services.
- Services are either related to trade (commercial services) or offered by professionals (personal services).
- It includes the processes which increase the value or utility of commodities.

Answers to application activity 26.2

(i) The economic activities taking place,

A is fishing.

B is construction.

C is teaching.

(ii).Level of production

A is primary production.

B is secondary production.

C is tertiary production.

Let student teachers identify more examples of economic activities that fall under the three levels of production mentioned in (ii)

iii) Guidance to activity 26.3.

In small groups or pairs or as individuals, student teachers discuss how to advise someone who comes to them to seek for advice on a proposal to start up a given business, describing what he or she needs have before the start of the business.

Possible answers to activity 26.3:

Would advise to have the following in place for successful start of his or her production

• Enough Land.	• Capital.
• Human resources.	• Organizational skills.

e) Answers to application activity 26.3

The role of indirect production towards economic growth in an economy,

- Encourages monetization of the economy.
- Helps in technological development
- Market expansion
- Increases government revenue through production for export
- Government taxes large scale indirect production firms thus gains revenue.
- Encourages infrastructural development in places where indirect production activities take place
- Attract both local and foreign investors
- Provides employment opportunities.

However,

- Large scale production associated with indirect production leads to land exhaustion and loss of soil fertility.
- The need to increase output requires a lot of machines since production is carried out on a large scale, yet machines are expensive.
- The output produced is always massive and this may not be all consumed due to low incomes of the people hence creating wastage.
- Requires skilled man power which is inadequate and worse still the experts seem to be very expensive.
- Leads to income inequality because some indirect producers take on large scale production activities while others in direct production take on small-scale subsistence production.
- Reduction in the food needed by the local people since most of the large-scale farms produce output for export and the local population may not be left with goods. This may affect their standard of living.

Lesson 2: Land as a factor of production.

a) Learning objective;

- Identify the different factors of production.
- Identify the characteristics and role of labour as a factor of production

b) Learning resources;

Recommended student teachers' books, internet access, newspaper articles on Economics, economic journals

c) Prerequisites/revision/introduction:

The tutor should guide the student teachers to find out the definition of land, the purpose of land and characteristics of land. This is done by asking student teachers to first give their own views on what they think about land, characteristics and the purpose of land as a factor of production. Then after, allow them their small groups carry out research about production from the textbook or internet, as you compare with what they had in their minds and then they made presentation to the whole class.

d) Learning activities;

Guidance to activity 26.4:

In small groups, or pairs or as individuals, visit the library and research on land as a factor of production to explain the meaning of land, identify its characteristics and the role it plays in the production process, Then let the student teachers from their research made, present their findings to the whole class in discussion.

Answers to activity 26.4:

- a. Refer to the definition of land in the student teacher's book in **26.5.1.**
- b. Refer to the characteristics of land in the student teacher's book in **26.5.1.1.**
- c. Refer to the role of land in the student teacher's book in **26.5.1.2.**

e) Answers to application activity 26.4

- Land is natural while other factors are not.
- Land is a primary factor of production while others are not.
- Land has fixed supply while others are not.
- Land is subjected to operation of the law of diminishing return while others are not.
- Land is not geographically while other factors like labour are.
- Since land is a gift of nature, it has no cost of production i.e. zero supply price, which is not the case with other factors.

Lesson 3: Labour as a factor of production.

a) Learning objective;

- Identify the characteristics and role of labour as a factor of production.
- Examine the role of specialisation in resource utilisation for efficiency in production.

b) Learning resources;

Recommended student teachers' books, internet access, newspaper articles on Economics, economic journals

c) Prerequisites/revision/introduction

The tutor should guide the student teachers to find out the definition of labour, category of labour and specialization of labour. This is done by asking student teachers to first give their own views on what they think about labour, category of labour and labour specialization as a factor of production. Then after, allow them their small groups carry out research about production from the textbook or internet, as you compare with what they had in their minds and then they made presentation to the whole class.

d) Learning activities;

1.) Guidance to activity 26.5:

Ask student teachers in small groups or pairs or as individuals to analyse the statements provided and identify the work done by different workers in different fields. They visit the library or internet to research about labour and thereafter write T for true and F for false statements. Thereafter, categorize labour according to their skills. They, then make class presentation after the research and discussion. Tutor makes a general conclusion after student teachers' presentation.

2.) Answers to activity 26.5

a.

- i. A construction worker at a hotel site. (True)
- ii. A waiter who serves guests in a hotel. (True)
- iii. A student in class (False)

- iv. A baby at home. (False)
- v. A housemaid washing clothes. (True)
- vi. An artist involved in making art. (True)
- vii. A taxi driver transporting passengers. (True)
- viii. Teacher in class teaching. (True)
- ix. A doctor treating patients. (True)
- x. A farmer in his garden digging. (True)
- b. Categorizing labour into their skill levels
 - i) A construction worker at a hotel site. Can be unskilled if he is potter, semi-skilled for some constructors and skilled for engineers
 - i. A waiter who serves guests in a hotel - semi-skilled.
 - ii. A housemaid washing clothes – Unskilled.
 - iii. An artist involved in making art – with some training it is semi-skilled and when fully trained it is skilled.
 - iv. Taxi driver transporting passengers - Semi- skilled
 - v. Teacher in class teaching - skilled
 - vi. A doctor treating patients - skilled
 - vii. A farmer in his garden digging – unskilled once not trained, semi-skilled in case with some training and skilled in case one is fully trained.

3) Guidance to Activity 26.6

Ask student teachers in small groups or pairs or as individuals to study the case study about Kwizera and Tuyishime, undertake research about specialisation discuss the questions provided in the activity. They, then make presentation after the research and discussion to the whole class. Tutor makes a general conclusion after student teachers' presentation, by harmonizing their findings.

- a. Tuyishime is a specialist because she is highly trained and skilled as a gynecologist. And Kwizera is not a specialist because his worker doesn't require professional skills.

- b. Refer to the definition of specialization to the student teachers' book 26.2.2.b.
- c. The arguments for and against specialization can be found in the student teacher's book in 26.2.2.b.

e) Application activity 26.3

Refer to the advantages of specialisation in the student's book in 26.2.2.b.

Lesson 4: Capital as a factor of production.

a) Learning objectives:

- Identify the characteristics and role of capital as a factor of production.
- Contribute to the capital accumulation process in Rwanda.

b) Teaching resources:

Recommended student teacher's books, internet access, newspaper articles on economics and economics journal

c) Prerequisites/revision/introduction.

The tutor should guide the student teachers to find out the definition of capital, characteristics, the role of capital in production and factors that determine capital accumulation. This is done by asking them to first give their own views on what they think about capital, the characteristics and the role of capital and then capital accumulation. Then after, allow them carry out research about capital, characteristics and the role and capital accumulation.

d) Learning activities:

Guidance to activity 26.7:

In small groups, pairs or as individuals visit the library or internet, research on capital and use the activity questions to discuss and share their views in plenary after. Tutor harmonises their findings.

Answers to activity 26.7.

- a. Capital refers to all manmade resources used in the production process of goods and services. Or it is any physical asset capable of creating further goods and services. Like commercial buildings, roads, factories etc.

- b. The characteristics of capital include;
- Capital is man-made. It is, therefore, possible to increase its supply when the situation requires.
 - It involves the element of time, as it renders its service over a period of time. That is why payment for capital is calculated in terms of so much per cent per annum.
 - The use of capital makes roundabout methods of production possible. Its application increases efficiency and the productive power of all the factors with which it is combined and used.
 - Capital is rewarded with interest in the market of factors of production.
 - The demand for capital is derived. i.e. capital is not demanded for its own sake but for the purpose it is used to serve. i.e. production of goods and services.
- c. Refer to the role of capital in the student's book in **27.2.3 b.**
- d. What can be done to increase the country's stock of capital?
- Increase the level of savings.
 - Break through culture and traditions.
 - Improve the level of financial sector development.
 - Ensure peace and security.
 - Improve technology levels.
 - Improve the level of entrepreneurship
 - Increase wages and remuneration to motivate increase their productivity.
 - Train and retrain labour.
 - Market research and expansion.
 - Population control to match population with the available resources.
 - Reduced taxes and increased subsidization by government
 - Development of infrastructure.

e) Answers to application activity 26.6

- a. USA has higher levels of capital accumulation than Rwanda because of;

- High levels of saving in the US while there is low level of savings in Rwanda due to poverty and inadequate saving education
- Poor culture, habits and customs of Rwandan society about capital accumulation which isn't the case in the USA.
- Low levels of taxes in the US while in Rwanda there is high and unfavourable government taxes and low rates of subsidizations.
- Well-developed infrastructure in the US while in Rwanda there is low level of infrastructure development and poorly distributed infrastructure.
- Low population growth rates in the US while in Rwanda there is high population growth rate with a big dependent class that increases the marginal propensity to consume than to save thus reducing capital accumulation process.
- Extended market in the US while there is a small size of market both local and foreign:
- Low rates of capital outflows in the US while in Rwanda there is high rate of capital outflows due to high marginal propensity to import
- Big number of productive workers in the US while there is small number of productive workers due to a small working class and low skills required to increase production.
- Nucleated family in the US while in Rwanda there is extended family system which increase present consumption and discourage saving mobilization for investment, hence discouraging capital formation.
- High and better wages and enumeration of workers in the US while in Rwanda there is low wage rate and poor remuneration of workers especially in the public sector as the biggest employer. This discourages labour efficiency and productivity hence hindering capital accumulation.
- Large capital stock in the US than in Rwanda where there is a small capital stock that doesn't encourage further increase in capital stock.
- High levels of entrepreneurial skills and positive attitude to work in the US while in Rwanda, there is low level of entrepreneurial skills and negative attitude towards work.
- Political stability and security in the US while in Rwanda there

is unstable government and insecurity that scares away potential investors.

- High and better technology in the US while in Rwanda there is low and poor technology level.
 - High labour productivity in the US while in Rwanda there is low labour productivity due to lack of sufficient and efficient cooperant factors
 - High levels of business profitability in the US than in Rwanda where there is low level of profitability due to small initial and working capital injected in most businesses
 - Well-developed financial sector in the US than in Rwanda where there is low level of financial sector and money market development that discourages savings and savings mobilization, all which hinder investments and capital accumulation.
- b. Refer to activity 26.7 d above for the measures taken by the government of Rwanda to increase the capital accumulation in the country. Cooperant

Lesson 5: Entrepreneurship as a factor of production

a) Learning objective;

- Identify the characteristics and role of entrepreneur as a factor of production.
- Analyse the functions of entrepreneurs in an economy

b) Learning resources;

Recommended Student teachers' books, internet access, newspaper articles on economics, economics journals

c) Prerequisites/revision/introduction

The tutor should guide the student teachers to find out the definition, characteristics and functions of entrepreneur as a factor of production. This is done by asking student teachers to first give their own views on what they think about above, then after, allow them in their small groups carry out research about entrepreneur as a factor of production from the textbook or internet, as you compare with what they had in their minds and then they made presentation to the whole class.

d) Learning activities;

1) Guidance to activity 26.8

In small groups ask student teachers to identify people who have successfully started businesses in Rwanda and identify their enterprises and the products they produce. Activity 26.8 • Basing on the identified entrepreneurs, ask student teachers in small groups to explain the meaning of entrepreneur and discuss the characteristics and function of entrepreneurs. Through question and answer session with the student teachers, ask them to identify role such entrepreneurs have played to the development of their areas of operation and the country at large.

2)Answers to activity 26.8.

- a. Let student teachers identify different businesses by entrepreneurs in their localities.
- b. Refer to 26.5.4.1 for the characteristics of entrepreneurs.
- c. Refer to 26.5.4.2 for the functions of entrepreneurs.

e) Answers to application activity 26.5.

- Credit expansion through reduced interest rates on borrowing.
- Market expansion in and outside the country.
- Education and training of entrepreneurs to equip them with basic knowledge and skills to deal with day-to-day problems.
- Ensure peace and security I all parts of the country to attract potential investors from within the country and abroad.
- Break through cultural values and traditions of participating in non-economic activities by sensitizing them about economically productive activities.
- Fight inflation in the economy to bring about economic stability.
- Infrastructural development.
- Development of the level of technology by funding research and innovation
- Setting Favourable policies like tax holidays and subsidies etc.
- Privatisation of some public assets which will attract potential private investors to start up.

26.6. Summary of the unit

Production is the organized activity of transforming resources into finished products in the form of goods and services.

Purpose of production: According to Adam Smith; the purpose of production is consumption. I.e. to satisfy human wants and needs. According to Keynes; the main purpose of production is to create wealth and improve the economic wellbeing of people.

Types of production:

- Direct production:
- Indirect production:

Levels of production.

- Primary Production:
- Tertiary Production:
- Secondary Production;

Factors of production:

- Land
- Capital
- Labour
- Entrepreneurship

26.7 Additional information for the teacher

Labor is measured by the labor force or labor pool. To be considered part of the labor force, you must be available, willing to work, and have looked for work recently. The size of the labor force depends not only on the number of adults but also how likely they feel they can get a job. It is the number of people in a country who are employed plus the unemployed. Not everyone who is jobless is automatically counted as unemployed. Many are jobless by choice and aren't looking for work. Examples include stay-at-home mothers, retired seniors, and students. Others have given up looking for work. These are discouraged workers.

It is important to distinguish personal and private capital in factors of production. A personal vehicle used to transport family is not considered a capital good. But a commercial vehicle that is expressly used for official purposes is considered a capital good. During an economic contraction or when they suffer losses, companies cut back on capital expenditure to ensure profits. During periods of economic expansion, however, they invest in new machinery and equipment to bring new products to market.

It should be noted that, while large companies make excellent examples, a majority of companies are small businesses started by entrepreneurs.

Because entrepreneurs are vital for economic growth, countries are creating the necessary framework and policies in order to make it easier for them to start companies.

The definition of factors of production in economic systems presumes that ownership lies with households, who lend or lease them to entrepreneurs and organizations. But that is a theoretical construct and is rarely the case in practice. With the exception of labor, ownership for factors of production varies based on industry and economic system.

For example, a firm operating in the real estate industry typically owns significant parcels of land. But retail corporations or shops lease land for extended periods of time. Capital also follows a similar model in that it can be owned or leased from another party. Under no circumstances, however, is labor owned by firms. Labor's transaction with firms is based on wages.

Ownership of the factors of production also differs based on the economic system. For example, private enterprise and individuals own most of the factors of production in capitalism. However, collective good is the predominating principle in socialism. As such, factors of production, such as land and capital, is owned by workers.

26.8. Answers to End unit assessment

1. a) To satisfy their wants and needs.
 - b) Factors that hinder development of entrepreneurs in Rwanda include;
 - Fear of taking and bearing risks
 - Lack of passion and motivation towards work.
 - Lack of self-belief, hard work and disciplined dedication
 - Lack of adaptability and flexibility.
 - Limited creativity and innovativeness amongst People in Rwanda.
 - Weak money management capacity thus leading failure to plan for present and future financial obligations and set aside an emergency fund.
 - Ineffective planning skills
 - Inability to make the right connections by reaching out to mentors with more experience and extensive networks to seek valuable advice.

- Fear of exiting after making losses. Thus, fear to try something new and continue to dump money into failing businesses.
 - Inability by most people to question themselves intimidating questions
 - Lack of commitment to outcome.
2. (a) No any factor of production is more important than the other because they all complement to each other equally.
- (b) Factors that can lead to increase in capital accumulation.
- Increase the level of savings.
 - Break through culture and traditions.
 - Improve the level of financial sector development.
 - Ensure peace and security.
 - Improve technology levels.
 - Improve the level of entrepreneurship
 - Increase wages and remuneration to motivate increase their productivity.
 - Train and retrain labour.
 - Market research and expansion.
 - Population control to match population with the available resources.
 - Reduced taxes and increased subsidization by Government
 - Development of infrastructure.
3. a) Matched

Resource	Reward
Land	Rent
Labour	Wages or salaries
Capital	Interest
Entrepreneurship	Profits

b)

Resource	Category
Land	Natural
Labour	Human resource
Capital	Manmade
Entrepreneurship	Organizational skills

4. Advantages of direct production.

- Increased home food.
- Reduced famine, starvation and hunger.
- It is cheap since little capital is required to start and manage.
- Reduces government expenditure on food for the citizens.
- Reduces dependence on other countries for food aid.
- Improves people's standards of living.

Disadvantages direct production:

- Reduces government revenue since the people engaged earn no income to pay in form of taxes.
- Reduces the country's economic growth trend.
- Doesn't promote technological development.
- May worsen a country's dependence on other countries for financial aid since people earn no incomes.
- Increases a country's budgetary deficits.
- Worsens a country's BOP position.
- Worsens the unemployment problem since family labour is used than hired labour.

Advantages of indirect production:

- Increase government revenues through taxes
- Monetizes the economy since production is for market.
- Promotes technological development
- Increases the country's stock of real assets
- Infrastructural development

- Solves the unemployment problem
- Increases the development of an entrepreneurial class.
- Quickens economic growth and development.
- Better quality is produced since there is use of machines and skilled labour hence improving a country's terms of trade.
- Earns a country foreign exchange since there is production for export.
- Attracts both local and foreign investors hence increase investment levels.

Disadvantages of indirect production.

- It is expensive since it requires large sums of capital to start and manage.
 - May deprive the locals of output since mostly it might target for export hence worsening people's welfare.
 - Its mostly large scale thus may lead to displacement of people.
 - Use of capital-intensive techniques of production may lead to technological unemployment.
 - May lead to massive production with little market thus leading to wastage.
1. Possible answers are given by student teachers basing on the activities in their localities but categorized as primary, secondary and tertiary production.

26.9: Additional activities.

26.9.1: Remedial activities.

1. Distinguish between capital and labour
2. How are factors of production being rewarded
3. How is capital as a factor of production different from other factors of production?
4. Discuss the role of capital towards development.

Answers to remedial activities.

Refer to the student teachers' book on factors of production for all the answer.

26.9.2: Consolidation activities.

Qn. "Without land there is no production" discuss.

Role of land in production include;

- It is the original source of raw-materials for industries, thus promotes industrialisation.
- It includes soils and climate which are vital for agriculture.
- It is a source of fuel like oil, coal, firewood etc.
- It is a source of fish which is used for food or exchange locally or externally.
- It provides scenery for tourism e.g. waterfalls, wild animals, natural forests, mountains etc. all which earns a country revenue in form of forex.
- It provides a site on which all developments stand.
- It is a source of minerals like gold, copper etc. which can be exchanged to provide revenue.
- Land is taxed to earn government revenue.
- It is a source of water for home use, using in industries and generation of electricity.
- It is a source of medicine like herbs which help promote health standards of nationals of a given country.
- It helps in transport systems like road network, railways, air transport which aids production directly and or indirectly.

However, other factors also play an important role in production e.g.

Role of an entrepreneur:

- Organizes other factors of production.
- Undertakes risks and bears the burden of uncertainties of the business.
- Co-ordinates other factors of production.
- Is a decision maker.

- Directs the development of the enterprise
- Is an initiator.
- Is an innovator.

Role of capital:

When invested, capital;

- Increases the levels of outputs produced.
- Leads to infrastructural developments
- Leads to the exploitation of idle resources
- Breaks the state of technological backwardness

26.9.3. Extended activities.

Question 1. Taking an example of the sweeper and the manager in the same production process,

Analyse the factors that may cause labour as a factor of production in the same production process to be rewarded differently.

Question 2. Justify the reasons for demanding for high wages by labour in the production process.

Answers to the extended activities.

Qn: 1: Reasons why labour in the same production process may be rewarded differently.

- The sweeper can easily be replaced than a manager; supply for a sweeper is more elastic than the supply of a manager.
- The manager fore goes a lot of time to be trained than a sweeper.
- A manager has more responsibilities than a sweeper.
- Differences in the nature of jobs.

2: Justification to demand for high wages by labour.

- When the skills of workers have increased
- When the levels of outputs produced by workers have increased.
- When the job is becoming riskier.
- When the levels of profits for the employer have increased.

- When workers in the same industry elsewhere are getting higher wages.
- When the levels of responsibilities of workers have increased.
- When there is an increase in the general price levels.
- When the number of hours worked have increased.

● UNIT: 27

INPUT-OUTPUT RELATIONSHIP/ PRODUCTION FUNCTION.

27.1: Key Unit Competence:

Be able to describe and illustrate the production function.

27.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed in other related subjects and units. Student teachers should integrate the knowledge, skills, values and attitudes acquired prior in other units like unit 26 about factors of production, in understanding and analysing the input output relationship. Together with the knowledge and skills student teachers have from entrepreneurship S.2 unit 4 about markets, they can be able to analyse the role of resources in increasing production capacity of firms, once employed and utilised efficiently. Remarkably, student teachers have some understanding as far as this unit is concerned. The tutor though, needs to have a good understanding and skills on this unit so as to motivate student teachers towards the interpretation of economic phenomena using the knowledge and attitudes gained in here.

27.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the student teachers. It may be direct or indirect in the explanation of unit lessons. For example, when explaining the production function both in the short run and long run, tutor stresses the issue of *environment and sustainability*, where student teachers have to learn that, whereas producers allocate resources where they are more profitable, either in the short run or long run, they should keep in mind that over utilisation of resources depletes them quickly and reduces their availability for the future generation. Therefore, as responsible citizens, they should balance profit maximisation vis a vis environmental sustainability.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other cross-cutting issues. E.g. Inclusive education like engaging all student teachers in class activities and discussion without discrimination, using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other related information that may be tackling a given cross-cutting issue that he or she needs to integrate.

27.4. Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and units in this subject. This unit deals with how inputs are varied either in the short run or long run to produce a given level of output. The student teachers in groups or pairs or as individuals, read through and analyse this activity, so as to enable them gain the curiosity to research about input output relationship. Therefore, it should be noted that, as student teachers get engaged in the lessons of this unit, they discover answers to the questions they were asking at the beginning. For, example from the introductory activity in this unit, as the student teacher carries out analyse and discuss about the activity given, he or she may discover that;

a.

<i>Inputs</i>	<i>Output</i>
Teachers, classrooms, teaching/learning materials	Students
Medical personnel and facilities	Healthy population
Land and capital	Food

- b. The relationship between the two is in such a way that, as the ratio of inputs increase, holding other factors constant, output also increases. Or to produce a given level of output, there is need to use a combination of a given ratio of inputs.

27.5. List of lessons/ subheadings:

NO.	Lesson tittle	Lesson objectives	Number of periods
1.	Production function and periods:	Explain and illustrate the relationship between inputs and outputs both in the short run and long run.	1
2	Product of the firm and the Law of diminishing marginal returns.	Explain how production varies with planning periods. Calculate total product (TP), average product (AP) and marginal product (MP) both in short run and long run. State and explain the law of diminishing marginal returns and assumption.	2
End unit assessment.		Be able to describe and illustrate the production function.	1

Lesson 1: Production function and periods;

a) Teaching objectives.

Explain and illustrate the relationship between inputs and outputs both in the short run and long run.

b) Teaching resources.

Recommended student's books, internet access, newspaper articles on economics and entrepreneurship, and economic and entrepreneurship journals

c) Prerequisites/revision/introduction.

This lesson seeks to analyse how firms combine resource to produce a given level of output in either short run or long run. Students are equipped with knowledge, skills and attitudes gained from mathematics and geography about statistics and graphs and from unit 19 about equations and fractions in the economics. All these will be related to how they can illustrate the input – output relationship. We also saw in unit 26 that, the different factors of production are not demanded for the

sake of just having them, but for the purpose they are used to serve. And that is production of a given level of output. Therefore, a student teacher can easily relate this knowledge in analysing and interpretation of the production function.

d) Learning activities:

i) Guidance on learning activity 27.1:

Student teachers, either as a whole class with a guidance by their tutor or as individuals with a cover letter from the school administration, can either visit a nearby enterprise, or research from either economics or entrepreneurship textbooks or the internet about any enterprise to find out its input used in a given period to produce a given level of output. They will base on their research to show its production function by use of an illustration or a graph and interpret their outcomes to the class in discussion.

Answers to activity 27.1:

Depending on their findings, production function can be represented mathematical as a function or curve as seen in the student's book on the meaning of production function 27.1.

ii) Guidance on learning activity 27.2:

Student teachers in groups or pairs, analyse, share their views and discuss on the statements in the case study about Mucyo and Mugabo. Thereafter, tutor calls them upon for general class discussion. Tutor summarizes the lesson.

Answers to activity 27.2.

To produce shoes, Mucyo took 1 year to release his final product for sale while Mugabo, producing shoes also, took 3 months to release his final product for sale.

Required:

- a. Why do think Mucyo took much time, while Mugabo took less time, yet they all produce shoes? Mucyo took much time than Mugabo because she had planned for a long run production period while Mugabo took less time than Mucyo because he had planned for a short run period.
- b. In your own perspective, how much time do you think any production process should take? Justify your answer. Planning periods

do not show specific period of time e.g. a week, month or year, however, it depends on the production unit making decision and what it is able to do with in that time and the type of commodity produced. This means that, short run period for one firm may be long run period for another. Therefore, there is no specific period a given production should take. For example, in the case study given above, Mucyo chose long run period but Mugabo chose a short run period.

Lesson 2: Product of the firm and the Law of diminishing marginal returns

a) Learning objectives:

- Explain how production varies with planning periods.
- Calculate total product (TP), average product (AP) and marginal product (MP) both in short run and long run.
- State and explain the law of diminishing marginal returns and assumption.

b) Teaching resources.

Recommended student's books, internet access, newspaper articles on economics and entrepreneurship, and economic and entrepreneurship journals.

c) Prerequisites / revision / introduction.

This lesson looks at the meaning of product, forms of product of a firm and how to calculate them. Student teachers base on the mathematical knowledge and skills gained in unit 19 of economics year 1, to calculate and interpret the values therein.

d) Guidance on learning activity 27.3:

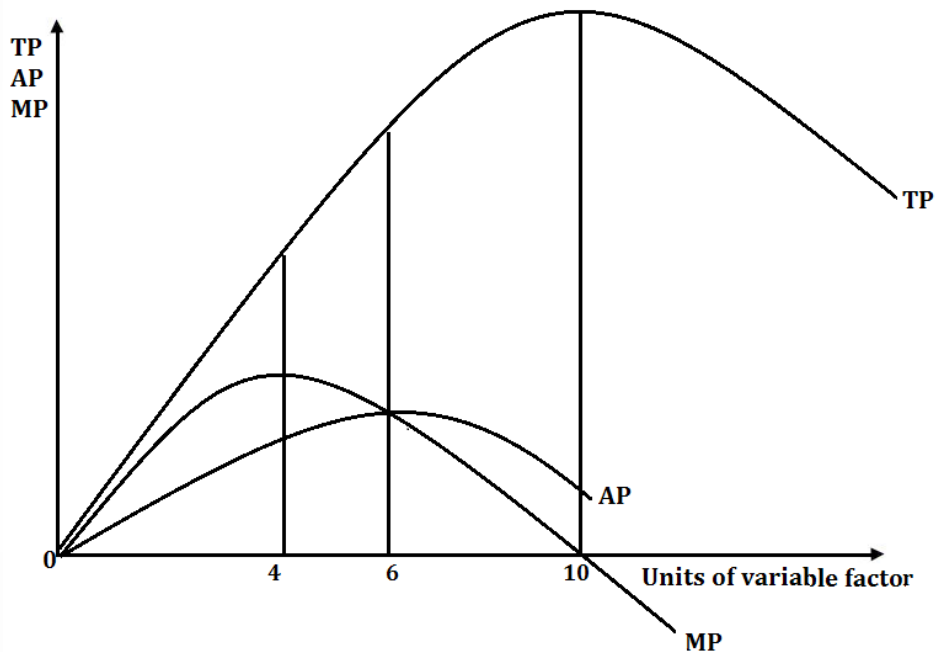
Based on the knowledge and skills gained from unit 19 about equations and fractions in economics, student teachers, through individual work, or pair work or groups, study the data given in the table to calculate and illustrate and interpret the information on graphs.

Answers to activity 27.3:

Using the formulas for AP as $\frac{TP}{L}$ and MP as $\frac{\Delta TP}{\Delta L}$, the students can get the following results

Fixed factor	Variable factor.	TP	AP (TP/L)	MP ($\Delta TP/\Delta L$)
7	1	4	4	4
7	2	14	7	10
7		27	9	13
7	4	40	10	13
7	5	60	12	20
7	6	72	12	12
7	7	77	11	5
7	8	80	10	3
7	9	81	9	1
7	10	81	8.1	0
7	11	77	7	-4

The relationship between TP, AP & MP can be illustrated as below;



Guidance on learning activity 27.4:

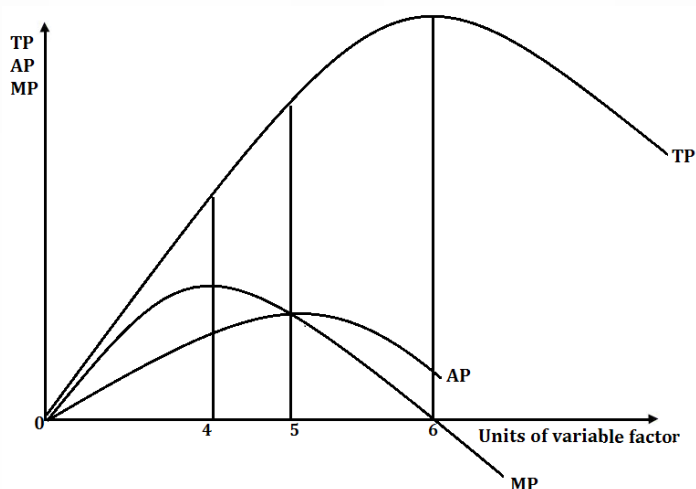
Tutor reviews the previous lesson and based on the knowledge and skills gained from it, student teachers either in groups, pairs or individuals, visit the library or the internet and carry out more research on the production function, in there, they state and explain the law of diminishing returns and its assumptions and make presentation in plenary thereafter. Tutor harmonises student teachers' findings.

Answers to activity 27.4: refer to the law of diminishing returns and its assumptions in the student teacher's book subtitle 27.1. a & b.

e) Application activity 27.4:

Tutor gives out, and marks an activity as in class exercise or homework for student teachers to apply their level of understanding on the lesson.

Capital units	Labour units	TP	AP	MP
1	1	8	8	8
1	2	20	10	12
1	3	33	11	13
1	4	48	12	15
1	5	60	12	12
1	6	60	10	0
1	7	56	8	-4
1	8	48	6	-8
1	9	36	4	-12



Guidance to Skills lab 27.

The tutor mobilises student teachers to come up something like school garden where they can grow some crops purposely for sale in order to develop their student teacher business club and also a garden where they grow greens and fruits for their own consumption in order to improve on their diets

27.6. Summary of the unit.

In this unit we covered the following;

- **Production function** is an expression of the relationship between physical quantities of inputs and output.
- **Production function** is expressed as $Q = f(K, L_p, L_z, E)$
- **Planning periods** commonly used are short run and long run periods
- **Product of the firm** refers to output (goods and or services) of a given production unit (firm). Or what has been produced by a given production unit (firm) at a given period of time.
- **Forms of product of a firm** i.e. TP, AP and MP
- Meaning, calculations, illustration and interpretation of TP, AP and MP.
- **Law of diminishing marginal returns** states that *“As more and more units of a variable input are applied to the fixed factor in a given state of technology, the marginal product of the variable factor will eventually diminish.”*

27.7. Additional information for the tutor.

The relationship between TP, AP and MP, can be further explained as below;

Stage 1: Region of increasing returns.

This is the first stage where **TP, AP and MP** are increasing. In this stage, fixed factors are too much in relation to variable factors. The fixed factor is used intensively thus becomes efficient hence making TP, AP and MP to increase. Because the output per unit of the variable input is improving throughout this stage, a price-taking firm will always operate beyond this stage. In this stage, variable input will not be fully utilized for example the AP is still increasing.

Stage 2: The region of decreasing returns.

This is where more units of the variable factor are employed to have high output. TP increases at a decreasing rate. MP and AP begin to decline and MP is below AP. This is due to too much variable factors over a fixed factor and high levels of specialisation. In this stage, employment of additional variable inputs increases the output per unit of a fixed input but decreases the output per unit of the variable factor. The optimum input-output combination for the price-taking firm will be in this stage, although a firm facing a downward sloped demand curve might find it most profitable to operate in stage 1.

Stage 3: The region or stage of negative returns.

In this stage, too much variable input is being used relative to the available fixed inputs. As more of a variable factor is employed, TP will begin to decline and MP becomes negative. It is no longer worthwhile to employ more of the variable factor, because its presence on the margin obstructs the production process rather than enhancing it. The output per unit of fixed and variable input declines throughout this stage. The wise thing therefore to do is to vary even the fixed factor and change the scale of production and therefore change the planning period.

When TP, AP and MP begin to decline, it becomes unprofitable to continue production therefore the rates of variable factors must constantly be reviewed to avoid losses. Employment of more units of labour doesn't make output increase indefinitely the productivity of each worker decreases. When the ratio of labour to a fixed factor decreases, the last stage in a production process gives rise to the law of diminishing returns.

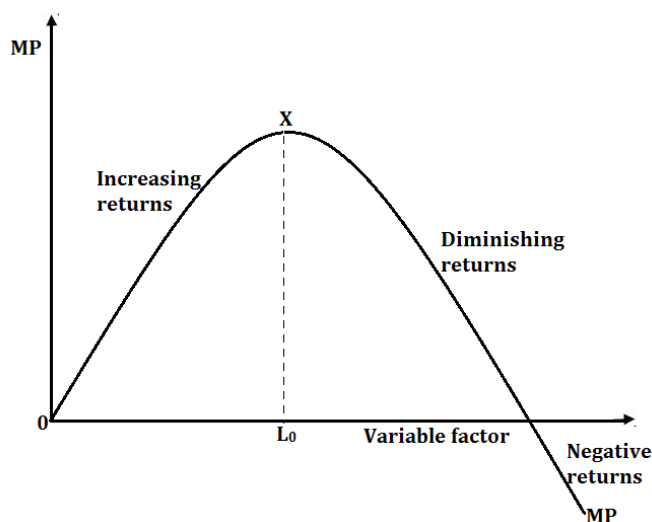
The law of diminishing returns/Variable proportions

The law of diminishing returns states that given a short run situation with 2 factors of production, one variable and factor ***“As more and more units of a variable input is applied to the fixed factor in a given state of technology, the marginal product of the variable factor will eventually diminish.”***

Assumption of the law:

- Existence of a variable factor of production and other factors are constant.
- All units of the variable factor are homogeneous.
- The price of the product is given and constant.

- It assumes a short run period.
- It assumes that technology is constant.
- It is possible to change the proportions in which various inputs are combined.
- The output is measured in physical units like tones, kilograms etc.



27.8. Answers to End unit assessment:

1. Describe the different forms in which the production function can be expressed

Production function can be expressed as a mathematical expression or graph as seen in the student's book under subtitle 27.1. (Meaning of production function)

2. Explain the relationship between total product, average product and marginal product.

Refer to the relationship between TP, AP and MP in the student teacher's book under subtitle 27.3.2.

3. When is the law of diminishing returns applicable and why?

The law of diminishing returns is only applicable in the short run since it is assumed that, in that period, some factors are fixed while others are variable. Therefore, it's difficult to vary output with the varying variable units since others cannot be varied hence the law of diminishing returns sets in at a certain point.

4. Use the table below to calculate AP and MP and illustrate TP, AP and MP thereafter.

Capital units	Labour units	TP	AP ($\frac{TP}{L}$)	MP ($\frac{\Delta TP}{L}$)
1	0	0	-	-
1	1	6	6	6
1	2	16	8	10
1	3	27	9	11
1	4	36	9	9
1	5	40	8	4
1	6	42	7	2
1	7	42	6	0
1	8	40	5	-2

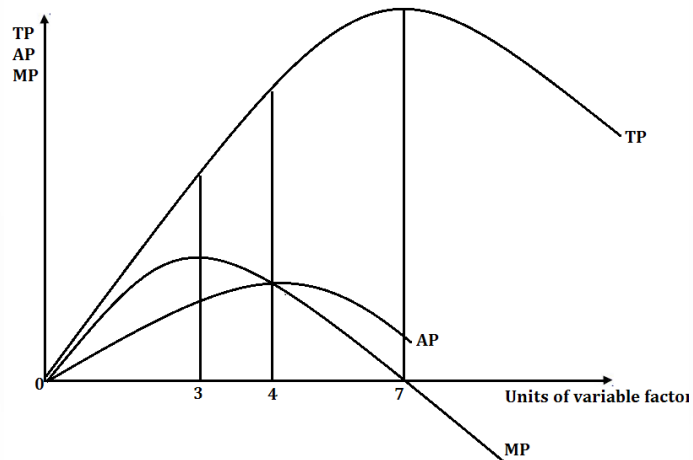
27.9: Additional activities:

27.9.1: Remedial activities.

Use the following table to calculate and illustrate the information therein.

Capital units	Labour units	TP	AP	MP
1	1	8	8	8
1	2	20	10	12
1	3	36	12	16
1	4	48	12	12
1	5	58	11.6	10
1	6	60	10	2
1	7	60	8.5	0
1	8	56	7	-4
1	9	50	5.55	-6

Illustration:



27.9.2. Consolidation activities:

Question: What are the conditions for the law of diminishing returns?

Answers:

- Existence of a variable factor of production and other factors are constant.
- All units of the variable factor are homogeneous.
- The price of the product is given and constant.
- It assumes a short run period.
- It assumes that technology is constant.
- It is possible to change the proportions in which various inputs are combined.
- The output is measured in physical units like tones, kilograms. Etc.

27.9.3: Extended activities.

Question: a) Examine the causes of the law of diminishing returns?

b) Identify the fields where the law applies easily.

c) Why is the law mostly applicable in agriculture?

Answers:

- a. Causes of the law of diminishing returns.
- **Fixed factors of production.** All factors of production, land, labour, capital or enterprise cannot be increased every time. If certain factor becomes fixed, the adjustment of factor of production will be disturbed and the production will not increase at an increasing rate and thus law of diminishing returns will apply.
 - **Scarce factors.** In case of certain factors especially land which is itself limited cannot be increased the law of diminishing return will apply. It may also happen in case of other factors of production. For example, sometimes, labour, especially technical or capital or even entrepreneur cannot be increased in individual cases. As a result, the adjustment of factors of production will be disturbed and the output cannot be achieved at increasing rates.
 - **Lack of Perfect Substitutes.** Lack of perfect substitutes of factors of production means that one factor of production cannot be substituted for another factor. Substitute for every factor of production is not always available. In the absence of such substitute, the law of diminishing returns will apply.
 - **Optimum Production.** If the perfect adjustment of the factors of production has been made, certainly optimum production will be returned. After this optimum level of production, more and more variable factors will result in less efficient combination of fixed as well as variable factors of production. In other words, this, will reduce the marginal product and hence the law of diminishing returns will operate.
- b. Fields where the law applies easily include.

Agriculture, in industries and also in extractive industries like mines, fisheries, buildings.

- c. Why the law is mostly applicable in agriculture.

The law of diminishing returns has a vast application, but it specially applies in agriculture sector. The most important factors responsible due to which the law is applicable in agriculture are undernoted:

- **Limited land:** The most important factor due to which this law applies to agriculture is the limited size of land. Production is sought to be increased by employing more and more units of variable factors. This will result in diminishing returns.

- **Less use of machinery:** In the agricultural sector, there is limited use of machinery as compared to industry. The reason is that in the agricultural sector most of the work is done by hands. This also results in low productivity. Thus, agriculture remains deprived of several external and internal economies of scale. Therefore, the law of diminishing returns applies in agricultural sector.
- **Natural factors:** Another reason due to which the law of diminishing returns applies is the natural influence like rainfall, climate, floods etc. Even, in case man makes all best efforts but nature is not in favour, the law of diminishing returns is surely to apply.
- **Seasonal occupation:** Agriculture is a seasonal occupation. The people are not busy on land throughout the year. They remain busy only during the period of ploughing and harvesting season. This period is approximately of six months. For the remaining period, both farmers and cattle remain idle which reduce the production per worker. It is, thus, the law of diminishing returns quickly applies to agriculture sector.
- **Difference in the fertility of land:** All pieces of land are not equally fertile. When demand for land increases even less fertile land are also brought under cultivation. It means less marginal returns and high cost of production.
- **Ineffective supervision:** Agricultural operations are spread over the vast areas. Therefore, effective supervision becomes most risky and difficult. The result is the law of diminishing returns.
- **Less chances of division of labour:** In agricultural sector, there are very less chances of division of labour. Therefore, production on large scale is ruled out. It also results into the operation of the law of diminishing returns.

UNIT: 28

THEORY OF THE FIRM.

28.1: Key Unit Competence:

Student teachers will be able to assess the impact of location and localisation of firms in an area

28.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed from other related subjects and units. Student teachers, for example, should integrate the knowledge, skills, values and attitudes acquired prior in Geography S.2 unit 20 about industry in Rwanda, to be able to assess the impact of location and localisation of firms in an area. Remarkably, student teachers are not empty headed as far as this unit is concerned. The tutor though, needs to have a good understanding and skills on this unit so as to motivate student teachers towards the interpretation of economic phenomena using the knowledge and attitudes gained in here.

28.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the student teachers. It may be direct or indirect in the explanation of unit lessons. For example, when explaining location and localization of firms, tutor stresses the issue of *environment and sustainability*, where student teachers have to learn that, whereas firms locate their firms in a given area due to availability of resources, they should keep in mind that over utilisation of resources depletes them quickly and reduces their availability for the future generation. Therefore, as responsible citizens, they should balance profit maximisation vis a vis environmental sustainability. As well, inform the student teachers that production entities need to be mindful of not polluting the environment when undertaking production activities so that they should do not have negative impact on the environment. There is need therefore for environmental impact assessment before undertaking any production activity.

Also, as government directs location of given firms, it should look at regional balance and income redistribution issues so as to up-bring lagging

areas and population to the level where they can improve their welfare. This promotes inclusiveness of all people especially the disadvantaged groups. This, at the same time, reduces unemployment and idleness of the population and so promotes peace and harmony in the country.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other cross-cutting issues. E.g. Inclusive education like engaging all student teachers in class activities and discussion without discrimination, using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other related information that may be tackling a given cross-cutting issue that he or she needs to integrate.

28.4. Guidance on the introductory activity:

The introductory activity in this unit, in the student teacher's book, is a basic tool used as orientation activity that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and units in this subject. This unit deals with the conditions that firms base on to locate their business entities in a given area or location and arguments for and against localization of firms in an area. The student teachers in groups or pairs or as individuals read through and analyse this activity, so as to enable them gain the curiosity to research about location and localization of firms. Therefore, it should be noted that, as student teachers get engaged in the lessons of this unit, they discover answers to the questions they were asking at the beginning. These questions may not necessarily need to be answered at the start, but for arousing the student teachers' curiosity about the unit. For, example from the introductory activity in this unit, as the student teacher carries out research about location and localization of firms, they discover in the due course of the unit, that

- a. Economic name given to a single production unit by different entrepreneurs is a *firm*.
- b. The name given to setting up a business activity in any given place is *location*
- c. The economic name given to the act of the government directing production units in one place is *localization*.
- d. In Rwanda, production units have been put together at Masoro in Gasabo district.

- e. For what reasons would government direct location of firms in a single area.

They may provide their views at the end as they gain more knowledge and attitude on location and localisation of firms.

N0	Lesson tittle	Lesson objectives	Number of periods
1.	Meaning of a firm, industry and a plant.	Distinguish between a firm, plant and an industry.	1
2	Location of firms:	Analyse the factors that influence location of firms in an area. Support the need for location of firms in an area.	2
3	Localization of firms:	Assess the impact of Localisation of firms in an area. Support the need for localisation of firms in an area.	2
End unit assessment.		Be able to assess the impact of location and localisation of firms in an area.	1

Lesson 1: Meaning of a firm, industry and a plant.

a) Teaching objectives.

- Distinguish between a firm, plant and an industry.

b) Teaching resources.

Recommended student's books, internet access, newspaper articles on economics, geography and entrepreneurship, and economic, entrepreneurship and geographic journals

c) Prerequisites /revision/introduction.

This lesson seeks to provide student teachers with knowledge and

understanding of the difference between a firm, a plant and an industry. This helps them to make clear analysis and interpretation of economic phenomena at their disposal. As seen, student teacher has knowledge and understanding from geography about industrialisation, they therefore make more research on the internet, or library to distinguish the terms given.

d) Learning activities:

i) Guidance on learning activity 28.1:

Student teachers either in groups, individuals or in pairs, visit the library or internet make research on the difference between a firm, an industry and a plant. Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to learning activity 28.2:

Refer to 28.2.1, 28.2.2

Lesson 2: Location of firms:

a) Learning objectives.

- Analyse the factors that influence location of firms in an area.
- Support the need for location of firms in an area.

b) Teaching resources.

Recommended student's books, internet access, newspaper articles on economics and entrepreneurship, and economic and entrepreneurship journals

c) Prerequisites /revision/introduction.

This lesson seeks to provide student teachers with knowledge and understanding on the location of firms in an area. This helps them to make clear analysis and interpretation of economic phenomena at their disposal. As seen, a student teacher has knowledge and understanding from geography about industrialisation, they therefore make more research from the internet, or library to explain why entrepreneurs locate their business activities in a given area.

d) Learning activities:

i) Guidance on learning activity 28.2:

Student teachers, either in groups, individuals or in pairs, through brain storming; discuss the meaning and factors for the location of a firm in an area. Thereafter, they make class presentation. The tutor then harmonises the students' findings.

Answers to learning activity 28.2:

Refer to 28.2.1 and 28.2.2

Lesson 3: Localization of firms:

a) a) Learning objectives.

- Assess the impact of Localisation of firms in an area.
- Support the need for Localisation of firms in an area.

b) Teaching resources.

Recommended student's books, internet access, newspaper articles on economics and entrepreneurship, and economic and entrepreneurship journals.

c) Prerequisites /revision/introduction.

This lesson seeks to provide student teachers with knowledge and understanding on the Localisation of firms in an area. This helps them to make clear analysis and interpretation of economic phenomena at their disposal. As seen, a student teacher has knowledge and understanding from geography about industrialisation, they therefore make more research from the internet, or library to explain why the government of Rwanda, for example decided to localise industries at Masoro in Gasabo District Kigali City, the advantages and disadvantages likely to happen.

d) Learning activities:

i) Guidance on learning activity 28.3:

Student teachers, either in groups, as individuals or in pairs, visit the library or the internet and carry out research on localisation guided by the questions about Masoro in activity 28.3. Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to activity 28.3:

- a. Examples of industries at Masoro Economic Zone are fish processing firms, vehicle assembly plant, Juice and Mattress making firms etc.
- b. *Reasons why the government of Rwanda decided to localize industries at Masoro may include among others the following;*
 - i) To increase foreign and domestic private sector investment
 - ii) For export growth and diversification
 - iii) Development of industry/ non-agriculture sectors and
 - iv) Creation of off farm employments and incomes
- c. Arguments for the government concentrating industries at Masoro
 - Attracted local and foreign investment
 - Created employment especially the youth
 - It has enabled establishment of world class infrastructure
 - Availled commodities for local consumption
 - Creation of competition which promoted efficiency and affordable prices for the products
 - It led to the establishment of the agriculture park which supports the provision of efficient and cost-effective handling solutions for grains, seeds & fertilizers in the country

Arguments against localisation.

- Promotes regional imbalance
- Over exploitation of the resources as industries become many
- Noise and air pollution
- High cost of resources as firms compete for the few available which increases costs of production and may later result into high prices for their final goods.

For more disadvantages refer to the student's book on localization in unit 28.3.2.

e) Application activity 28.3:

Tutor together with the student teachers take the initiative to visit any

localized area in Rwanda for research purposes and application of what they studied about localization of firms.

Guidance on skills lab 28:

Guide student teachers on how to have a talk to the youth about location of firms. Let them base on the factors for location of firms to advise the youth on the factors that should consider before they start any business.

28.6. Summary of the unit:

In this unit we looked at the following,

A Firm refers to a single production unit or enterprise under one ownership, management and contact

An industry refers to a combination of several firms that compete in the production of the same product or service.

A plant refers to a place or establishment where goods are produced.

Location of firms refers to establishment of a firm or industry in a particular geographical area. Or it is a site or place where a firm or industry is established or to be set up.

Factors for location of firms include the following

- Availability of raw materials:
- Availability of the market:
- Government policy:
- Transport and communication network:
- Availability of power:
- Availability of labour or Skill base in the area
- Availability of land:
- Political stability/security:
- Commercial institutions:
- Climate:
- Water

Localization refers to the concentration of many firms in an area

Merits and demerits of localization.

28.7. Additional information for the tutor:

A firm is the single unit that employs factors of production to produce goods and services. When teaching this unit try to be more practical so that student teachers can be able to appreciate the distinction between a firm, industry and a plant and the factors that influence the location of a firm and the distinction between location and localisation. For this to happen organize study trips to different firms where learners are to observe what takes place in a firm, the factors for their location and the difference between location and localisation of firms and after which they discuss their observations.

28.8. Answers to end unit assessment:

1. Distinguish with examples the following terms
 - a. **A firm** is a single production unit under unified control and management. A stone quarrying firm, Tea processing firm, Coffee processing firm, “*Abahuzamugambi ba kawa* cooperative” of Maraba in Huye, Bugurama Mining Company, Bralirwa Brewery in Kigali, Kitabi Tea factory in Nyamagabe, Bank of Kigali, Equity Bank etc.
 - b. **An industry** is the combination of a number of firms producing broadly related commodities or services for the same market. E.g. Sugar industry, Textile Industry, Cement Industry, Mining Industry, Entertainment industry, Transport industry, soft drinks industry, financial industry etc.
 - c. **A plant** is a place or an establishment where a firm carries out its productive activities. It is also known as factory e.g. A mining plant, a stone quarrying plant.
2. Describe the objectives of the firm

Different firms have different objectives depending on the size and location. All firms must make an appropriate choice when deciding on which goods services to produce in order to achieve its objectives. But in general, firms have the following objectives.

- *Profit maximization.* The firm’s major and sometimes single objective is to maximize profits. Firms will organize their production processes in such a way that they will maximize profits.
- *Sales maximization:* Firms often seek to increase their market share – even if it means less profit. Some firms aim at selling output and if the sales are large the size of the firm expands which in turn means large profits.
- *Provision of employment opportunities:* This is very true for many

family-owned businesses to provide employment to the family members and government firms to provide employment to the growing population.

- *Reputation (good name):* Firms will offer good quality products, offer excellent customer care and give consumers other benefits e.g. after sales service in order to maintain good name or image in the society.
- *Preventing government interference:* Some firms may be forced to charge fair prices to prevent government from interfering through price legislation.
- *Cooperation:* Some firms aim at keeping members together and achieve certain objectives.
- *Welfare maximization:* Some firms, especially government owned and controlled, aim at providing certain (necessities) goods and services for the welfare maximization of the society.
- *Growth maximization:* This is similar to sales maximization and may involve mergers and takeovers. With this objective, the firm may be willing to make lower levels of profit in order to increase in size and gain more market share. More market share increases their monopoly power and ability to be a price setter.
- *Long run profit maximization:* In some cases, firms may sacrifice profits in the short term to increase profits in the long run. For example, by investing heavily in new capacity, firms may make a loss in the short run but enable higher profits in the future.
- *Social/environmental concerns:* A firm may incur extra expense to choose products which don't harm the environment or products not tested on animals. Alternatively, firms may be concerned about local community/charitable concerns. Some firms may adopt social/environmental concerns as part of its branding. This can ultimately help profitability as the brand becomes more attractive to consumers. Some firms may adopt social/environmental concerns on principal alone; even if it does little to improve sales/brand image.
- *Co-operatives:* A co-operative is run to maximize the welfare of all stakeholders – especially members. Any profit the co-operative makes will be shared amongst all members.

3. Distinguish between localization and delocalization

Localisation means the concentration of a certain industry in a particular area, locality or region while delocalization refers to a situation of

transferring firms from the area of high concentration to areas of low concentration.

4. ***“Masoro industrial area is one of the industrialized areas in the country”.*** Discuss factors that contributed to its localization. Refer to answers in activity 28.3.
5. ***Explain the costs and benefits of localization of firms.*** Refer to the student’s book on 28.3.2.

28.9. Additional activities

28.9.1. Remedial activities:

In the process of making decisions of a firm, which questions would you ask yourself?

Answers.

- What to produce,
- For whom to produce,
- Where to produce,
- How to produce and
- When to produce.

28.9.2. Consolidation activities:

Question: Explain how the following influence the location of firms in an area.

- i) Nearness to sources of power
- ii) Nearness to markets.
- iii) Nearness to raw-materials.
- iv) Climatic conditions

Answers:

- *Nearness to Sources of power:* Nearness to the sources of power is another important cause of location of industries. This explains the concentration of iron and steel industry near the coal-fields. The farther coal is carried away from the coal mines, the higher the costs of transportation become. But with the development of hydro-power and atomic-power, coal as a source of power has become less important because the former can be carried to hundreds of kilometers with comparatively less cost.

- *Nearness to Markets:* Industries localize in a certain area because of the consideration of the market potentialities of its product. If the market is quite away from the place of manufacture, transport costs will be high which will raise the selling price of the product in comparison with other similar products which are manufactured near the market. The former will thus decay soon. On the other hand, export-oriented industries are concentrated near the port-towns because the transport costs of carrying exports to the ports are low for such industries.
- *Climatic Conditions:* Climatic or soil conditions in certain areas are suited for the production of a particular product. Such an area has got an overwhelming advantage over other areas. If efforts are made to develop other areas by artificial means, the cost of manufacture would be very high.
- *Nearness to Raw Materials:* Nearness to raw materials is a dominant factor in the location of an industry, especially that industry which uses bulky raw material that is expensive to transport and loses weight in the manufacturing process.

28.9.3. Extended activities:

1. Generally, other than government localizing firms in one place, why may firms on their own localize in an area?
 - *Climatic Conditions:* Climatic or soil conditions in certain areas are suited for the production of a particular product. Such an area has got an overwhelming advantage over other areas. If efforts are made to develop other areas by artificial means, the cost of manufacture would be very high.
 - *Nearness to Raw Materials:* Nearness to raw materials is a dominant factor in the localization of an industry, especially that industry which uses bulky raw material that is expensive to transport and loses weight in the manufacturing process.
 - *Nearness to Sources of power:* Nearness to the sources of power is another important cause of localization of industries. This explains the concentration of iron and steel industry near the coal-fields. The farther coal is carried away from the coal mines, the higher become the costs of transportation. But with the development of hydro-power and atomic-power, coal as a source of power has become less important because the former can be carried to hundreds of kilometers with comparatively less cost.

- *Nearness to Markets:* Industries localize in a certain area because of the consideration of the market potentialities of its product. If the market is quite away from the place of manufacture, transport costs will be high which will raise the selling price of the product in comparison with other similar products which are manufactured near the market. The former will thus decay soon. other hand, export-oriented industries are concentrated near the port- towns because the transport costs of carrying exports to the ports are low for such industries.
- *Adequate and Trained Labour:* Industries tend to be concentrated in those areas where adequate supplies of trained labour are available. New industries are also attracted to such areas. The growth of many industries around Kigali city is due to a regular supply of labour in these areas from far and near.
- *Availability of Finance:* Finance is the life of every industry. Industries are localized in those areas where banking and financial facilities are easily available. As a matter of fact, capital is attracted to those areas where industries are localized which, in turn, attract more industries.
- *Momentum of an early start:* Sometimes an industry is concentrated at a particular place simply by chance, or due to the urges of the entrepreneur, or due to their attachment to that place. By chance an industry starts at a certain place which later on attracts a number of other manufacturers.
- *Political Patronage:* Political causes have the greatest influence in the concentration of industries. A certain industry can be localized in a given area due to political reasons.

2. What factors may determine long term decisions of a firm?

Every firm must put into consideration a number of factors when deciding on which service or good to produce for sale in order to make maximum profits. This can largely determine the size of the firm whether to remain small or large in the long run. This due to scarcity of resources available, thus every choice made has an opportunity cost. Some of the factors may include among others the following;

- *The objective of the firm:* A firm will take decisions that are in line with the objectives. For example, in regard to this matter, a firm may decide to remain small or large depending on its major objective e.g. profit maximizing firms tend to remain small and decide to sell at a high price by restricting output, while a sales maximizing firms,

tends to expand and grow large by selling more that give profits in the long run.

- *Cost of production:* A firm has to consider its average costs when taking the pricing decision for its output. This will help determine the profit level at the end. Firms. High cost firms are always limited from expansion thus tend to remain small while low cost firms expand thus take decisions of growing large.
- *Government policies on business* e.g. taxes, subsidization etc: Unfavourable government policies, for example, high tax level on firm's products may influence the firm's decision to setting high prices or even reduce the wages for workers in order to cut down the costs to remain profitable and may make firms to remain small while favourable government policies like subsidization lead to reduced costs of production thus encouraging firms to expand and thus grow large.
- *Location of the firm:* Firms located in different areas have different decisions depending on the business environment. For example, firms in rural areas because of having different business environment from those of urban areas take different decisions. E.g. Firms in rural areas, tend to decide to remain small because of instabilities in demand/market, poor technology, limited capital etc. while those in urban tend to have assured demand/market, better technology, adequate capital thus encouraging them to grow large.
- *Economic conditions:* Certain economic conditions under which the firm is operating like inflation, unemployment, business cycle etc. influence decisions taken by the firm. For example, economic stability like stable prices and exchange rates etc. encourages firms to take a decision of expanding their businesses and grow large While economic instability like price fluctuations and foreign exchange instabilities discourage firms from growing large and so remain small.
- *Market size:* Where the market size is small, a firm decides to remain small where as big sized market makes a firm grow and expand in size.
- *Business expectations:* Business expectations in terms of returns on its investment affect its decision regarding planning, marketing, and investment decisions etc. High business expectations i.e. high level of business profitability which encourage more investments, leads to increased expansion of firms to enjoy economies of scale

thus making firms to take long term decision of growing large. While low levels of business expectations i.e. low profitability discourage production, investments and thus discourage expansion thus making firms to take long term decision of remaining small.

- *The level of competition:* In this case for example, a firm will take its long-term decision depending on the conditions it is operating in. i.e. firms under perfect competition cannot take decisions like those under imperfect competition market conditions.
- *Political climate:* This makes firms decide differently in such a way that a firm in politically stable and secure area is optimistic about stable demand and production hence decides and plans to grow large. While a firm in a politically unstable and insecure area isn't certain about security and its workers' lives and property hence don't invest much of its capital in fear of losses in case of anything, which makes it decide to remain small to avoid such risks.
- *Nature of the business:* This makes firms to take a long-term decision to either remain small or large. For example, the nature of some businesses is in such a way that they don't necessitate large scale production e.g. hawking, maize roasting, shoe shinning etc. While others, take decision of growing large because their businesses allow them too.
- *Level of technology:* well developed and modern technology, enables a firm to take a long - term decision of growing large, while poor and rudimentary technology hinders firms from expanding, thus makes such firms to take a long-term decision of remaining small.
- *Level of infrastructural development:* well developed social economic infrastructure like roads, power, financial institutions, telecommunication network etc. encourage firms to expand their production activities and thus decide to grow large and vice versa.

● UNIT: 29

THEORY OF THE COSTS.

29.1: Key unit competence:

Be able to describe production costs of the firm in the short run and long run.

29.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed from other related subjects and units. Student teachers, for example, should integrate the knowledge, skills, values and attitudes acquired prior in unit 26 on factors of production, unit 27 about input output relationship and unit, 28 about location and localization of firms to analyse and understand the costs of a firm. We saw in unit 28 that firms will always locate their businesses following profit maximisation, and it should therefore come in the student's mind that, for a firm to maximize profits, it must also minimize costs. Hence, in this unit, student teachers will understand what costs are, examine how costs are calculated. Student teachers base their calculations and analyses on the knowledge gained from unit 19 about fractions and equations in economics to better understand and gain skills on calculations in this unit. The tutor though, needs to have a good understanding and skills on this unit so as to motivate student teachers towards the interpretation of economic phenomena using the knowledge and attitudes gained in here.

29.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the student teachers. It may be direct or indirect in the explanation of unit lessons. For example, when explaining the costs of a firm, tutor stresses the issue of *finance education* by guiding the student teachers to discover that the more firms sell, the more they earn. However, this will depend on the costs incurred in the production of that commodity. Therefore, firms should always try as much as possible to use cost effective methods so as to reap much from their sales; otherwise, they may risk losses in case they don't organize their businesses well. Also firms should understand that, however much they try to minimize

costs to maximize profits, they should mind about the quality of resources used to produce better quality products which will determine the value of the commodity, and profits at the end, therefore, stressing the issue of *Standardisation culture*, where they should always counterbalance quantity with quality to earn much from their sales. Costs of production also are at times have an indirect affect, on the entrepreneur and the society as well. For example, entrepreneurs should always mind about the pollution effects to the society and therefore need to have *environmental impact assessment* before undertaking any production activity.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other cross-cutting issues. E.g. Inclusive education like engaging all student teachers in class activities and discussion without discrimination, using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in student teacher's book there are examples and activities indicated, the teacher can improvise and use any other related information that may be tackling a given cross-cutting issue that he or she needs to integrate.

29.4: Guidance on the introductory activity:

The introductory activity of this unit, in the student teacher's book, is a basic tool used as orientation activity that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and units in this subject. This unit deals with how to calculate, illustrate and interpret costs of a firm. The student teachers in groups or pairs or as individuals, read through and analyse the passage in the activity, and this arouses their curiosity to research about costs of a firm. Therefore, it should be noted that, as student teachers get engaged in the lessons of this unit, they discover answers to the questions they were asking at the beginning. These questions may not necessarily need to be answered at the start, but for arousing the student teachers' curiosity about the unit. For, example from the introductory activity in this unit, as the student teacher carries out research about costs of a firm, they discover, in the due course of the unit, that;

- a. The economic term given to expenses on resources in production is cost of production.
- b. Anything variable that is used in production needs to be spent on as a resource in production
- c. It is important to calculate expenses in production in order to balance them with revenues so as to calculate profits.

29.5: List of lessons or subheadings:

N0.	Lesson tittle	Lesson objectives	Number of periods
1.	Costs of a firm	• Identify and describe different types of costs. • Illustrate the relationship between costs in the short run and long run. • Acknowledge the importance of minimizing costs in the production process.	6
2	Scale of production	• Analyse how firms grow and the advantages and disadvantages of growth of firms. • Describe the different economies and diseconomies of scale that a firm can face. • Advocate for the growth of firms in an area to enjoy economies of large-scale production.	5
End unit assessment		Be able to describe production costs of the firm in the short run and long run.	1

Lesson 1: Costs of a firm:

a) Teaching objectives.

- Identify and describe different types of costs
- Illustrate the relationship between costs in the short run and long run.
- Acknowledge the importance of minimizing costs in the production process.

b) Teaching resources:

Recommended student's books, internet access, newspaper articles on economics, and economics journals

c) Prerequisites /revision/introduction.

This lesson seeks to provide student teachers with knowledge and understanding of the meaning of costs, types and how costs are calculated, illustrated and interpreted both in the short run and long run. This helps them to analyse data given, calculate and interpret economic phenomena at their disposal, using the skills and attitudes from the unit. As seen, student teachers have knowledge and understanding from equations and fractions in unit 19, unit 27 on input output relationship, and 28 on location and localisation of firms, all in economics year 1, therefore, it will be easy for them to calculate, illustrate and interpret any data given in this lesson.

d) Learning activities:**i) Guidance on learning activity 29.1:**

Student teachers, either in groups, individuals or in pairs, visit the library or internet to research about costs, discuss and explain the given task. Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to learning activity 29.1:

1. Refer to Student teacher's book under subheading 29.1.1
2. Refer to Student teacher's book under subheading 29.1.2
3. Costs are incurred at any stage of production both in the short-run and long-run.

ii) Guidance on learning activity 29.2:

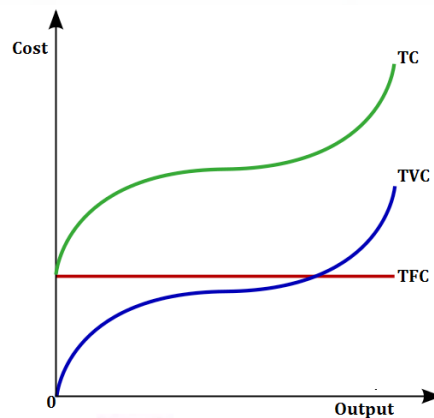
Student teachers, either in groups, individuals or in pairs, visit the library or internet to research about how costs are calculated and interpreted based on the activity requirements. Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to activity 29.2:

a.

Out put	TC	TFC	TVC
0	50	50	0
1	80	50	30
2	90	50	40
3	95	50	45
4	105	50	55
5	125	50	75
6	170	50	120

b. Illustration of TC, TFC & TVC



c. Relationship between TC, TVC and TFC

- TVC and TC are both upward sloping indicating that as output increases TVC increases as well as TC.
- TVC and TC are parallel to one another and never will meet because TFC can never be zero ($TC = TVC + TFC$)
- TFC is a straight line parallel to the output axis indicating that TFC is constant at all levels of output.

iii) Guidance on learning activity 29.3:

Student teachers, either in groups, individuals or in pairs, based on the research carried out on costs, calculate and interpret the data provided in the table with reference to the activity requirements. Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to activity 29.3:

a.

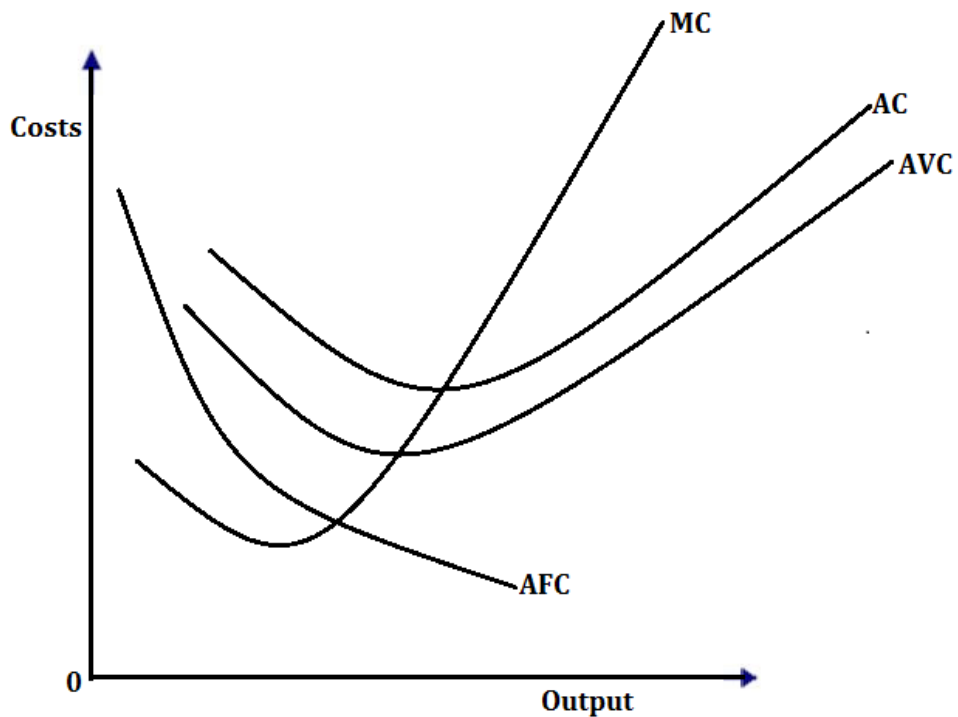
Output	TFC	TVC	TC	AFC	AVC	AC	MC
0	50	0	50	-	-	-	-
1	50	40	90	50	40	90	40
2	50	50	100	25	25	50	10
3	50	57	107	16.67	19	35.6	7
4	50	64	114	12.5	16	28.5	7
5	50	85	135	10	17	27	21
6	50	126	176	8.33	21	29.33	41
7	50	189	239	7.14	27	34.1	63
8	50	400	450	6.25	50	56.25	211

b. With the aid of illustrations, show the relationship between

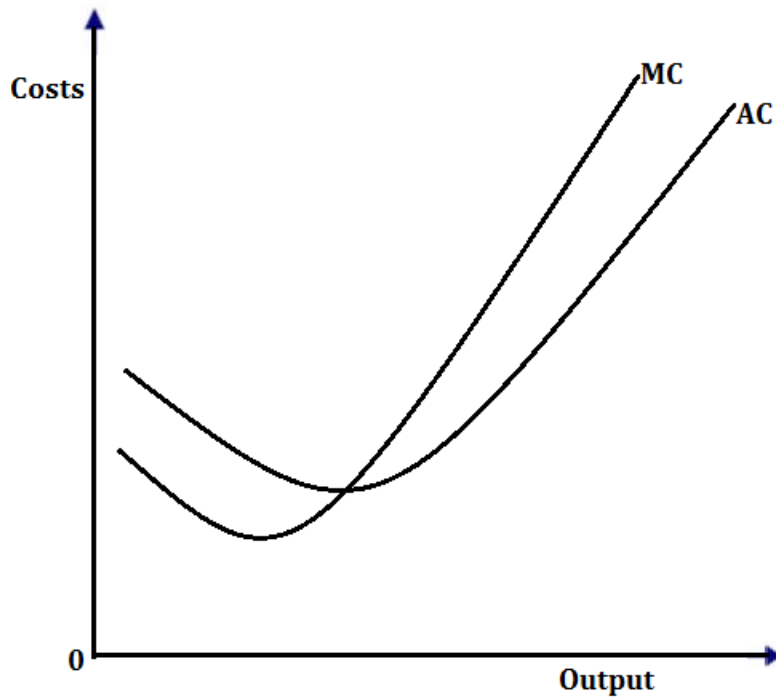
i) TFC, TVC and TC;

Refer to activity 29.2 above

ii) AFC, AVC, AC and MC.



iii) MC and AC



i) Guidance on learning activity 29.4:

Student teachers, either in groups, individuals or in pairs, visit the library or internet and research on long run average cost of a firm. Based on the activity requirements answer the questions given.

Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to activity 29.4:

- Costs in the long run are U-shaped.
- The long run average cost curve is called an envelope curve because it covers several short run average cost curves.
- A long run average cost curve is U-shaped because of the economies and diseconomies of scale.
- Refer to sub heading 29.1.5 for the description and illustration of how a long run cost curve is derived.

Lesson 2: Scale of production:

a) Learning objectives:

- Analyse how firms grow and the advantages and disadvantages of growth of firms.
- Describe the different economies and diseconomies of scale that a firm can face.
- Advocate for the growth of firms in an area to enjoy economies of large-scale production.

b) Teaching resources:

Recommended student's books, internet access, newspaper articles on economics, economics journals

c) Prerequisites /revision/introduction.

This lesson seeks to provide student teachers with knowledge and understanding of how firms grow and the advantages and disadvantages of growth of firms. This helps them to analyse the sizes of different firms in Rwanda and with references to information from different media, be able to explain the advantages and disadvantages that are likely to occur as firms grow. As seen before, student teachers have knowledge and understanding from unit 27 on input output relationship, and unit 28 on location and localisation of firms, therefore, it will be easy for them to understand this lesson on scales of production.

d) Learning activities:

i) Guidance on learning activity 29.5:

Student teachers, either in groups, individuals or in pairs, visit the library or internet and research about different firms in Rwanda, compare their sizes and how they are managed to be the way they are; based on the activity requirements answer the questions given. Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to activity 29.5:

- a. Firms grow through natural growth and or artificial growth by mergers.
- b. Refer to 29.2.1 and 29.2.2.

- c. One would not allow his/her firm not to grow beyond a certain level because of diseconomies of scale.

ii) Guidance on learning activity 29.6:

Tutor guides student teachers on how to form debate groups for them to discuss about the arguments for and against merging of firms. After, tutor harmonises the student teacher's views.

Answers for activity 29.6

Refer to the advantages and disadvantages of merging in the student teacher's book unit 29.2.2.b)

iii) Guidance on learning activity 29.7:

Tutor guides student teachers on how to form debate groups for them to hold a debate on the arguments for and against merging of firms. After, tutor harmonises the student teacher's views.

Answers for activity 29.7

1. The economic term given to advantages of largescale production is *economies of scale* and the disadvantages of large-scale production is *diseconomies of scale*.
2. Refer to internal and external economies and diseconomies of scale in the student's book unit 29.2.3 (a) and (b) respectively.
 - a. Answers to application activity 29.7 (a)
 - (i) The economic term that can be used is Merging (horizontal)
 - (ii) Reasons why the firms decided to take the decisions Refer to unit 29.2.2 (b) in student teacher's book.
 - (iii) Give the student teachers time to find other examples of mergers on their own.
 - b. **Application activity 29.7 (b):** Answers to application activity 29.7:

Why do firms merge?

- **For cooperation purposes (Synergy):** One of the main reasons why companies merge or acquire other companies is to create collaboration. The success of a merger or acquisition deal is determined by the extent of the synergy achieved. Synergy refers

to the greater combined value of merged firms than the sum of the values of individual units.

- **Diversification:** Sometimes, a company may acquire another company in an unrelated industry in order to diversify their investment or reduce the impact of that particular industry on their profitability. Also, two companies may merge to complement a product or service and to gain a competitive edge over other companies in the market.
- **Survival:** Sometimes, companies opt for a merger or acquisition deal in order to survive, especially during the period of global financial crisis.
- **Economies of scale:** An amalgamated company will have more resources at its command than the individual companies. This will help in increasing the scale of operations and the economies of large scale will be availed. These economies will occur because of more intensive utilisation of production facilities, distribution network, research and development facilities, etc. These economies will be available in horizontal mergers (companies dealing in same line of products) where scope of more intensive use of resources is greater.
- **Eliminate competition:** Companies merge for the purpose of eliminating competition, and gaining a larger market share. The merger or amalgamation of two or more companies will eliminate competition among them because companies will be able to save their advertising expenses thus enabling them to reduce their prices. The consumers will also benefit in the form of cheap or goods being made available to them.
- **Operating Economies:** Two or more firms merge to eliminate the duplication of facilities e.g. in accounting, purchasing, marketing, etc. This is because number of operating economies will be available with the merging of two or more companies. Operating inefficiencies of small concerns will be controlled by the superior management emerging from the amalgamation. The amalgamated companies will be in a better position to operate than the companies which work individually.
- **Growth purposes:** A company may not grow rapidly through internal expansion. Merger or amalgamation enables satisfactory and balanced growth of a company. It can cross many stages of growth at one time through amalgamation. Growth through merger or amalgamation is also cheaper and less risky. A number of costs

and risks of expansion and taking on new product lines are avoided by the acquisition of a going concern. By acquiring other companies, a desired level of growth can be maintained by an enterprise.

- **Utilisation of Tax Shields:** When a company with accumulated losses merges with a profit making company it is able to utilize tax shields. A company having losses will not be able to set off losses against future profits, because it is not a profit earning unit. Therefore, if it merges with a concern earning profits then the accumulated losses of one unit will be set off against the future profits of the other unit. In this way the merger or amalgamation will enable the concern to avail tax benefits.
- **Increase in Value:** One of the main reasons of merging or amalgamation is the increase in value of the merged company. The value of the merged company is greater than the sum of the independent values of the merged companies
- **Better Financial Planning:** The merged companies will be able to plan their resources in a better way. The collective finances of merged companies will be more and their utilisation may be better than in the separate concerns. It may happen that one of the merging companies has short gestation period while the other has longer gestation period. The profits of the company with short gestation period will be utilized to finance the other company. When the company with longer gestation period starts earning profits then it will improve financial position as a whole.
- **Economic Necessity:** Economic necessity may force the merging of some units. If there are two sick units, government may force their merger to improve their financial position and overall working. A sick unit may be required to merge with a healthy unit to ensure better utilisation of resources, improve returns and better management. Rehabilitation of sick units is a social necessity because their closure may result in unemployment etc.

Answers application activity 29.7 (c)

Photographs A is small scale production while B is large scale production.

- (i) Allow student teachers to make their choices and support them with their own reasons.
- (ii) How the scale of production producers involved: Refer to economies of scale in unit 29.2.3 of student teachers' book.

- (iii) Allow student teachers to give apply their knowledge of production and offer suggestions.

29.6: Summary of the unit:

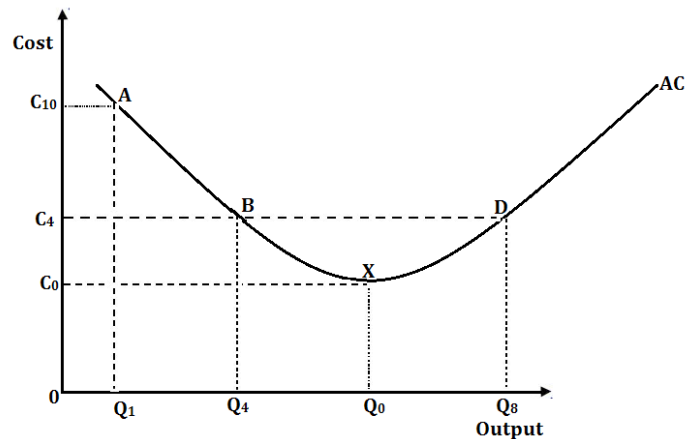
In this unit we saw and covered the following

- **Costs** are expenditures by a firm during production process of goods and services. Or a cost is any alternative that is given up in production as a result of decision.
- **Types of Costs** include direct and indirect costs.
- **Short run and long run costs** of the firm and their relationship (Calculations and illustrations).
- **Scale of production** refers to the size of plant, the number of plants installed and the technique of production adopted by the firm
- Forms of growth of firms are Natural and external growth (amalgamation / merging).
- Advantages and disadvantages of merging.
- **Economies of scale** are advantages that a firm enjoys in form of reduced average costs as the firm expands its scale of production while **diseconomies of scale** are the disadvantages which a firm faces by expanding the scale of production beyond the point of optimal capacity.
- Forms of economies and diseconomies of scale are internal and external economies and diseconomies of scale.

29.7. Additional information for the tutor

In the short run, before the point of optimum, the firm is operating below its capacity, i.e. **excess capacity (underutilization of resources)**. At this point, there is high cost of production but low output. After the optimum point, the firm over utilizes the fixed factor by the variable factor and therefore producing at **over capacity**. Therefore, a rational firm will operate at the point where AC is minimal i.e. where the $MC=AC$ (optimum point). Beyond this point, it is a signal to the producer that there should be increase even in the fixed factor and therefore start operating in the long run.

Illustration:



The figure above shows a firm's capacity of resource utilisation and the respective average costs. For example, below point "X" (points "A" & "B") a firm underutilizes the fixed factor by the variable factor which shows **excess capacity**. At point "X", the firm efficiently and effectively utilizes the fixed factor by the variable factor thus **optimum or full capacity** while after point "X" e.g. at point D, the firm over utilizes the fixed factor by the variable factor, thus **over capacity**.

Excess capacity:

Excess capacity refers to a situation where a firm is producing at a lower scale of output than it has been designed for. Or it is a situation where the firm is underutilizing its resources. Excess capacity occurs when the actual production of a firm is less than the amount that is achievable or optimal. It is where there is output volume at which marginal cost is less than the average cost and, hence, where it is possible to decrease average cost by increasing the output. Excess capacity may be measured by the amount of additional output that will reduce the average cost to a minimum.

Excess capacity can be due to:

- i) Use poor techniques of production.
- ii) Poor and undeveloped market.
- iii) Political insecurity where the firm is located.
- iv) Limited market or less demand for the commodity.
- v) Inadequate skills used in production.

- vi) Desire by the firm to restrict output and sell at a high price for profit maximization.
- vii) A firm may be new and strategizing marketing policies.
- viii) Poor and unfavourable government policies towards resource utilisation. Like high taxes.
- ix) Small scale production that does not enable the firm to utilize resources efficiently.
- x) Limited capital to inject in business for proper exploitation of resources.

29.8. Answers to end unit assessment

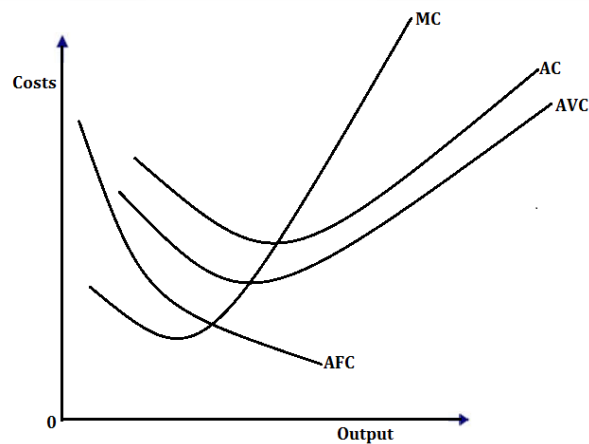
1. a) Refer to the types of cost in the student's book in 29.1.2.
 - b) The unit cost curves are U-shaped in the short run due to *the law of diminishing returns* and in the long run due to *economies and diseconomies of scale*.
2. a) Firms grow mainly in two ways i.e. through Natural growth as the firm organizes itself and grows internally for example, through ploughing back its profits or through Artificial growth by merging or amalgamating with other similar or related or unrelated firms.
 - b) Refer to application activity 29.7 above.
 - c) Different examples of firms in Rwanda that have grown out of merging include airtel that merged Tigo.
3. The arguments for and against natural growth include only all internal economies and diseconomies respectively. Refer to 29.2.3 a (i) and b(ii) for the internal economies and diseconomies of scale.
4. Analyse the tables below and answer the questions that follow.

Required:

- a. Calculate and fill up the blank spaces.

Output	Fixed cost	Variable cost	Total cost	AFC	AVC	AC	MC
0	40	0	40	-	-	-	-
1	40	20	60	40	20	60	20
2	40	30	70	20	15	35	10
3	40	32	72	13.33	10.66	24	2
4	40	34	74	10	8.5	37	2
5	40	36	76	8	7.2	15.2	2
6	40	38	78	6.67	6.33	13	2
7	40	40	80	5.71	5.71	11.4	2
8	40	56	96	5	5.75	12	4
9	40	80	120	4.4	8.89	13.33	24
10	40	140	180	4	14	18	60

- b. Illustrate AFC, AVC, AC, and MC on a graph.



29.9: Additional activities:

29.9.1: Remedial activities:

1. When we pay for labour, rent, and interest in production, we say we are incurring?
2. Costs of production can be either incurred or incurred by the producer. Thus, we have direct and indirect costs of production.

3. Firms grow in size in two major ways ie
and Growth.

Tutor sets more and more activities for the slow learners basing on where they have a difficulty most.

Answers

1. Costs of production
2. directly or indirectly
3. natural and artificial

29.9.2. Consolidation activities.

Question: Why do external economies of scale occur?

Possible answers.

- *Cluster effect.* If firms locate in a similar area, then this makes it more efficient for suppliers to meet a larger base of purchasers. For example, if an iron and steel firm is set up in an area, there will be already suppliers and transport links to deal with the related aspects of the industry.
- If similar firms locate in a particular region it will encourage skilled labour to seek work in this area. This attracts skilled workers and firms have to spend less on recruiting the skilled labour.
- If mining becomes concentrated in a certain area, then there will develop better transport links for shipping the goods to the market. Therefore, as new firms enter or existing firms expand – then they can take advantage of the existing infrastructure to get lower average costs.
- In the political sphere, if an industry grows and becomes important to a region, it may gain greater political bargaining power and local politicians will seek to gain favourable terms for their local industry – in the form of subsidies/tariffs.

29.9.3. Extended activities.

Question: Why do small firms continue to exist even when there are advantages of large-scale production?

Small scale firms continue to exist and survive alongside large firms even if they know there are advantages of expansion. The factors that make small scale firms continue to exist despite the advantages of large-scale

production include among others the following,

- Easy to manage and run: Small firms are often relatively easy to establish, and generally do not require complex rules and procedures to set them up.
- Size of the market: Where the market size is small, it can be best served by a small firm. Some markets may have limited potential for growth, including space markets which provide specialist or customized services.
- Government policy: Government assistance and state aid in the form of subsidies, grants, tax incentives and relief, and guarantees also enable some small firms to survive. This is because government may favour enterprises because of their limited use of domestic resources and are also easy to set up.
- Fear of diseconomies of scale: Diseconomies of scale may set-in early for certain types of firms, especially those in the service sector, where significant problems can be experienced as they grow, including difficulties with communication, financing, and employing and training labour. Therefore, some firms may fear to grow because of fearing disadvantages of large-scale production.
- Capital resource base: Limited capital forces some firms to remain small and continue being small in their operational nature.
- Personal services: i.e. rendering personal services, firms have to remain small in order to promote their levels of efficiency.
- Gestation period: Where the production period is quick, the small-scale firms are appropriate to serve the quick demand.
- Fear of amalgamation: i.e. some firms decide to remain small in size due to fear of amalgamation.
- Entrepreneurs choice: Some entrepreneurs may prefer to keep their small size enterprise for its their desire.
- Firms may be new and at their infancy and therefore they have to be small.
- Some small-scale firms use bi products of large-scale industries. Therefore, the two firms cannot compete with each other.
- Tax avoidance i.e. some firms may remain deliberately small so as to avoid being registered for taxes.

- The entrepreneur may be having other sources of income thus uses that enterprise to pass time and meet other needs hence its continued survival.
- Resale price maintenance: Where prices are fixed by the producer at each stage of distribution, this fixed price reduce small scale producers' profits hence its survival.
- Profit maximization may not be the driving force for all businesses, such as not-for-profit organisations. Hence, remaining small does not conflict with the profit maximization objective.
- Need to retain control: Where the owner decides to retain control and remain independent, he may wish to retain a small firm.
- Flexibility of the firm: When the proprietor intends to maintain flexibility of the business so as to take advantage of any new opportunity, he /she may wish to maintain a small firm.
- Nature of the product: In some cases, nature of the product may limit the mass production. E.g. if one is offering personal services like hair dressing, he/she may attend to one person at a time.
- Legal constraints: where the law restricts growth of a firm, the existing firms have to continue being small.
- Binding together: Small firms continue to operate alongside large-scale firms by working as a group while maintaining their independence which enables them to realize economies of large-scale production.
- Distance between producers: When the firm is separated from its rivals by a long distance, it may continue to exist despite its small size.

UNIT: 30

REVENUES AND PROFITS OF A FIRM.

30.1: Key unit competence:

Be able to discuss a firm's revenues and profit maximisation process.

30.2: Prerequisite (knowledge, skills, attitudes and values)

The tutor should guide the student teachers towards application of various knowledge, skills, attitudes and values, acquired and developed from other related subjects and units. Student teachers, for example, should integrate the knowledge, skills, values and attitudes acquired prior in unit 26 on factors of production, unit 27 about input output relationship and unit, 28 about location and localization of firms and 29 about costs of a firm to analyse and understand the revenues of a firm. We saw in unit 28 that firms will always locate their businesses following profit maximisation, therefore, in this unit, student teachers will examine how profits are calculated through calculating revenues of a firm. . Student teachers base their calculations on the knowledge gained from unit 19 about fractions and equations in economics to better understand and gain skills on calculations in this unit. The tutor though, needs to have a good understanding and skills on this unit so as to motivate student teachers towards the interpretation of economic phenomena using the knowledge and attitudes gained in here.

30.3. Cross-cutting issues to be addressed:

In teaching this unit, there are some cross-cutting issues that can be developed by the student teachers. It may be direct or indirect in the explanation of unit lessons. For example, when explaining the revenues of a firm, tutor stresses the issue of *financial education* by guiding the student teacher to discover that the more firms sell, the more they earn, therefore, firms should always try as much as they can to produce more in order to earn more. However, this depends on the quality of their products which will determine the value of the commodity, therefore, stressing the issue of *Standardisation culture*, where they should always counterbalance quantity with quality to earn much from their sales.

Also, in trying to reap much revenues through high sales, they should

mind about the environment by not overstraining it because it might lead to quick depletion that reduces its sustainability and use for the future generation. Therefore, as responsible citizens, they should balance profit maximisation vis a vis environmental sustainability. As well, inform the student teachers that production entities need to be mindful of not polluting the environment when undertaking production activities so that they should not have negative impact on the environment. There is need therefore for environmental impact assessment before undertaking any production activity.

Furthermore, the activities, language and instructional techniques used in this unit, should enable the tutor to fittingly integrate other cross-cutting issues. E.g. Inclusive education like engaging all student teachers in class activities and discussion without discrimination, using gender responsive language by not harming or minimizing any gender in his/her speech and examples given in his or her explanations etc. Even though in the student teacher's book there are examples and activities indicated, the teacher can improvise and use any other related information that may be tackling a given cross-cutting issue that he or she needs to integrate.

30.4: Guidance on the introductory activity:

The introductory activity of this unit, in the student teacher's book, is a basic tool used as orientation activity that enables the student teachers to connect the knowledge, skills, attitudes and values already acquired in other subjects and units in this subject. This unit deals with how to calculate, illustrate and interpret revenues and profits of a firm. The student teachers in groups or pairs or as individuals read through and analyse the case study about Nzaramba's piggery firm and this arouses their curiosity to research about revenues and profits of a firm. Therefore, it should be noted that, as student teachers get engaged in the lessons of this unit, they discover answers to the questions they were asking at the beginning. These questions may not necessarily need to be answered at the start, but for arousing the student teachers' curiosity about the unit. For, example from the introductory activity in this unit, as the student teacher carries out research about revenues and profits of a firm, they discover in the due course of the unit, that

- a. The economic term given to Nzaramba's income after selling his piglets is revenue.
- b. Each piglet cost $\frac{50000}{20} = 2500$. Therefore, each piglet cost 2500frw.
- c. Nzaramba's income in the first month was 50,000frw and in the second month it was 87500frw

- d. Nzaramba earned 37500rwf as extra income as a result of selling extra 15 piglets.

30.5: list of lessons or sub headings.

N0	Lesson tittle	Lesson objectives	Number of periods
1.	Revenues of a firm	Identify and calculate the different forms of revenue. Explain the relationship between total, average and marginal revenue. Calculate and differentiate between the different forms of revenue under different firms. Illustrate the relationship between Total Revenues (TR), Average Revenue (AR) and Marginal Revenue (MR) of different firms.	2
2	Profits of firms:	Identify the different forms of profits of a firm. Describe the condition for profit maximisation.	1
End unit assessment.		Be able to discuss a firm's revenues and profit maximisation process	1

Lesson 1: Revenues of a firm:

a) Teaching objectives.

- Identify and calculate the different forms of revenue.
- Explain the relationship between total, average and marginal revenue.
- Calculate and differentiate between the different forms of revenue under different firms.
- Illustrate the relationship between Total Revenues (TR), Average Revenue (AR) and Marginal Revenue (MR) of different firms.

b) Teaching resources.

Recommended student's books, internet access, newspaper articles on economics, economics journals

c) Prerequisites /revision/introduction.

This lesson seeks to provide student teachers with knowledge and understanding of the meaning of revenues and its forms and how revenues are calculated. This helps them to analyse data given, calculate and interpret economic phenomena at their disposal, using the skills and attitudes from the unit. As seen, student teachers have knowledge and understanding from equations and fractions in unit 19, unit 29 on theory of costs all in economics Year 1, therefore, it will be easy for them to calculate, illustrate and interpret any data given in this lesson.

d) Learning activities:**i) Guidance on learning activity 30.1:**

Student teachers, either in groups, individuals or in pairs, analyse the data in the case study provided in the activity about Musa selling eggs, guided by the questions therein, visit the library or internet to discuss the required answers. Thereafter, make presentation in class discussions. Tutor, harmonises the students' findings.

Answers to learning activity 30.1:

- a. Revenue of the firm refers to sum of money value received from the sale of various quantities of output by the firm at a given price at a given time.
- b. Musa's total amount after selling his eggs was 45000frw. The economic term given to the total amount after sales by Musa is *Total revenue*.
- c. The price per tray of eggs was $\frac{45000}{15}$ 3000 frws. The economic term given to price per unit of eggs sold is *Average Revenue*.
- d. Musa's additional revenue after selling 3 extra trays of eggs was 9000frw. The economic term given to extra revenue after selling extra eggs by Musa is *Marginal revenue*.

ii) Guidance on learning activity 30.2:

Student teachers, either in groups, individuals or in pairs, analyse the data in the table provided in the activity, guided by the questions

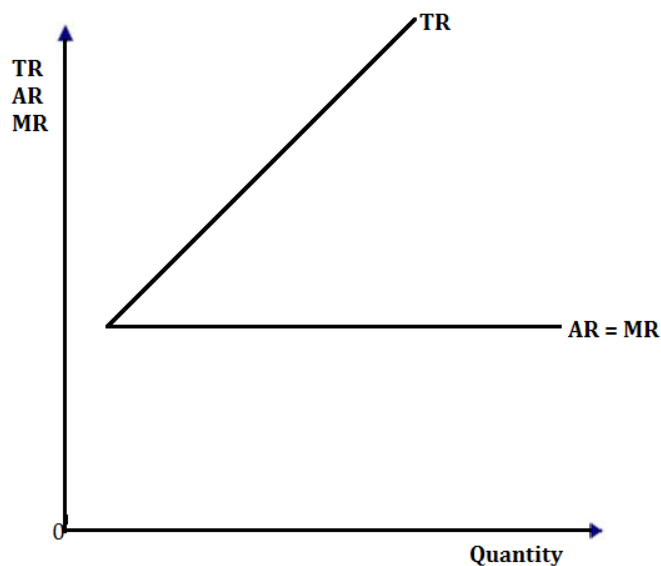
therein, calculate, illustrate and interpret their findings. Thereafter, tutor samples some groups, individuals or pairs to make presentation in class. Tutor, finally harmonises the students' findings.

Answers to activity 30.2:

a) Calculation of AR and MR

Output (Q)	Total Revenue (TR)	Average Revenue (AR) ($\frac{TR}{Q}$)	Marginal Revenue (MR) ($\frac{\Delta TR}{\Delta Q}$)
0	-	-	-
1	100	100	100
2	200	100	100
3	300	100	100
4	400	100	100
5	500	100	100

b) Illustration of TR, AR & MR



c) Relationship between TR, AR and MR.

From the above figure, it can be concluded that, there was only one price that prevailed in the market. Each firm had to take the market price as given and sell its quantity at the ruling market price. The firm's demand curve is infinitely elastic. Therefore, the relationship is in a such way

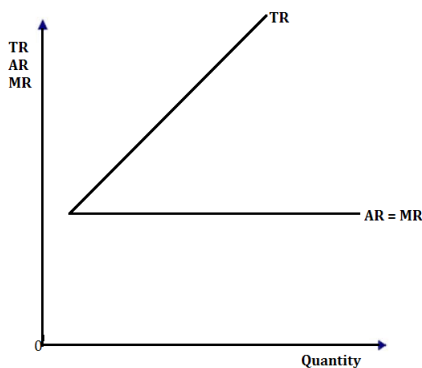
that; as the firm sells more and more at the given price, its total revenue will increase but the rate of increase in the total revenue will be constant, making $AR = MR$.

d) Answers to application activity30.2:

a. Calculation of TR and MR

Output	A v e r a g e revenue (AR)	Total Revenue (TR)	M a r g i n a l Revenue)
1	10	10	10
2	10	20	10
3	10	30	10
4	10	40	10
5	10	50	10
6	10	60	10
7	10	70	10

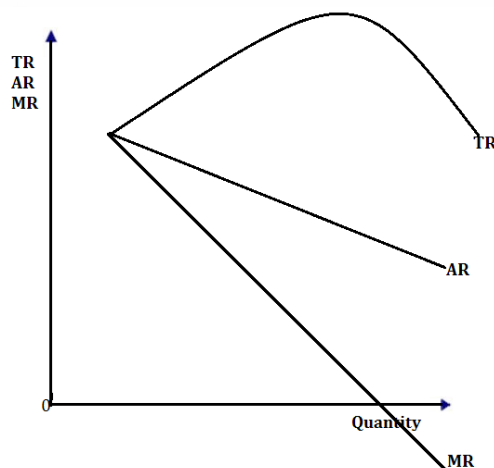
b. Illustration of AR, TR and MR.



c. i) Calculation of TR and MR

Output	A v e r a g e revenue (AR)	Total Revenue (TR)	M a r g i n a l Revenue)
1	10	10	10
2	9	18	8
3	8	24	6
4	7	28	4
5	6	30	2
6	5	30	0
7	4	28	-2
8	3	24	-4

ii) Illustration of TR, AR and MR



Lesson 2: Profits of a firm

a) Teaching objectives.

- Identify the different forms of profits of a firm.
- Describe the condition for profit maximisation

b) Teaching resources.

Recommended student's books, internet access, newspaper articles on economics, economics journals

c) Prerequisites /revision/introduction.

This lesson seeks to provide student teachers with knowledge and understanding of the meaning of profits and its forms and the necessary condition for profit maximisation of firms. This helps them to be able to calculate their own profits in case they start up business in future and analyse why some firms either make profits or losses in business. Using the skills and attitudes from the lesson about costs in unit 29, and revenues in lesson one of this unit, student teachers explain the meaning and forms of profits and the necessary condition for profit maximisation.

d) Learning activities:

i) Guidance on learning activity 30.3:

Student teachers, either in groups, individuals or in pairs, analyse the data in the table provided in the activity, guided by the questions therein, use the internet and economics books from the library and carry out

research and discuss on the concept of profits. Thereafter, tutor samples some groups, individuals or pairs to make presentation in class. Tutor, finally harmonises the students' findings.

Answers to activity 30.3:

- a. Refer to units 30.4.1 and 30.4.2 in student teacher's book
- b. Refer to unit 30.4 3 in student teacher's book for the necessary condition for profit maximisation.

e) Answers to the application activity 30.3:

1. *Benefits of profits to any firm may include among others, the following.*

The importance of profit can be explained with the help of following points:

1. *Employment generation:* Profits lead to an inducement to invest as well as to innovate. As the entrepreneur begins to forecast more profits, he/ she undertake more investment which in turn creates more employment. This will generate more incomes which in turn, will create more demand for the goods in the market.
2. *Profit is essential for the survival of business:* Profit is necessary for the survival and growth of business enterprise. If the business does not make enough profit it will not survive in the growing competitive world. Profit means survival. It enables the business to grow, helps employee motivation, eases negotiations with banks, attracts investors, and gives clients and customers a confidence in business. .
3. *Reward for risk taken:* Profit is a reward for risk taken in the business. It is a return on investment. Business expects highest profit as they expect return on their investment. A firm invests money with the expectation of higher returns on their investment. The shareholders expect higher returns in the form of dividend. Banks and financial institutions expect better rate of interest on the loan given to the business enterprise.
4. *Profit is an indicator of efficiency:* Profit is a yardstick that tests the efficiency of the business firm. The success of the business can be judged by the extent of profit earning capacity.
5. *Reserves to meet future contingencies/ emergencies:* The business is subject to many risk and uncertainties such as changing customer preferences, increasing competition, changing government policies etc. In such cases profit is used to meet those unfavorable business difficulties.

6. *Increases volume of business:* Maintenance of profit is the internal source of funds. This profit can be used for increasing the volume of business through expansion and diversification. The portion of profit is re-invested in the business for further development.
7. *Ability to Borrow Money:* Many businesses depend on debt financing to operate. Debt financing obligates a business to repay the money borrowed to the creditor with interest. Businesses borrow money from banks to operate. Therefore, firm's profitability plays an important role in whether a bank lends the company money. In addition to profit, a business owner's credit score and collateral are determining factors in lending decisions. A company that cannot turn a profit is typically seen as a risk for default by a lender.
8. *Attract Investors Financing:* Some businesses choose to bring in private investors to secure funding for their operations. An enterprise that earns continual profits is seen as a potentially good investment option because the investor believes there is a good chance to earn an attractive return on his investment. Attracting investors depends on one's ability to show the monetary benefits of investing in your business. As a business owner, one should prepare to show potential investors your ability to generate profits in previous years and your plans to continue to earn profits in the future.
9. *Hire More Employees:* A part of growing a business includes hiring additional employees who can handle the growing responsibilities within the company. A business that is profitable has a better chance of affording to pay new employees' salaries than a company that is struggling financially. Hiring new employees is an important element of running any business because employees are typically given more responsibility in business operations. A business owner must allocate resources to defining open job positions, developing a hiring process and creating training programs.

30.6: Summary of the unit:

In this unit, we have looked at the following:

- Revenues of the firm which refers to sum of money value received from the sale of various quantities of output by the firm at a given price at a given time.
- Forms of revenues include Total revenue, average revenue and marginal revenue.
- Calculations and illustrations of TR, AR and MR.

- Profits refers to the earnings to an entrepreneur as a factor of production.
- Forms of profits are; normal, abnormal and negative profits or commonly known as losses.
- Condition for profit maximisation is that MR and MC curves but the slope of the MR curve, should be less than the slope of the MC curve.

30.7. Additional information for the tutor:

Profit is the amount of money remaining after all the expenses of running the business are paid. It's got by having total revenues minus total expenses. In the short term, a business can lose money and still keep going by drawing on previously accumulated cash reserves. Start-up technology companies sometimes incur losses for several years and use venture capital to fund operations until they reach positive cash flow. But over the longer term, earning a profit is essential to a company's survival.

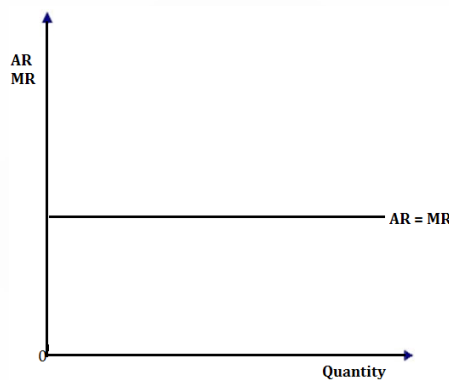
30.8: Answers to end of unit assessment

1. (a) Refer to unit 30.2 a and c for the difference between total revenue and marginal revenue.

(b) The relationship between average revenue and marginal revenue curves under perfect and imperfect markets respectively. Use illustrations.

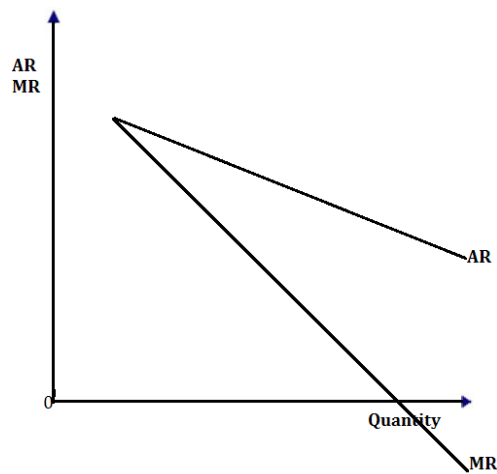
i) *Relationship between AR and MR under perfect markets.*

AR = MR under perfect markets as shown below



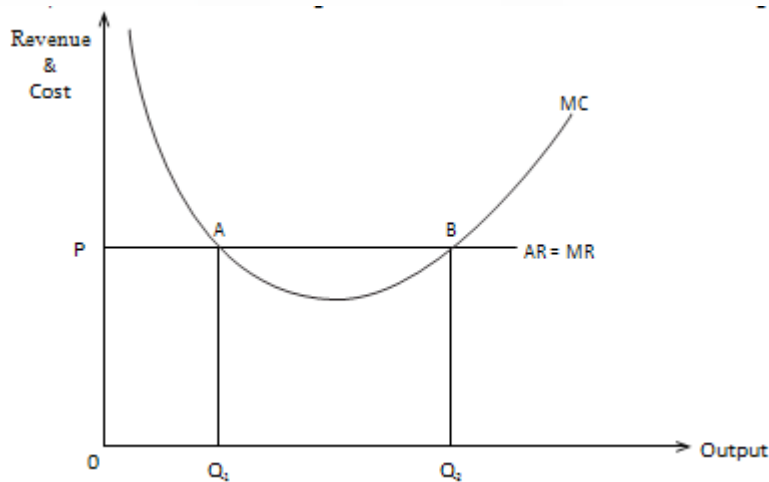
ii) *Relationship between AR and MR under imperfect markets*

AR > MR at all levels of output in the market as shown below.



2. a) Refer to 30.4.2 (a) and (b)

(b) A firm maximizes profits when its $MC = MR$ under perfect markets as shown below;



From the above illustration the firm maximizes profits at point B where $MC=MR$ but the slope of MC is greater than the slope of MR. The profit maximizing output is output OQ_2 because it is greater than output OQ_1 . The equilibrium price is P_e which is equal to average revenue (AR) and as well equal to marginal revenue (MR). i.e. ($P=AR=MR$).

3. Evaluate the role of profit in an economy.

Importance of profits in an economy include the following

- Profits encourage firms to cut costs and increase efficiency.
- High profits give firms the capacity invest in research and

development This can lead to better technology, lower costs and dynamic efficiency.

- Profits encourage entrepreneurs to create new products which may be profitable.
- Higher profits resources to flow from non-profitable to profitable areas which increases capital accumulation
- High profits enable a rise in wages for workers hence high standard of living.
- Government tax corporate profits to gain revenue.

Though profit plays an important role in an economy, it is worth bearing in mind that;

- Pursuit of profit may damage the environment
- Higher profit may lead to greater inequality in society. It depends whether firms have monopoly/monopsony power.
- The pursuit of short-term profit can encourage risk-taking and reckless behaviour.
- Firms may pursue other objectives apart from profit-maximisation which may diverge from the major objective hence harming the economy.

30.9: Additional activities:

30.9.1: Remedial activities:

1. Use the table below to answer the questions that follow.

Output	Total Revenue
1	5
2	10
3	15
4	20
5	25

i) Calculate AR and MR.

ii) Illustrate the information in the table.

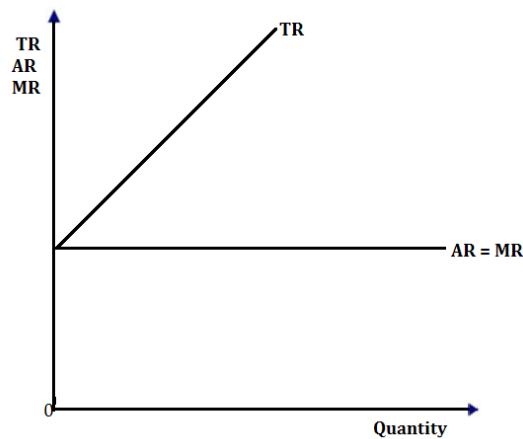
2. When does a firm earn abnormal profit, normal profits and losses respectively?

Answers.

1. i)

Output	TR	AR	MR
1	5	5	5
2	10	5	5
3	15	5	5
4	20	5	5
5	25	5	5

ii) Illustration of TR, AR, and MR



2. A firm earns abnormal profits when its TR is greater than its TC ($AR > AC$); normal profits occur when its TR is equal to its TC ($AR = AC$) and losses when its TR is less than its TC ($AR < AC$).

30.9.2: Consolidation activities.

Question: Why is MR curve equal to AR under some markets and yet in other markets MR is less than AR at all levels of output?

- In some markets, for example, under perfect markets, there is only one price that prevails for every seller therefore, as the firm sells more and more at the given price, its total revenue will increase but the rate of increase in the total revenue will be constant thus making its average revenue equal to marginal revenue.
- While in other markets, for example, imperfect markets, because the business persons want to sell more, they must reduce price, not only on the extra units sold, but also on the earlier units, hence

making average revenue different from marginal revenue and average revenue is above marginal revenue.

30.9.3: Extended activities

Question. Some firms keep operating even if they are not able to make even normal profits. Discuss.

A firm may continue to operate even if it is not making profits because of the following reasons.

- Some firms do not want to lose their established markets/ customers as a solution to the problems sought.
- Firms continue to operate because they fear to lose their suppliers of raw materials for their industry.
- Some firms fear to lose their skilled man power which it would have trained at a high cost, which labor may be necessary in the near future thus they continue to operate.
- Firms may be expecting to get loans in future from the financial institutions to boost its business.
- Some firms fear to be taken over by the state through nationalization.
- The firm may be a beginner firm, thus is still in its infancy and it expects to make profits in the long run.
- When the firm holds highly specific capital which it cannot leave lying idle.
- Some firms keep operating when they hope to change or restructure management, if it believes current losses are due to poor management
- A loss- making firm may be a branch of a bigger firm (subsidiary firm) which is making profits and the losses can be shared by the other firms so as to cover the costs.
- Some firms are not meant to be making profits but to give services like welfare improvement, in case of government organizations.
- Some firms may be set up for research/ experimental purposes so they operate even if they are making losses.
- If a firm had earned abnormal profits before and is still surviving on them.
- Difficulties might be short run and therefore hope to make improvements in the long run.

- Some firms keep operating when they fear to lose their reputation or good name in society.
- If the firm has invested in various assets it may feel reluctant to sell them and therefore keep on operating hoping to make improvements.
- However, not all firms can stay, others close due to the following reasons:
 - Appearance of new and strong firm thus out competed.
 - Exhaustion of raw materials.
 - Persistent labour unrest or inadequate labour supply.
 - Absence of spare parts and failure to get them.
 - New government regulations e.g. total ban of production of a given commodity.
 - Change in fashion and design hence demand shifts to fashionable goods.
 - Lack of raw materials e.g. during war times and economic decline.

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