

English Language for
Associate Nurses,
Student's Book 5

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Foreword

Dear student,

Rwanda Basic Education Board is honored to present English Language for Associate Nurses, Student's Book 5 which serves as a guide to competence-based teaching and learning to ensure consistency and coherence in the learning of Senior 5 English language content. The Rwandan educational philosophy is to ensure that you achieve full potential at every level of education which will prepare you to be well integrated in society and exploit employment opportunities.

In line with efforts to improve the quality of education, the Government of Rwanda emphasizes the importance of aligning teaching and learning materials with the syllabus to facilitate your learning process. Many factors influence what you learn, how well you learn and competences you acquire. Those factors include the relevance of the specific content, the quality of teachers' pedagogical approaches, the assessment strategies and the instructional materials available.

Special attention was paid to the activities that facilitate the learning process in which you can develop your ideas and make new discoveries during concrete activities carried out individually or with peers. With the help of the teachers, whose role is central to the success of the learning, you will gain appropriate skills and be able to apply what you have learnt in real life situations. Hence, enabling you to develop certain values and attitudes allowing you to make a difference not only to your own life but also to the nation.

This is in contrast to traditional learning theories which view learning mainly as a process of acquiring knowledge from the more knowledgeable who is mostly the teacher. In regard to the competence-based curriculum, learning is considered as a process of active building and developing knowledge and meanings by the learner where concepts are mainly introduced by an activity, situation or scenario that helps the learner to construct knowledge, develop skills and acquire positive attitudes and values.

In addition, such active learning helps you to do and think about what you are doing. It encourages you to bring your own real experiences and knowledge into the learning processes. In this regard, for the efficiency use of this textbook, your role is to:

- Develop knowledge and skills by working on given activities which lead to the content;
- Communicate and share relevant information with other learners through presentations, discussions, group work and other active learning techniques such as role play, case studies, investigation and research in the library, on internet or outside;
- Participate and take responsibility for your own learning;
- Carry out research/investigation by consulting printed/online documents and resourceful people, and present findings;
- Ensure the effective contribution of each group member in assigned tasks through clear explanation and arguments, critical thinking, responsibility and confidence in public speaking;
- Draw conclusions based on the findings from the learning activities.

I wish to sincerely extend my appreciation to the people who contributed towards the development of this document, particularly the REB staff who organized the whole process from its inception. Special appreciation goes to the teachers who supported the exercise throughout. Any comment or contribution would be welcome to the improvement of this text book for the next versions.

Dr. MBARUSHIMANA Nelson

Director General, REB

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I owe gratitude to different universities and schools in Rwanda that allowed their staff to work with REB in the in-house textbooks production project. I wish to extend my sincere gratitude to lecturers, teachers and all other individuals whose efforts in one way or the other contributed to the success in the writing of this textbook.

Special acknowledgement goes to the University of Rwanda which availed content providers, quality assurers, validators as well as experts in design and layout services, illustrations and image anti-plagiarism.

Finally, my word of gratitude goes to the Rwanda Basic Education Board staff particularly those from the Curriculum, Teaching and Learning Resources Department (CTLR) who were involved in the whole process.

Joan MURUNGI,

Head of Department, CTLR

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Introduction

Changes in schools

This text book is part of the reform of the school curriculum in Rwanda: that is changes in what is taught in schools and how it is taught. It is hoped this will make what you learn in school useful to you when you leave school, whatever you do then.

In the past, the main thing in schooling has been to learn knowledge – that is facts and ideas about each subject. Now the main idea is that you should be able to use the knowledge you learn by developing skills or competencies. These skills or competencies include the ability to think for yourself, to be able to communicate with others and explain what you have learnt, and to be creative, that is developing your own ideas, not just following those of the teacher and the text book. You should also be able to find out information and ideas for yourself, rather than just relying on what the teacher or text book tells you.

Activity-based learning

This means that this book has a variety of activities for you to do, as well as information for you to read. These activities present you with material which will help you to learn and find out things for yourself. You already have a lot of knowledge and ideas based on the experiences you have had in your life within your own community. Some of the activities, therefore, ask you to think about the knowledge and ideas you already have.

In using this book, therefore, it is essential that you do all the activities. You will not learn enough unless you do these activities. They are the most important part of the book.

In some ways this makes learning more of a challenge. It is more difficult to think for yourself than to copy what the teacher tells you. But if you take up this challenge you will become a better person and become more successful in your life.

Group work

You can also learn a lot from other people in your class. If you have a problem it can often be solved by discussing it with others. Many of the activities in the book, therefore, involve discussion or doing other activities in groups or pairs. Your teacher will help to organise these groups and may arrange the classroom so that you are always seated in groups facing each other. You cannot discuss properly unless you are facing each other.

Research

One of the objectives of the new curriculum is to help you to find things out for yourself. Some activities, therefore, ask you to do research using books in the library, the internet if your school has this, or other sources such as newspapers and magazines. This will enable you to develop the skills of learning for yourself when you leave school. Your teacher will help you if your school does not have a good library or internet.

Icons

To guide you, each activity in the book is marked by a symbol or icon to show you what kind of activity it is. The icons are as follows:



Thinking

Thinking Activity icon

This indicates thinking for yourself or in groups. You are expected to use your own knowledge or experience, or think about what you read in the book, and answer questions for yourself.



Practical Activity

Practical Activity icon

The hand indicates a practical activity, such as a role play on resolving a conflict, taking part in a debate or following instructions on a map. These activities will help you to learn practical skills which you can use when you leave school.



Writing/Research Activity

Writing Activity icon

Some activities require you to write in your exercise book or elsewhere.



Fieldwork Activity

Fieldwork Activity icon

Fieldwork means learning outside the classroom either in the school compound, the local area or in the learner's home area. It is suitable since it engages the learners and makes them involved in the learning process. Fieldwork can be used in all subjects.



Discussion/ Vocabulary Reading

Discussion Activity icon

Some activities require you to discuss an issue with a partner or as part of a group. It is similar to group work, but usually does not require any writing, although some short notes can be written for remembrance.



Computer/Internet Activity

Computer/Internet Activity icon

Some activities require you to use a computer in your computer laboratory or elsewhere.



Listening Activity

Listening Activity icon

The listening activity requires learners to carefully listen to the teacher or fellow learner reading a passage, poem or extract on the subject and then answer the questions.



Observation Activity

Observation Activity icon

Learners are expected to observe and write down the results from activities, including experiments or social settings over-time.

Good luck in using the book.



Unit 1: Myself and My Community

My goals

After studying this unit, I will be able to:

- ⦿ Use: 'can', 'may', 'have to', 'paragraphs', 'more', 'fewer', 'no'.
- ⦿ Describe leisure time activities, internet use, reading habits, facilities in the community, the structure of local government and the provision of social services, in speech and writing.
- ⦿ Compare facilities, jobs and transport in town and country in speech and writing.
- ⦿ Show readiness to execute my role and responsibility as a community member.

A: Listening and Speaking

Describing hobbies and leisure time



Activity 1

1. Discuss the following and share your answers with others.
 - (a) Tell other members what you understand by the words “hobby” and “leisure time”.
 - (b) Explain to other members how you spend your free time.
 - (c) Describe some of the leisure time activities people in your community do.
 - (d) Why do you think the internet is increasingly being used by people?



Activity 2

Study these photos carefully. They show different hobbies and leisure time activities.

Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Activity 3

Now answer these questions.

1. Describe the activities taking place in photos 1-6.
2. Identify which of the activities in the photos you think are done as hobbies and those that are done as leisure activities.
3. In your opinion, do you think hobbies and leisure activities are the same? Use the photographs to explain your answer.
4. Explain the importance of hobbies and leisure time activities in our lives.

Recounting activities



Activity 1

Discussion

1. Think of the activities you did over the weekend. Narrate them to your fellow members. Now write an essay or a composition describing those activities. Exchange your compositions with a friend to read through and compare the activities.

Describing internet activity



Activity 1

1. Use the internet from your school computer laboratory, if there is one. If your school does not have one, visit an internet café near your school. An internet café is a place where people get the internet at a fee. It is also possible that some people have an internet connection in their homes. If you have a friend who has it at home, you can request him or her to let you use it to search the web (a source of information on the internet about a particular subject, published by an individual or organisation) for information.
2. Think about a topic that interests you. It could be about football, culture, music, nature, and others. Download it in Microsoft Word and edit the details, including the photographs and the content. Send it as an e-mail to a classmate.



Activity 2

1. Discuss with classmates. In turns, share the leisure activities that people in your community engage in.

After class, interact with some of the people in your community to find out why they prefer particular leisure activities to others.



Activity 3

Discussion

Think about this proverb!

“All work without play makes Jack a dull boy”.

- (a) Share with a classmate what you understand by this proverb.
- (b) Do you agree with this proverb? Give reasons for your answer.
- (c) Explain the problems likely to be caused by a lot of leisure.
- (d) How would you advise your young brother or sister to use his or her leisure time?

B: Reading and Comprehension

Describing reading habits



Activity 1

1. Carefully study the photographs below.

Photo A



Photo B



Photo C



Photo D



- (a) What do you think the people could be reading in each photo? Give reasons.
- (b) Explain the similarities and differences between **photo B** and the rest of the photographs.
- (c) Why do you think people engage in the kind of reading shown in **photo C**?
- (d) How helpful is the kind of reading shown in **photo D**?



Activity 2

Discussion

1. Share your views about these questions.
 - (a) Tell your class members what you normally like reading about. Give reasons for your opinion.
 - (b) What do people in your community like to read about?
 - (c) Compare what you read at your school and what is read by people in your community.
 - (d) The comparison in (c) above will bring out three issues:
 - (i) things read by people in the community but not read at your school.
 - (ii) things read at your school but not read by people in the community.
 - (iii) things read both by people in the community and also read at your school.
2. Give reasons for each situation above.

Reading extracts from Literature



Activity 1

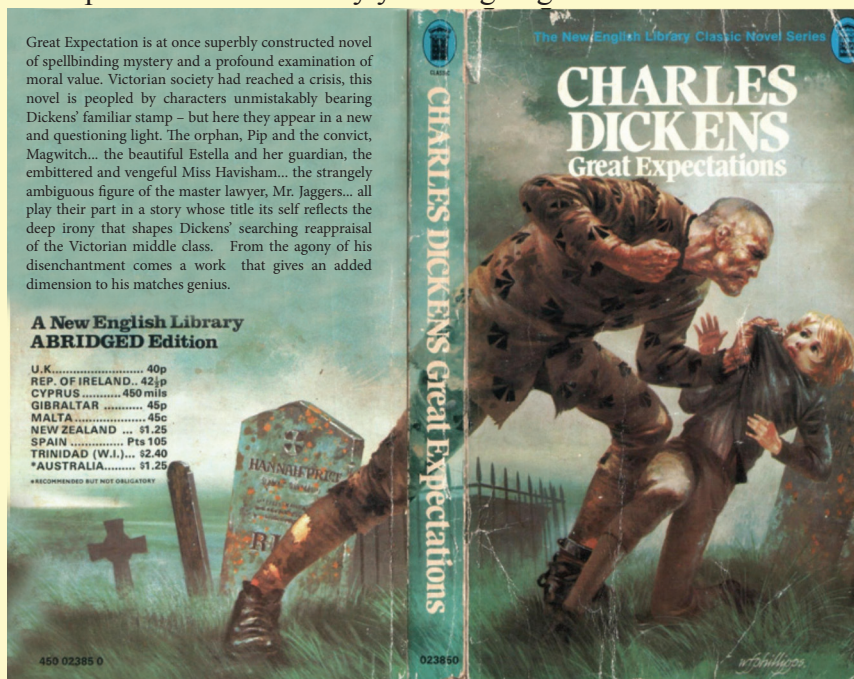
Discussion

1. We have discussed reading as a form of spending our leisure time. Tell your class members the books or magazines you have ever read.
2. Describe a memorable story you have ever enjoyed reading.
3. Stories are classified as: fiction, comedy, drama, horror, non-fiction, romance, satire, adventure, tragedy, tragi-comedy and fantasy. Find out what each story type encompasses. Which of these stories do you normally read? Explain your preference for those stories.



Activity 2

1. Look at the cover of this book. Look at the photograph and make a prediction of the story you are going to read.



2. Are there any other books by Charles Dickens you have ever read? Which ones? What was the plot of the texts?



Activity 3

Read and enjoy the story

My father's family name being Pirrip, and my Christian name Philip, my infant tongue could make of both names nothing longer or more explicit than Pip. So, I called myself Pip, and came to be called Pip.

I give Pirrip as my father's family name, on the authority of his tombstone and my sister - Mrs. Joe Gargery, who married the blacksmith. As I never saw my father or my mother, and never saw any likeness of either of them (for their days were long before the days of photographs), my first fancies regarding what they were like, were unreasonably derived from their tombstones. The shape of the letters on my father's, gave me an odd idea that he was a square, stout, dark man, with curly black hair. From the character and turn of the inscription, "Also Georgiana Wife of the Above," I drew a childish conclusion that my mother was freckled and sickly. To five little stone lozenges, each about a foot and a half long, which were arranged in a neat row beside their grave, and were sacred to the memory of five little brothers of mine - who gave up trying to get a living, exceedingly early in that universal struggle - I am indebted for a belief I religiously entertained that they had all been born on their backs with their hands in their trouser-pockets, and had never taken them out in this state of existence.

Ours was the marsh country, down by the river, within, as the river wound, twenty miles of the sea. My first most vivid and broad impression of the identity of things, seems to me to have been gained on a memorable raw afternoon towards evening. At such a time I found out for certain, that this bleak place overgrown with nettles was the churchyard; and that Philip Pirrip, late of this parish, and also Georgiana wife of the above, were dead and buried; and that Alexander, Bartholomew, Abraham, Tobias, and Roger, infant children of the aforesaid, were also dead and buried; and that the dark flat wilderness beyond the churchyard, intersected with dykes and mounds and gates, with scattered cattle feeding on it, was the marshes; and that the low leaden line beyond, was the river; and that the distant savage lair from which the wind was rushing, was the sea; and that the small bundle of shivers growing afraid of it all and beginning to cry, was Pip.

"Hold your noise!" cried a terrible voice, as a man started up from among the graves at the side of the church porch. "Keep still, you little devil, or I'll cut your throat!"



A fearful man, all in coarse grey, with a great iron on his leg. A man with no hat, and with broken shoes, and with an old rag tied round his head. A man who had been soaked in water, and smothered in mud, and lamed by stones, and cut by flints, and stung by nettles, and torn by briars; who limped, and shivered, and glared and growled; and whose teeth chattered in his head as he seized me by the chin.

"O! Don't cut my throat, sir," I pleaded in terror. "Pray don't do it, sir."

"Tell us your name!" said the man. "Quick!"

"Pip, sir."

"Once more," said the man, staring at me. "Give it mouth!"

"Pip. Pip, sir."

"Show us where you live," said the man. "Point out the place!"

I pointed to where our village lay, on the flat in-shore among the alder-trees and pollards, a mile or more from the church.

The man, after looking at me for a moment, turned me upside down, and emptied my pockets. There was nothing in them but a piece of bread. When the church came to itself - for he was so sudden and strong that he made it go head over heels before me, and I saw the steeple under my feet - when the church came to itself, I say, I was seated on a high tombstone, trembling, while he ate the bread ravenously. "You young dog," said the man, licking his lips, "what fat cheeks you ha' got." I believe they were fat, though I was at that time undersized for my years, and not strong.

"Darn me if I couldn't eat 'em," said the man, with a threatening shake of his head, "and if I han't half a mind to't!"

I earnestly expressed my hope that he wouldn't, and held tighter to the tombstone on which he had put me; partly, to keep myself upon it; partly, to keep myself from crying.

"Now lookee here!" said the man. "Where's your mother?"

"There, sir!" said I.

He started, made a short run, and stopped and looked over his shoulder.

"There, sir!" I timidly explained. "Also Georgiana. That's my mother."

"Oh!" said he, coming back. "And is that your father alonger your mother?"

"Yes, sir," said I; "him too; late of this parish."

"Ha!" he muttered then, considering. "Who d'ye live with - supposin' you're kindly let to live, which I han't made up my mind about?"

"My sister, sir - Mrs. Joe Gargery - wife of Joe Gargery, the blacksmith, sir."

"Blacksmith, eh?" said he. And looked down at his leg.

After darkly looking at his leg and me several times, he came closer to my tombstone, took me by both arms, and tilted me back as far as he could hold me; so that his eyes looked most powerfully down into mine, and mine looked most helplessly up into his.

"Now lookee here," he said, "the question being whether you're to be let to live. You know what a file is?"

"Yes, sir."

"And you know what wittles is?"

"Yes, sir."

After each question he tilted me over a little more, so as to give me a greater sense of helplessness and danger.

"You get me a file." He tilted me again. "And you get me wittles." He tilted me again. "You bring 'em both to me." He tilted me again. "Or I'll have your heart and liver out." He tilted me again.

I was dreadfully frightened, and so giddy that I clung to him with both hands, and said, "If you would kindly please to let me keep upright, sir, perhaps I shouldn't be sick, and perhaps I could attend more."

He gave me a most tremendous dip and roll, so that the church jumped over its own weather-cock. Then, he held me by the arms, in an upright position on the top of the stone, and went on in these fearful terms:

"You bring me, to-morrow morning early, that file and them wittles. You bring the lot to me, at that old Battery over yonder. You do it, and you never dare to say a word or dare to make a sign concerning your having seen such a person as me, or any person sumever, and you shall be let to live. You fail, or you go from my words in any partickler, no matter how small it is, and your heart and your liver shall be tore out, roasted and ate. Now, I ain't alone, as you may think I am. There's a young man hid with me, in comparison with which young man I am a Angel. That young man hears the words I speak.

"That young man has a secret way pecooliar to himself, of getting at a boy, and at his heart, and at his liver. It is in wain for a boy to attempt to hide himself from that young man. A boy may lock his door, may be warm in bed, may tuck himself up, may draw the clothes over his head, may think himself comfortable and safe, but that young man will softly creep and creep his way to him and tear him open.

"I am a-keeping that young man from harming of you at the present moment, with great difficulty. I find it wery hard to hold that young man off of your inside. Now, what do you say?"

I said that I would get him the file, and I would get him what broken bits of food I could, and I would come to him at the Battery, early in the morning.

"Say Lord strike you dead if you don't!" said the man.

I said so, and he took me down.

"Now," he pursued, "you remember what you've undertook, and you remember that young man, and you get home!"

"Goo-good night, sir," I faltered.

"Much of that!" said he, glancing about him over the cold wet flat. "I wish I was a frog. Or a eel!"

At the same time, he hugged his shuddering body in both his arms - clasping himself, as if to hold himself together - and limped towards the low church wall. As I saw him go, picking his way among the nettles, and among the brambles that bound the green mounds, he looked in my young eyes as if he were eluding the hands of the dead people, stretching up cautiously out of their graves, to get a twist upon his ankle and pull him in.

When he came to the low church wall, he got over it, like a man whose legs were numbed and stiff, and then turned round to look for me. When I saw him turning, I set my face towards home, and made the best use of my legs. But presently I looked over my shoulder, and saw him going on again towards the river, still hugging himself in both arms, and picking his way with his sore feet among the great stones dropped into the marshes here and there, for stepping-places when the rains were heavy, or the tide was in.

The marshes were just a long black horizontal line then, as I stopped to look after him; and the river was just another horizontal line, not nearly so broad nor yet so black; and the sky was just a row of long angry red lines and dense black lines intermixed.

On the edge of the river I could faintly make out the only two black things in all the prospect that seemed to be standing upright; one of these was the beacon by which the sailors steered - like an unhooked cask upon a pole - an ugly thing when you were near it; the other a gibbet, with some chains hanging to it which had once held a pirate. The man was limping on towards this latter, as if he were the pirate come to life, and come down, and going back to hook himself up again. It gave me a terrible turn when I thought so; and as I saw the cattle lifting their heads to gaze after him, I wondered whether they thought so too. I looked all round for the horrible young man, and could see no signs of him. But, now I was frightened again, and ran home without stopping.

(Source: Extract from "Great Expectations" by Charles Dickens)



Activity 4

1. Visit your library and borrow the novel 'The Great Expectations' written by Charles Dickens. Read it. Discuss the plot of the story. Explain the challenges Pip faced and how he struggled to overcome them.
2. Language can be categorised as formal or informal or slang. Use the dictionary to find out the meanings of these terms.
3. The fierce man on page 10-11 uses slang. Identify the slang words and provide their formal equivalent words. In literature all these types of language are permitted for use.



Activity 5

Discussion

Think of a real-life situation where the story of Pip applied to your life. Discuss the situation with your friends.

Describing facilities in the community



Activity I

Work

The table below shows facilities that are normally found in communities, whether in towns and cities or in the countryside. Study the table carefully. Fill in the missing information. Compare your answers with other classmates.

- (i) Use a tick ($\checkmark$) to show the facilities that exist in your locality.
- (ii) For those that are not found in your locality, show them using a cross ($\times$).
- (iii) In the third column, indicate the importance of each facility to people's lives.

Facility	$\checkmark$	$\times$	Role in people's lives
Health centre/Hospital			
School			
Clean water			
Bank			
Shops			
Transport			
Radio station			
Worship centre/ Church/ Mosque			
Legal services/Court of law			
Post office			
Entertainment/Recreation			
Employment			



Activity 2

Discussion

- (a) Have you ever been to both the countryside and the city?
- (b) Briefly describe the differences between the two places.
- (c) Which of the two places would you prefer to live in? Give reasons for your choice.



Activity 3

Read the following passages

My country home

I live in a small village with my family. There is a narrow murram road connecting my village with the nearby town. Most people walk or ride bicycles to the town. There are fewer facilities compared to the city. We have a health centre and a primary school in our community. However the health centre does not have enough medicine. The primary school lacks enough teachers and scholastic materials for proper studying. People collect water from streams and wells or from boreholes. Shopping is done at the nearby trading centre but many essential commodities are often not there. People have to travel to town to shop for some essential commodities. There is no post office, so people can only send letters by travelling to town to post them. There may be people who want to bank their money, but there is no bank in our village. In my village there is more land than in the city which can be used for farming and other uses.

It is also easy to get cheap food in my village. Many people in the village are farmers. They earn money by selling food. The incomes are lower than those in the town but the cost of things is lower than that in the city.

My city home

I was born and brought up in Kigali City. The roads are good and are connected to almost every part of the country. There is a large population and there are many vehicles to transport people and goods. There are many hospitals and schools with very good facilities. The buildings are big, tall and amazing to look at. Most of the country's administrative offices and head offices of government departments and organisations are found here.

It is also where we find the National Bank of Rwanda and head office of the University of Rwanda. There are a number of industries where people are employed. The people looking for jobs are usually more than the available jobs. Others are government workers and they are paid salaries. Incomes are higher but things are more expensive than in the village. Many people have piped clean water supplied to their houses and electricity. Shopping is made easy by the numerous supermarkets and shops found all over the city. There are also various entertainment centres. People often travel using their own vehicles or they use public transport such as buses or taxis.

After reading the two passages, answer these questions

- (a) Why do you think there is a large population in the city?
- (b) Explain what makes the countryside a good place to live in.
- (c) In your opinion, what are the problems faced by people living in towns?
- (d) In your opinion, where is life more challenging; in the town or in the village? Why?

Comparing facilities in the country/town



Activity 1

Discussion

- (a) The photos (1 – 16) show facilities in the countryside and in town. Study them carefully.

Photo 1

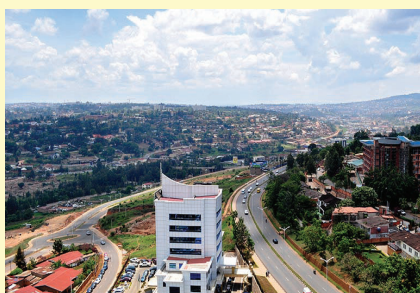


Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



- (b) Based on the photographs, discuss and compare the facilities in town and those found in the countryside.
- (c) After the discussion, write a short essay comparing the facilities found in town and those found in the countryside.
- (d) What problems are likely to arise as a result of more facilities being found in towns than in the countryside?



Activity 2

Debate the motion: **Town life is better than village life.** What would be your points supporting the motion? What would be your arguments against the motion?

Comparing jobs in the country/ town



Activity 1

Discussion

Study the photographs and describe what is taking place. Where is one likely to find the jobs being done in the photograph?

Photo 1



Photo 2



Briefly discuss these questions.

1. Compare the jobs done in the towns with those done in the villages.
2. Are the jobs done in towns more important than those done in the villages? Explain your answer.
3. Write an essay describing the jobs and their economic benefit to the people of Rwanda. Compare your compositions.

Comparing transport in the country/ town



Activity 1

Discussion

Discuss these questions:

- (a) How do people normally travel in your community?
- (b) Discuss the transport means available in your community.
- (c) Explain the challenges your community members face in terms of transportation of themselves and their goods.

Choose a secretary to present your findings to the class for comparison and further discussion.

Describing social services



Activity 1

- (a) Name the kind of services provided by the government to your community. Explain the role each of them plays in people's lives.
- (b) Explain how the government manages to get money to use in providing services to the people.
- (c) Apart from the government, non-governmental organisations can also provide services to communities. Which of such organisations are found in your community? Explain the kind of services they provide.
- (d) How do these organisations manage to get money to be able to provide services to the community?



Activity 2

Read this text carefully

The provision of social services is done by the government or non-governmental organisations for the benefit of the community. These include education, medical care, housing, food, roads, welfare and poverty reduction programmes.

In Rwanda, the Ministry of Health is committed to improving the health of the Rwandan people by strengthening the quality of health care and providing access to treatment through the health insurance scheme (Mutuelles de Santé).

The ministry also launched a community-based insurance scheme in the country. The scheme covers all services and medicine provided by the health centres to sick people as well as ambulance transport to the hospital.

The beneficiaries are required to contribute to the scheme. However, the government pays for the very poor people as well as other vulnerable groups who cannot manage to contribute to the insurance scheme.

Through the “Girinka programme”, the government has been able to reduce poverty and child malnutrition among poor rural families. This programme also known as “one cow per poor family” is a system by which each poor family is given one cow. It is aimed at improving their living conditions and giving them hope for survival.

This programme combines livestock and crop farming. The cows produce milk which is a source of nutrition for the family as well as income from the sale of surplus milk. The cows also provide organic manure used to fertilise the soil. As a result, this improves their livelihood through a more nutritious and balanced diet from milk, increased agricultural output through higher soil fertility and higher incomes.

The Rwandan government introduced the national human settlement policy, which came to be known as **“Imidugudu”**, in December 1996. This policy focused on group settlement as a way of solving the problem of land scarcity. It aimed at establishing specific residential areas in each village in efforts to promote proper land utilisation and the provision of basic services.

With the help of United Nations agencies such as the United Nations High Commissioner for Refugees (UNHCR) and a number of non-governmental organisations such as PREFER (Poverty Reduction Education Family Empowerment), the government then began building homes for the hundreds of thousands of people who were returning from exile after the war. Most beneficiaries were the vulnerable survivors of the genocide, many of whom were widows and orphans.

The programme since 1997 has been modified and extended to help the rural people more generally. This is aimed at bringing scattered households closer together in villages. The concept of Imidugudu was seen to offer many advantages to the population because of the fact that people would be living together in defined areas. This would make it much easier and more efficient for the government to provide social and economic services to the population.

Under this programme, the government focuses on the provision of services such as health, education, water and sanitation. The government also aims at providing roads and other communication networks, agricultural extension services and easy reach to markets. This would eventually encourage development in these locations.

Questions

1. After reading, make notes on the text using topic headings of the issues talked about in the text.
2. Briefly talk about other programmes the government has put in place to help in the provision of social services to the people.



Activity 3

Activity - Research

The table below shows a number of agencies involved in the provision of social services to Rwandan communities. You are advised to use the library and the internet to fill in the table by stating the kind of services provided by each provider and their source of funding. An example has been given to assist you in completing the table.

Social service provider	Services provided	Source of funds (money)
Government		
10,000 Women Programme		
Food and Agricultural Organisation (FAO)	Promoting agricultural production and ensuring food security in Rwanda. Provision of food relief during emergencies; poverty alleviation	Donations from international financial institutions such as the World Bank, individual volunteers, the private sector, charity organisations and national governments
United Nations Development Programme (UNDP)		
Care International Rwanda		
United States Agency for International Development (USAID)		
Hope and Homes for Children		
The United Nations Children's Fund (UNICEF)		



Activity 4

By now you should have noticed that provision of social services can be carried out by the government or non-governmental organisations or private institutions which supplement the government's efforts. In order for social services to reach the ordinary or common people, the government depends on local councils in communities to deliver the services. Therefore, the role of local council officials is very important in service delivery.

- (a) Your school will invite an official from the local council to come and talk to you about social service delivery. Listen to him or her.
- (b) You will have the opportunity to share ideas with the official.
- (c) You will also ask questions about the provision of social services in order to gain more knowledge about social service providers, the kind of services they provide and how they fund their activities.

Describing local government processes



Activity 1

- (a) How are local leaders in your community elected?
- (b) Explain some of the duties of local leaders in your community.
- (c) Is it important for the people in a community to get involved in administrative processes of their communities? Give reasons for your answer.
- (d) Describe some of the administrative processes that the people of your community participate in.



Activity 2

- Your school will invite an official from the local council to talk to you about the organisational / administrative structure of local government and the importance of local government processes such as voting and council meetings.
- You will have the opportunity to share ideas with the official.
- You should ask questions about the how administrative structures are formed right from the lowest level in village communities to the national level.

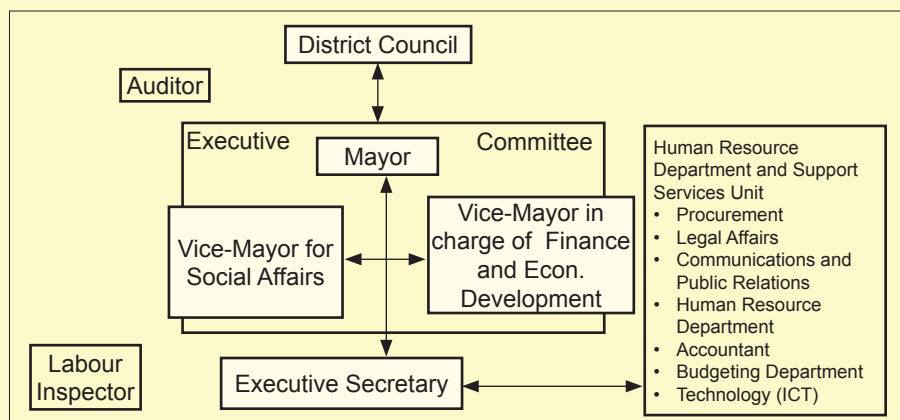
Talking about responsibilities



Activity 1

Discussion

- Carefully study the diagram below showing the organisational / administrative structure of a district local government in Rwanda.

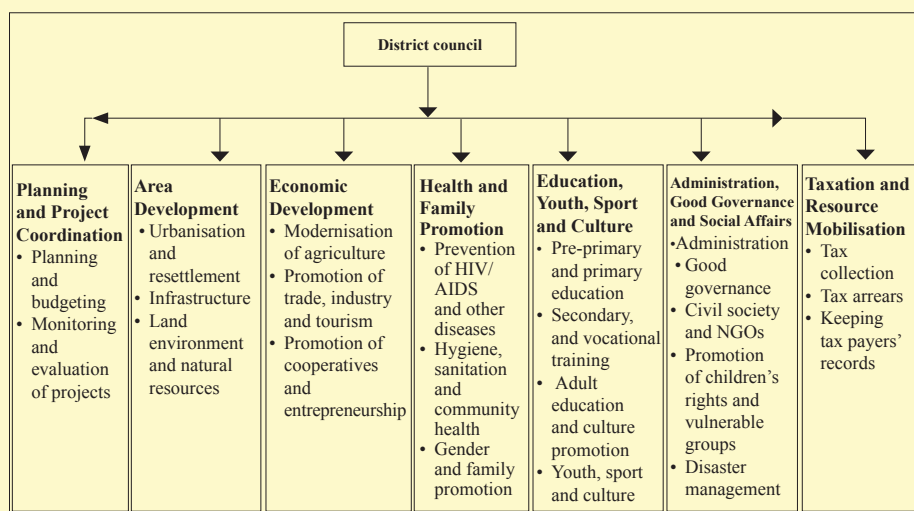


- (b) Draw a similar diagram showing the administrative structure of your school. You may need to consult your head teacher or any other teacher to guide you.
- (c) Compare your work for further discussion.



Activity 2

In Activity 1 above, you were shown the administrative structure of a district local government in Rwanda. The diagram below shows the process of service provision under the district local government structure through different departments. Study it carefully and answer the questions that follow.



- (a) According to the diagram above, the provision of social services starts with planning and budgeting. Why do you think this is necessary?
- (b) Of what importance are sport, leisure and culture in people's lives?
- (c) Explain the steps taken by the local government to promote agriculture in your area.
- (d) Why do you think collecting taxes is necessary in the provision of services?



Activity 3

Dialogue

Practice this dialogue before answering the questions that follow.

Gakwaya: Good afternoon, Keza.

Keza: Good afternoon, Gakwaya.

Gakwaya: Yesterday, I saw you walking across the road. Where were you coming from?

Keza: Oh! I was coming from the District Council headquarters.

Gakwaya: What had you gone to do there?

Keza: I had gone to attend a discussion organised by the Mayor involving other government officials.

Gakwaya: What was it about?

Keza: It was about sensitising people about the duties and responsibilities of the government and the citizens themselves towards the development of their communities and Rwanda as a whole.

Gakwaya: It must have been very interesting. I wish I had known. I would also have attended.

Keza: Sure, yes; it was not only interesting but also quite educative!

Gakwaya: Would you mind sharing with me what you learnt from there?

Keza: I don't mind at all. First and foremost, we were informed that we as citizens have the responsibility of keeping our environment clean. We also have the duty to protect, safeguard and promote the environment.

Gakwaya: But I thought that it is government that is responsible for protecting and safeguarding the environment.

Keza: The environment includes all the things around us, including the homes where we live. So some parts of the environment require our personal effort to protect and safeguard them. We don't always have to wait for the government to look after our homes.

- Gakwaya:** That is correct. But what about our environment such as forests and wetlands? Who is responsible for their protection?
- Keza:** Well, the government plays a very big role in protecting these. But we as citizens also have our part to play. For example, we can protect our forests by not cutting down trees. Wetlands such as swamps can be protected by not draining them.
- Gakwaya:** What are other roles and responsibilities of the government?
- Keza:** The government is responsible for providing health care to the citizens and other social services and necessities such as security, clean water, schools and roads.
- Gakwaya:** Is there any role played by citizens in the promotion of security of their communities and the country as a whole?
- Keza:** Definitely. Security is a very sensitive issue and so it can be best promoted through the involvement of everyone. All citizens have the duty to safeguard peace, security and democracy; and to participate in the defence of their motherland. Citizens also have the duty to participate in the development of the country.
- Gakwaya:** You really gained a lot of knowledge and understanding. Is there any chance that there will be such a discussion in future? I would certainly attend.
- Keza:** Yes. There is going to be another one in one month's time. I will remind you one week before it takes place.
- Gakwaya:** I will be very grateful. Goodbye for now.
- Keza:** Goodbye to you.

Exercise

- Other than the duties and responsibilities mentioned above, state the other responsibilities of:
(a) the government (b) the citizens

2. Explain the responsibilities of:
(a) parents
(b) children
3. (a) Why do you think it is not a good idea to encroach on wetlands?
(b) In which other ways can we ensure that our forests are not destroyed?
4. Explain how citizens contribute towards the promotion of peace and security in their country.
5. How does peace contribute to the development of your country?

C: Writing



Language structure



Activity 1

Gap filling

Complete these sentences using the words in the box below. A word may be used more than once.

can, may, have to

1. Ibe at home before dark because there are many thieves on the way.
2. Driving a vehicle be dangerous if you are not well trained.
3. You go for the trip if you have the money to pay.
4. I not go to town tomorrow if it rains.
5. My son speak three languages: English, French and Swahili.
6. The head teacher says we enter the office now.
7. Peter have forgotten his phone at home.
8. We study hard if we want to pass examinations.
9. She go back home early because her child is sick.
10. You carry your umbrella. It is likely to rain today.



Activity 2

Rearrange the following sentences and use them to write a paragraph.

1. He is in my class and he is very bright.
2. I talked to my father since he works with an organisation that sponsors children's education.
3. I met him the next day and took him to our home.
4. One day I was going to school.
5. My father then agreed to talk to his bosses about the boy's problem.
6. He told me to bring the boy to our home.
7. I met a poor boy who looked miserable.
8. He told me that he loved to go to school, too.
9. After talking to him, my father sympathised with the boy's situation.
10. Fortunately my father's bosses accepted to pay the boy's fees.



Activity 3

Multiple choice

Choose the correct answer from the alternatives given.

1. She has friends than me.
(a) many (b) more (c) much
2. We saw people in Kigali City.
(a) more (b) much (c) many
3. Rudasingwa doesn't have friends at school.
(a) many (b) more (c) much
4. There are schools here than in my village.
(a) many (b) more (c) much

5. There are too questions in this exercise!
(a) many (b) much (c) very
6. I am sure I did not make mistakes in the examination.
(some/any)
7. I have money, so I will buy you lunch. (any/some)
8. That is very kind of you because I don't have money
on me. (some/any)
9. I went to the butchery but I did not buy meat. It was very
expensive. (some/any)
10. Do you have any food left? No, I do not have (some/any)
11. There are people here than in the centre of the city.
(less/fewer)
12. children are studying French these days. (Less/Fewer)
13. There are jobs than the number of people applying for
them. (less/fewer)
14. We closed the business because there were..... customers
than we had expected. (less/fewer)
15. We witness accidents these days because of tougher
laws. (less/fewer)
16. of the soldiers who went on patrol has come back.
(No/None)
17. of his friends would help him. (No/None)
18. Have you any newspapers? I am sorry, sir, but there are
left. (some/none)
19. She wanted some sugar but there was..... in the house. (no/
none)
20.of them has come back. (Some/None)

Practice exercise

1. Write a composition comparing a nearby town with your home village.
If you live in a town, compare your home town with a nearby village.
Arrange the composition as follows:
Paragraph 1: How big is it? What is found there?
Paragraph 2: What good things are found where you live?
Paragraph 3: What problems are found there?
Paragraph 4: What changes would you like to see in your town or village?
2. Read the following poem and answer the questions that follow

Home sweet home

Whether it be a bungalow
All built with red burnt bricks
Roofed with beams and iron sheets
With levelled floor all covered in tiles
Still it be my home sweet home

Whether it be a little hut
All walls smeared with mud and clay
Thatched with grass, straw and poles
With hard beaten earthen floor
Still it be my home sweet home

(Ivan Tuhairwe 2016)

Exercise

1. How many types of houses are described in the poem?
2. Compare the top covering of each house.
3. Point out one similarity of the houses.
4. Explain where these houses would most likely be found. Give reasons for your view.
5. Which of the houses would you prefer to stay in? Why?



Unit 2: Climate Change and Wildlife Protection

Introductory activity: Read the following text and answer questions below:

Impact of climate change on human health

The impacts of climate change include warming temperatures, changes in **precipitation**, increases in the frequency or intensity of some extreme weather events, and rising **sea levels**. These impacts threaten our health by affecting the food we eat, the water we drink, the air we breathe, and the weather we experience.

The **severity** of these health risks will depend on the ability of public health and safety systems to address or prepare for these changing **threats**, as well as factors such as an individual's behavior, age, gender, and economic status. Impacts will vary based on where a person lives, how sensitive they are to health threats, how much they are exposed to climate change impacts, and how well they and their community are able to adapt to change.

People in developing countries may be the most **vulnerable** to health risks globally, but climate change poses significant threats to health even

in wealthy nations such as the United States. Certain populations, such as children, pregnant women, older adults, and people with low incomes, face increased risks.

Warmer average temperatures will lead to hotter days and more frequent and **longer heat waves**. These changes will lead to an increase in heat-related deaths in the United States—reaching as much as thousands to tens of thousands of additional deaths each year by the end of the century during summer months.

These deaths will not be **offset** by the smaller reduction in cold-related deaths projected in the winter months. However, adaptive responses, such as wider use of air conditioning, are expected to reduce the projected increases in death from extreme heat.

Exposure to extreme heat can lead to **stroke** and **dehydration**, as well as cardiovascular, respiratory, and **cerebrovascular disease**. Excessive heat is more likely to affect populations in northern latitudes where people are less prepared to cope with excessive temperatures. Certain types of populations are more vulnerable than others: for example, outdoor workers, student athletes, and homeless people tend to be more exposed to extreme heat because they spend more time outdoors.

Additionally, younger children, pregnant women, older adults, and people with certain medical conditions are less able to regulate their body temperature and can therefore be more vulnerable to extreme heat.

Comprehension questions

1. Identify different impacts of climate change.
2. Explain how climate change impacts affect human health.
3. Which factors increase the severity of the climate change impacts on human health?
4. What are the consequences of extreme climate changes? How can these consequences be averted?
5. What are different diseases caused by extreme heat?
6. What group of people that are mostly affected by excessive heat?



Vocabulary

Use each of the following words in your own sentence.

- a) Precipitation
- b) sea levels
- c) severity
- d) threats
- e) vulnerable
- f) longer heat waves
- g) offset
- h) stroke
- i) dehydration
- j) cerebrovascular disease



Application activity

Debate on the following motion:

Areas with cold climate favors health more than those with hot climate.



Language use: Describing climate change

Describing climate change



Activity 1

1. Work with a classmate.
2. Look outside your classroom. In turns describe the weather you see. Does the weather sometimes change?
3. Are there times when you experience very hot weather as opposed to cold weather?
4. What do you think brings about these weather changes?



Activity 2

Read the passage below carefully

Climate change is already beginning to transform life on Earth. Around the globe, seasons are shifting, temperatures are increasing and sea levels are rising. And meanwhile, our planet must still supply us – and all living things – with air, water, food and safe places to live. If we don't act now, climate change will rapidly alter the lands and waters we all depend upon for survival, leaving our children and grandchildren with a very different world.

Heat-trapping gases emitted by power plants, automobiles, deforestation and other sources are warming up the planet. In fact, the five hottest years on record have all occurred since 1997 and the 10 hottest since 1990, including the warmest years on record – 2005 and 2010.

Photo 1



A dried-up savannah grassland due to extremely hot temperatures

Photo 2



Dry lake bed at Carson Lake in Nevada, United States

Climate Change Impacts: Higher Temperatures

High temperatures are to blame for an increase in heat-related deaths and illness, rising seas, increased storm intensity, and many of the other dangerous consequences of climate change.

During the 20th century, the Earth's average temperature rose one degree Fahrenheit to its highest level in the past four centuries – believed to be the fastest rise in a thousand years.

Scientists project that if emissions of heat-trapping carbon emissions aren't reduced, average surface temperatures could increase by 3 to 10 degrees Fahrenheit by the end of the century.

A one-degree increase may be found in one place, a 12-degree increase in another place, and yet other areas may become much colder.

The planet's oceans are also warming, which is causing dangerous consequences such as stronger storms, coral bleaching and rising seas.

Exercise

Answer these questions about the passage

1. Cite examples from the passage to explain what you understand by **climate change**.
2. Explain how climate change alters the land.
3. How are industrial processes responsible for climate change?
4. Explain what carbon emissions are and describe what would happen if heat-trapping carbon emissions are not reduced.
5. Look at photograph 2 of a lake that dried. What does this situation teach you about humans checking their negative responsiveness to the environment?
6. Some of the most dangerous consequences of climate change are mentioned in the passage. Which one will have the most serious impact on our lives, or on the places we care about?



Activity 3

Vocabulary practice

Identify new words from the passage you are not familiar with. Find their meaning either from a dictionary or ask your Geography teachers. Form your own sentences using the words and phrases to show that you have understood their meaning.

Describing climate change

In the previous lesson, in the reading section, we learnt about climate change and concluded that if we do not check our human actions towards the environment, we are headed for doom.



Activity 4

Discussion

Share your opinions about these questions.

1. Explain the effects you think climate change can cause on our natural resources like land, forests, animals, the air we breathe and our water resources.
2. Suggest what you think should be done to protect these resources.
3. How about humans and other lives in general; what do you predict will happen to us as a result of climate change?

Choose a secretary to present your findings to the class for further discussion and comparison of your views.

Climate Change Impacts: Changing Landscapes



Activity 5

Study the photograph carefully and use it to explain the effect of climate change on the land. What consequences will follow in relation to food supply and human survival?

Photo 3



A farmer struggling to till a hard piece of land to grow food



Activity 6

Practice, and act out the dialogue for the class.

Justine: Hello Bruce. I'm most concerned that changing temperatures are causing vegetation shifts and conservation challenges.

Bruce: Indeed. Rising temperatures and changing patterns of rain and snow are forcing trees and plants around the world to move towards polar regions and up mountain slopes.

Justine: What do you predict will be the outcome of these drastic changes?

Bruce: These vegetation shifts will undermine much of the work the conservation community has accomplished to date, with the potential to permanently change the face of conservancy preserves, local land trusts, and even our national parks.

Justine: That's for real because in our geography lessons today we were looking at how in the tundra, thawing permafrost will allow shrubs and trees to take root. In the Great Plains of the United States, grasslands will likely become forests. And New England's fiery fall foliage will eventually fade as maple and beech forests shift north towards cooler temperatures.

Bruce: The case is no different here in Africa; the average temperature of the earth has risen in the last decade. Since the last century, the snow on Mount Kilimanjaro has tremendously reduced. The temperatures have risen. It is really a pity!

- Justine:** And I guess wildlife has migrated to other areas.
- Bruce:** Oh, that is for sure! As plant communities try to adjust to the changing climate by moving towards cooler areas, the animals that depend on them will be forced to move. Development and other barriers may block the migration of both plants and animals.
- In fact, some species that may not adapt to the new environment will die.
- Justine:** Oh no! That is absurd. Our treasured wildlife is at risk! What should we do to rectify this precarious situation?



Activity 7

Composition

Write an essay that answers the last statement by Justine on what should be done to solve the climate change problems in the dialogue. Exchange your essays for comparison and discussion of your views.

Predicting the effects of climate change



Activity 1

Work together

From all the passages you have so far read in this unit about climate change, give your prediction about what might or could occur in the future if global warming persists.



Activity 2

Read the passage below

Climate Change Impacts: Rising Seas, Higher Sea Levels

The rise of sea levels due to climate change could displace tens of millions of people.

As the Earth heats up, sea levels rise because warmer water takes up more room than colder water, a process known as thermal expansion. Melting glaciers compound the problem by dumping even more fresh water into the oceans.



Floods as a result of warm temperatures

Rising seas threaten to inundate low-lying areas and islands, threaten dense coastal populations, erode shorelines, damage property and destroy ecosystems such as mangroves and wetlands that protect coasts against storms.

Sea levels have risen between four and eight inches in the past 100 years. Current projections suggest that **sea levels could continue to rise between 4 inches and 36 inches over the next 100 years.**

Worldwide, **approximately 100 million people live within three feet of the sea level.** The rise of the sea level associated with climate change could displace tens of millions of people in low-lying areas – especially in developing countries.

Inhabitants of some small island countries that rest barely above the existing sea level are already abandoning their islands, some of the world's first climate change refugees.

Climate Change Impacts: Increased Risk of Drought, Fire, and Floods



Climate change is making floods, fires and droughts more frequent and severe

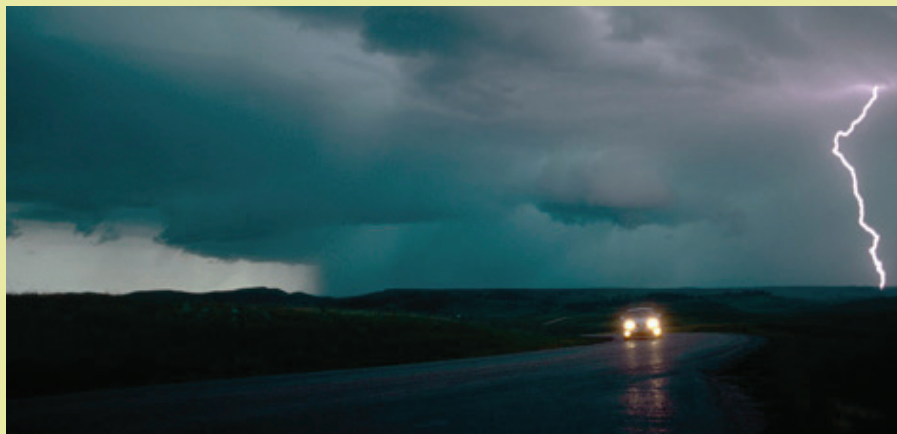
Climate change is intensifying the circulation of water on, above and below the surface of the Earth — causing drought and floods to be more frequent, severe and widespread.

Higher temperatures increase the amount of moisture that evaporates from land and water, leading to drought in many areas. Lands affected by drought are more vulnerable to flooding once rain falls.

As temperatures rise globally, droughts will become more frequent and more severe, with potentially devastating consequences for agriculture, water supply and human health. This phenomenon has already been observed in some parts of Asia and Africa, where droughts have become longer and more intense.

Hot temperatures and dry conditions also increase the likelihood of forest fires.

Climate Change Impacts: Stronger Storms and Hurricanes



Climate change will cause storms, hurricanes and tropical storms to become more intense

Scientific research indicates that climate change will cause hurricanes and tropical storms to become more intense — lasting longer, unleashing stronger winds, and causing more damage to coastal ecosystems and communities.

Scientists point to higher ocean temperatures as the main culprit, since hurricanes and tropical storms get their energy from warm water. As sea surface temperatures rise, developing storms will contain more energy.

At the same time, other factors such as rising sea levels, disappearing wetlands, and increased coastal development threaten to intensify the damage caused by hurricanes and tropical storms.

Climate Change Impacts: Heat-Related Illness and Disease

Climate change brings health risks to the world's most vulnerable communities.

As temperatures rise, so do the risks of heat-related illness and even death for the most vulnerable human populations.

In 2003, for example, extreme heat waves caused more than 20,000 deaths in Europe and more than 1,500 deaths in India. Scientists have linked the deadly heat waves to climate change and warn of more to come.

In addition to heat-related illness, climate change may increase the spread of infectious diseases, mainly because warmer temperatures allow disease-carrying insects, animals and microbes to survive in areas where they were once thwarted by cold weather.

Diseases and pests that were once limited to the tropics — such as mosquitoes that carry malaria — may find hospitable conditions in new areas that were once too cold to support them.

The World Health Organisation (WHO) estimates that climate change may have caused more than 150,000 deaths in the year 2000 alone, with an increase in deaths likely in the future.

Climate Change Impacts: Economic Loss and Damage



Climate change is already affecting economies around the world

Declining crop yields could put hundreds of thousands of people at risk for starvation.

Climate change is affecting businesses and economies at home and around the world.

If action is not taken to curb global carbon emissions, climate change could cost between 5 and 20 percent of the annual global gross domestic product, according to a British government report. In comparison, it would take 1 percent of GDP to lessen the most damaging effects of climate change, the report says.

These global costs will be felt by local communities and businesses:

- In southern New England lobster catches have plummeted because of heat stresses and growing parasite threats due to rising sea temperatures.
- Ski resorts located at the lower altitudes of the Swiss Alps have difficulty obtaining bank loans because of declining snow.
- In Lake Erie, climate change may significantly lower lake levels, altering shoreline habitats and costing millions for the relocation of ports and shore infrastructure.

Globally, more intense hurricanes and downpours could cause billions of dollars in damage to property and infrastructure. Declining crop yields due to prolonged drought and high temperatures, especially in Africa, could put hundreds of thousands of people at risk of starvation.

High sea temperatures also threaten the survival of coral reefs, which generate an estimated \$375 billion per year in goods and services.

Model auxiliary verbs

Using: *May, could, might*



Activity 3

Identify and write modal sentences from the passage predicting what the future will be like if climate change persists. Compare your sentences with other classmates.

For example

It *could be* more difficult to grow crops. There *might be* more droughts.

Describing change in wildlife populations



Activity 1

Discuss this question

If animals migrate to other areas because of climate change, either hot or cold conditions in which they have not lived before, how does this situation affect us as human beings?



Listening practice



Activity 2

(Text books closed) Your teacher will read a passage.

Express your opinions and answer the questions that follow.

One-fourth of the Earth's species could be headed for extinction by 2050 due to climate change.

Rising temperatures are changing weather and vegetation patterns across the globe, forcing animal species to migrate to new, cooler areas in order to survive.

The rapid nature of climate change is likely to exceed the ability of many species to migrate or adjust. **Experts predict that one-fourth of the Earth's species will be headed for extinction by 2050** if the warming trend continues at its current rate.

Today, animals are fleeing global warming much faster than they were less than a decade ago. A study found about 2,000 species are moving north at a rate of more than 15 feet a day. Climate change appears to be forcing many of the world's creatures to migrate to more favourable locales up to three times faster than previously believed, a study said on Thursday.

Climate Change Impacts: Wildlife at Risk



Extinction of animal species caused by high temperatures

Researchers compiled past studies on species migration and combined them into a meta-analysis that showed a clear trend towards cooler climates, with the fastest moves in places where heating was most intense. “These changes are equivalent to animals and plants shifting away from the equator at around 20 centimetres per hour, for every hour of the day, for every day of the year,” said project leader Chris Thomas, biology professor at the University of York.

“This has been going on for the last 40 years and is set to continue for at least the rest of this century.”

The study, which appears in the journal *Science*, was described by York ecology professor and co-author Jane Hill as “a summary of the state of world knowledge about how the ranges of species are responding to climate change”.

“Our analysis shows that rates of response to climate change are two or three times faster than previously realised,” she said.

The data came from studies of birds, mammals, reptiles, insects, spiders and plants in Europe, North America, Chile, Malaysia, and South Africa’s Marion Island.

By grouping the studies together and analysing their results, researchers found for the first time a link between how hot it was getting and where organisms were moving.

“This research shows that it is global warming that is causing species to move towards the poles and to higher elevations,” said lead author I-Ching Chen, now a researcher at the Academia Sinica in Taiwan.

“We have for the first time shown that the amount by which the distributions of species have changed is correlated with the amount the climate has changed in that region.”

Previous studies have suggested that some species are at risk of extinction due to their change in habitat, but this study did not delve into which species might be most in peril.

Instead, researchers said they hoped the analysis would give a more accurate picture of the changes going on across the planet.

“Realisation of how fast species are moving because of climate change indicates that many species may indeed be heading rapidly towards extinction, where climatic conditions are deteriorating,” said Thomas.

“On the other hand, other species are moving to new areas where the climate has become suitable; so there will be some winners as well as many losers.”

Exercise

Answer these questions about the passage you have listened to.

1. Explain the effects of rising temperatures on animal species.
2. What will happen to most of the Earth's species by the year 2050 if the warming trend continues?
3. Suggest mitigation measures to reduce the problem in question 3.
4. Compare the mobility levels of animal species today with a decade ago. Why has this sudden change in the mobility trend happened?
5. Describe the results of research findings scientists found by grouping the studies together and analysing their data.
6. Account for the risk to extinction of some species according to previous studies.



Activity 3

Discussion

1. Choose a secretary to report your findings about the question below to the class.
2. As a learner concerned about environmental and natural resources conservation in Rwanda, suggest solutions which you think can avert the concerns described in the passage you listened to. Compare your findings with other members.



Activity 4

Vocabulary study

- (a) Now open your textbooks. Identify the words in the box below from the passage.

species	extinction	trend	fleeing
migrate	organisms	elevations	correlated
habitant	peril	rapidly	deteriorating

- (b) Read the sentences in which they are used.
 (c) Share their meanings with a classmate.
 (d) Form your own sentences using each word to show that you have understood their meanings.

Present perfect continuous



Activity 1

Work with a classmate

Look at this statement taken from the passage you listened to. Explain the time the action is being performed.

“This has been going on for the last 40 years and is set to continue for at least the rest of this century.”

In turns discuss its meaning with a classmate.



Activity 2

Read

Read these sentences taken from the reading passage and re-write them using the present perfect continuous tense as in the example above. Please do not change their meaning. Compare your answers with other classmates.

1. One-fourth of the Earth's species could be headed for extinction due to climate change.
2. Rising temperatures are changing weather and vegetation patterns across the globe, forcing animal species to migrate to new, cooler areas in order to survive.
3. Experts predict that one-fourth of the Earth's species will be headed for extinction by 2050 if the warming trend continues at its current rate.
4. Today, animals are fleeing global warming much faster than they were less than a decade ago.
5. Climate change appears to be forcing many of the world's creatures to migrate to more favourable locales up to three times faster than previously believed, a study said Thursday.
6. Researchers compiled past studies on species migration and combined them into a meta-analysis that showed a clear trend towards cooler climates, with the fastest moves in places where heating was most intense.
7. These changes are equivalent to animals and plants shifting away from the equator at around 20 centimetres per hour, for every hour of the day, for every day of the year.
8. Our analysis shows that rates of response to climate change are two or three times faster than previously realised.
9. Previous studies have suggested that some species are at risk of extinction due to their change in habitat, but this study did not delve into which species might be most in peril.
10. Species are moving to new areas where the climate has become suitable.

Describing causes



Activity 1

Composition

Use some of the information provided in the passages you read in this unit to write a descriptive composition about the causes of climate change. Your composition should not be less than 500 words.

Remember to give a title to your composition, develop the body and conclude it. Please observe the paragraph structures whenever you are introducing a new idea.

Describing contrast

Using 'although', 'despite', 'in spite of'

Read these sentences carefully and discuss their meaning with a partner.

- a) Although species are declining, the gorilla population is increasing.
- b) The snow on Kilimanjaro has recently increased despite the global increase in temperature.



Activity 1

Rewrite the same sentences using:

- (a) Despite
- (b) In spite of



Activity 2

Matching beginnings and endings

Rewrite the following sentences as instructed without changing their meaning.

1. The climate change is already beginning to transform life on earth, but if we are cautious in our activities, we can reverse the situation. (*use: 'although'*)
2. Seasons are shifting and temperatures are increasing, but if industries stop polluting the air, gradually normal temperature conditions can be realised. (*Begin: Despite.....*)
3. We depend on forests for survival, but we use them faster than we replace them. (*Use: In spite of*).
4. Industrialists are always warned about the dangers of dumping refuse in our water sources, but some do not listen. (*Start: Despite.....*)

5. Scientists have warned that we shall all perish from the surface of the Earth. Some people do not listen to them. (**Begin: Although.....**)
6. The vegetation cover continues disappearing and animals dying. Poachers continue to kill game or wildlife. (**Use ‘despite’**)
7. We try our best to plant some trees, but temperatures continue rising! (**Use ‘in spite’**)
8. Rising temperatures are changing weather and vegetation patterns across the globe. Some animals adapt to the new climate conditions. (**Use ‘although’**)
9. Although some species have completely perished, (**Complete the sentence**)
10.despite the fact that sea levels have risen. (**Complete the sentence**).
11. There is lots of drought and floods, but the people somehow manage to survive. (**Use ‘although’**)
12. There is little rainfall. We plant drought resistant crops. (**Join the sentences in to one using ‘despite’**)
13. We have witnessed minimal temperature changes. This does not guarantee that we could be affected by drought related illnesses. (**Begin: In spite.....**)
14. Scientific research indicates that climate change will cause hurricanes and tropical storms to become more intense, but we should stay in our communities. (**Use ‘despite’**)
15. Extreme heat waves caused more than 20,000 deaths in Europe and more than 1,500 deaths in India. Surprisingly, people still pollute the environment. (**Use ‘Although’**)



Activity 3

Form five sentences using ‘*although*’, ‘*despite*’, and ‘*in spite of*’ about climate change. Compare your sentences with those of other classmates.

Describing wildlife protection



Activity 1

Research and report writing

Visit any Non-government Organisation or governmental body concerned with protecting our environment. Inquire for information regarding the steps the government is taking to conserve our environment. Write down notes and then present a full report on your research. Compare your reports with those of your classmates. For guidelines on how to write a report, refer to your General Studies and Communication Skills Text Book, Unit 9: Writing Official Documents and Mass Media for Senior Five by Fountain Publishers.

Making suggestions about preserving the environment

Using 'must', 'ought'



Activity 1

Discussion

Discuss the measures that we should take in order to preserve our environment. Write sentences about those measures using '**must**' and '**ought**'. Compare your answers with those of other groups.

For example

We **must** use bicycles more instead of cars.

We **ought** to use fewer fossil fuels.



Unit 3: Traditional Family Life

Introductory activity: Read the following text and answer questions below:

Health diet

What is a healthy diet?

Eating a healthy diet is not about strict limitations, staying unrealistically thin, or **depriving** yourself of the foods you love. Rather, it's about feeling great, having more energy, improving your health, and **boosting** your mood.

Healthy eating doesn't have to be overly complicated. If you feel **overwhelmed** by all the conflicting nutrition and diet advice out there, you're not alone. It seems that for every expert who tells you a certain food is good for you, you'll find another saying exactly the opposite. The truth is that while some specific foods or nutrients have been shown to have a beneficial effect on mood, it's your overall dietary pattern that is most important. The **cornerstone** of a healthy diet should be to replace processed food with real food whenever possible.

Eating food that is as close as possible to the way nature made it can make a huge difference to the way you think, look, and feel.

The fundamentals of healthy eating

While some extreme diets may suggest otherwise, we all need a balance of protein, fat, carbohydrates, fiber, vitamins, and minerals in our diets to sustain a healthy body. You don't need to eliminate certain categories of food from your diet, but rather select the healthiest options from each category.

Protein gives you the energy to get up and go—and keep going—while also supporting mood and cognitive function. Too much protein can be harmful to people with kidney disease, but the latest research suggests that many of us need more high-quality protein, especially as we age. That doesn't mean you have to eat more animal products—a variety of plant-based sources of protein each day can ensure your body gets all the essential protein it needs. Most animal sources of protein, such as meat, poultry, fish, eggs, and dairy, deliver all the amino acids your body needs, while plant-based protein sources such as grains, beans, vegetables, and nuts often lack one or more of the essential amino acids.

Fat. Not all fat is the same. While bad fats can wreck your diet and increase your risk of certain diseases, good fats protect your brain and heart. In fact, healthy fats—such as omega-3s—are vital to your physical and emotional health. Including more healthy fat in your diet can help improve your mood, boost your well-being, and even trim your **waistline**.

What are dietary fats?

Fat is a type of nutrient, and just like protein and carbohydrates, your body needs some fat for energy, to absorb vitamins, and to protect your heart and brain health. For years we've been told that eating fat will add inches to your waistline, raise cholesterol, and cause a **myriad** of health problems. But now we know that not all fat is the same.

“Bad” fats, such as artificial **trans fats** and **saturated fats**, are guilty of the unhealthy things all fats have been blamed for—weight gain, clogged arteries, an increased risk of certain diseases, and so forth. But “good” fats such as unsaturated fats and omega-3 fatty acids have the opposite effect.

In fact, healthy fats play a huge role in helping you manage your moods, stay on top of your mental game, fight fatigue, and even control your weight.

NB: Saturated fat occurs naturally in red meat and dairy products. It's also found in baked goods and fried foods. Trans fat occurs naturally in small amounts in red meat and dairy products. Trans fat can also be manufactured by adding hydrogen to vegetable oil.

Dietary fat and cholesterol

Dietary fat plays a major role in your cholesterol levels. Cholesterol is a fatty, wax-like substance that your body needs to function properly. In and of itself, cholesterol isn't bad. But when you get too much of it, it can have a negative impact on your health. As with dietary fat, there are good and bad types of cholesterol.

- High-Density Lipoprotein (HDL) cholesterol is the “good” kind of cholesterol found in your blood.
- Low-Density Lipoprotein (LDL) cholesterol is the “bad” kind.
- The key is to keep LDL levels low and HDL high, which may protect against heart disease and stroke.
- Conversely, high levels of LDL cholesterol can clog arteries and low HDL can be a marker for increased cardiovascular risk.

Rather than the amount of cholesterol you eat, the biggest influence on your cholesterol levels is the type of fats you consume. So instead of counting cholesterol, it's important to focus on replacing bad fats with good fats.

Healthy or “good” fats

Monounsaturated fats and polyunsaturated fats are known as the “good fats” because they are good for your heart, your cholesterol, and your overall health. These fats can help to:

- Lower the risk of heart disease and stroke.
- Lower bad LDL cholesterol levels, while increasing good HDL.
- Prevent abnormal heart rhythms.
- Lower **triglycerides** associated with heart disease and fight **inflammation**.
- Lower blood pressure.
- Prevent **atherosclerosis** (hardening and narrowing of the arteries).

Adding more of these healthy fats to your diet may also help to make you feel more satisfied after a meal, reducing hunger and thus promoting weight loss.

Monounsaturated fat – good sources include:

- Olive, canola, peanut, and sesame oils
- Avocados
- Olives
- Nuts (almonds, peanuts, macadamia, hazelnuts, pecans, cashews)
- Peanut butter

Polyunsaturated fat – good sources include:

- Sunflower, sesame, and pumpkin seeds
- Flaxseed
- Walnuts
- Fatty fish (salmon, tuna, mackerel, herring, trout, sardines) and fish oil
- Soybean and safflower oil
- Soymilk
- Tofu

Unhealthy or “bad” fats

Trans fat. Small amounts of naturally occurring trans fats can be found in meat and dairy products but it's artificial trans fats that are considered dangerous. This is the worst type of fat since it not only raises bad LDL cholesterol but also lowers good HDL levels. Artificial trans fats can also create inflammation, which is linked to heart disease, stroke, and other chronic conditions and contributes to insulin resistance, which increases your risk of developing Type 2 diabetes.

Trans fat – primary sources include:

- Commercially-baked pastries, cookies, doughnuts, muffins, cakes, pizza dough
- Packaged snack foods (crackers, microwave popcorn, chips)
- Stick margarine, vegetable shortening
- Fried foods (French fries, fried chicken, chicken nuggets, breaded fish)
- Anything containing hydrogenated or partially hydrogenated vegetable oil, even if it claims to be “trans fat-free”

Saturated fat. While not as harmful as trans fat, saturated fat can raise bad LDL cholesterol and too much can negatively impact heart health, so it's best consumed in moderation. While there's no need to cut out all saturated fat from your diet, most nutrition experts recommend limiting it to 10% of your daily calories.

Saturated fat – primary sources include:

- Red meat (beef, lamb, pork)
- Chicken skin
- Whole-fat dairy products (milk, cream, cheese)
- Butter
- Ice cream
- Lard
- Tropical oils such as coconut and palm oil

Fiber. Eating foods high in dietary fiber (grains, fruit, vegetables, nuts, and beans) can help you stay regular and lower your risk for heart disease, stroke, and diabetes. It can also improve your skin and even help you to lose weight. It may even help prevent colon cancer. Many different studies have highlighted how eating a diet high in fiber can boost your immune system and overall health

High-Fiber Foods

What is fiber?

Fiber, also known as roughage, is the part of plant-based foods (grains, fruits, vegetables, nuts, and beans) that the body can't break down. It passes through the body undigested, keeping your digestive system clean and healthy, easing bowel movements, and flushing cholesterol and harmful carcinogens out of the body.

Fiber comes in two varieties: insoluble and soluble.

Insoluble fiber does not dissolve in water. It is the bulky fiber that helps to prevent constipation, and is found in whole grains, wheat cereals, and vegetables such as carrots, celery, and tomatoes.

Soluble fiber dissolves in water and helps control blood sugar levels and reduce cholesterol. Good sources include barley, oatmeal, beans, nuts, and

fruits such as apples, berries, citrus fruits, and pears.

Many foods contain both soluble and insoluble fiber. In general, the more natural and unprocessed the food, the higher it is in fiber. There is no fiber in meat, dairy, or sugar. Refined or “white” foods, such as white bread, white rice, and pastries, have had all or most of their fiber removed.

The health benefits of fiber

Digestive health. Dietary fiber normalizes bowel movements by **bulking up** stools and making them easier to pass. This can help relieve and prevent both constipation and diarrhea. Eating plenty of fiber can also reduce your risk for diverticulitis (inflammation of the intestine), hemorrhoids, gallstones, kidney stones, and provide some relief for irritable bowel syndrome (IBS). Some studies have also indicated that a high-fiber diet may help to lower gastric acid and reduce your risk for gastroesophageal reflux disorder (GERD) and ulcers.

Diabetes. A diet high in fiber—particularly insoluble fiber from cereals—can lower your risk for type 2 diabetes. If you already have diabetes, eating soluble fiber can slow the absorption of sugar and improve your blood sugar levels.

Cancer. There is some research that suggests eating a high-fiber diet can help prevent **colorectal cancer**, although the evidence is not yet conclusive. Diets rich in high-fiber foods are also linked to a lower risk for other common digestive system cancers, including stomach, mouth, and pharynx.

Skin health. When yeast and fungus are excreted through the skin, they can trigger outbreaks or acne. Eating fiber, especially psyllium husk (a type of plant seed), can flush toxins out of your body, improving the health and appearance of your skin.

Heart health. Fiber, particularly soluble fiber, is an important element of any heart-healthy diet. Eating a diet high in fiber can improve cholesterol levels by lowering LDL (bad) cholesterol. A high fiber intake can also reduce your risk for metabolic syndrome, a group of risk factors linked to **coronary heart disease, diabetes, and stroke**. Fiber can also help to lower blood pressure, reduce inflammation, improve levels of HDL (good)

cholesterol, and shed excess weight around the abdomen.

Fiber and weight loss

By regulating your blood sugar levels, it can help maintain your body's fat-burning capacity and avoid insulin spikes that leave you feeling drained and craving unhealthy foods.

Eating plenty of fiber can move fat through your digestive system at a faster rate so that less of it can be absorbed.

When you fill up on high-fiber foods such as fruit, you'll also have more energy for exercising.

Calcium. As well as leading to **osteoporosis**, not getting enough calcium in your diet can also contribute to anxiety, depression, and sleep difficulties. Whatever your age or gender, it's vital to include calcium-rich foods in your diet, limit those that deplete calcium, and get enough magnesium and vitamins D and K to help calcium do its job. In general rich sources of magnesium are greens, nuts, seeds, dry beans, whole grains, wheat germ, wheat and oat bran.

Sources of calcium:

- milk, cheese and other dairy foods.
- green leafy vegetables – such as curly kale, okra but not spinach (spinach does contain high levels of calcium but the body cannot digest it all)
- soya drinks with added calcium.
- bread and anything made with fortified flour.

What are the health benefits of calcium?

Calcium is a key nutrient that many of us overlook in our diets. Almost every cell in the body uses calcium in some way, including the nervous system, muscles, and heart. Your body uses calcium to build healthy bones and teeth, keep them strong as you age, send messages through the nervous system, help your blood clot, your muscles contract, and regulate the heart's rhythm.

If you don't get enough calcium in your diet, your body will take it from your bones to ensure normal cell function, which can lead to weakened

bones or osteoporosis. Calcium deficiency can contribute to mood problems such as irritability, anxiety, depression, and difficulty sleeping.

Despite these vital functions, many of us are confused about calcium and how to best protect our bones and overall health. How much calcium should you get? Where should you get it? And what's the deal with vitamin D, magnesium, and other nutrients that help calcium do its job? This confusion means that many of us are not getting the recommended daily amount of calcium and approximately one in two women (and about one in four men) over the age of 50 will break a bone due to osteoporosis.

Getting enough calcium in your diet is not just important for older people. It's also vital for children, teens, and young adults since we continue building bone mass into our mid-20s. From then on, we can lose bone mass without sufficient calcium in our diets.

The calcium and osteoporosis connection

Osteoporosis is a “silent” disease characterized by loss of bone mass. Due to weakened bones, fractures become commonplace, which leads to serious health risks. People with osteoporosis often don't recover after a fall and it is the second most common cause of death in women, mostly those aged 60 and older. Men are also at risk of developing osteoporosis, but typically 5 to 10 years later than women. For most people, osteoporosis is preventable, and getting enough calcium in your diet is the first place to start.

Carbohydrates are one of your body's main sources of energy. But most should come from complex, unrefined carbs (vegetables, whole grains, fruit) rather than sugars and refined carbs. Cutting back on white bread, pastries, starches, and sugar can prevent rapid spikes in blood sugar, **fluctuations** in mood and energy, and a build-up of fat, especially around your waistline.

Adapted from <https://www.helpguide.org/articles/healthy-eating/healthy-eating.htm> retrieved on 8th September 2021.

Comprehension questions

1. What do you understand by “eating a healthy diet”?
2. Identify different types of nutrients found in various food types.
3. What are the fundamentals of healthy eating?
4. Explain the difference between good and bad fat; good and bad cholesterol.



Vocabulary practice

Use each of the following words in your own sentence.

1. depriving
2. boosting
3. overwhelmed
4. cornerstone
5. amino acids
6. artificial trans fats
7. saturated fats
8. triglycerides
9. inflammation
10. atherosclerosis
11. colon cancer
12. bulking up
13. colorectal cancer
14. yeast
15. metabolic syndrome
16. coronary heart disease
17. diabetes
18. stroke
19. osteoporosis
20. fluctuations

Application

Debate on the following motion:

Only rich people can eat healthy food.

Describing one's extended family



Language use



Activity 1

Discussion

Discuss these questions.

1. Share with your group members the people who live in your family.
2. Who is the head of your family and what are his or her roles?
3. Do you think living in a family is important? Explain your views.



Listening practice



Activity 2

(Textbook closed) Your teacher will read for you a passage. Listen carefully and answer the questions that follow.

The Traditional African Family

The subject of “traditional family patterns in Africa” is so broad that it cannot be adequately addressed in one chapter. The cultural and physical diversity added with the dramatic social changes of the last three decades on the continent makes the family pattern situation so variegated as to defy any sweeping generalisations. This difficulty in generalisation borne of diversity was already apparent to many early scholars of the African traditional family like Mair and Goode.

Perversity of Polygamy

Scholars of the African traditional family agree that the one widely known aspect that distinguishes the African traditional family, say from the European one, is the perversity of polygamy. Although polygamy is the act of an individual being married to more than one spouse at the same time, the more commonly practised in Africa is polygyny “.... the legal marriage of one man to two or more women concurrently - is permitted.”

Because of its perversity, the presence and absence of polygyny was a significant determinant and indicator of the nature of virtually every African social group; whether tribe, clan, or extended family, whether matrilineality or patrilineality was practised, bride price existed, and how children were raised.

Polygyny was widely practised in Africa and it often formed the backbone of the traditional African family patterns. According to Mair, “....the polygynous joint family, consisting of a man, his wives, and their children, is the ideal for most Africans.”

In spite of the perversity of polygyny, there was evidence that it was on the decline. The major reason cited is that with increasing modern influences, marrying more than one wife became an economic burden. Even traditionally, ordinary citizens could not achieve marrying more than one wife. Often only Kings, chiefs and men who had wealth could afford it. Polygyny though set the tone and often determined the strength of the society and pattern of social organisation of the traditional African family. The Baganda people of Uganda provide the best illustration.

In the late and early 19th century, a detailed study conducted among the Baganda found that, “Polygyny, the type of marriage in which the husband has plural wives, is not only the preferred but the dominant form of marriage for the Baganda.” Commoners had two or three, chiefs had dozens, and the Kings had hundreds of wives. What was the structure of the polygynous family?

Although among the Baganda, the nuclear family of the mother, father, and their children constitutes the smallest unit of the Baganda kinship system, the traditional family consists of several nuclear units held in association by a common father. Because the Baganda people are patrilineal, the household family also includes other relatives of the father such as younger unmarried or widowed sisters, aged parents, and children of the father's clan sent to be brought up by him. Included in this same bigger household will be servants, female slaves, and their children.

Having so many people in this household should not be confused with other types of large families like the joint family, with its several married brothers and their families living together or the 'extended' family, consisting of a group of married offspring living in one household under a patriarch or matriarch. The Baganda are also patrilocal. Therefore, the new families tend to generally live near or with the husband's parents.

Source: Mwizenges Tembo, PH.D Bridgewater College, Virginia, USA.



Activity 3

Answer these questions about the passage you have listened to.

1. What do you understand by the word 'variegated' as used in the passage in respect to traditional African family systems?
2. How does African traditional family differ from an European one?
3. According to the passage, would you approve of a matrilineal or patrilineal family? Justify your view.
4. Explain the difference between polygyny and extended family systems.
5. Account for the decline in the perversity of polygyny.
6. Illustrate a typical Baganda household.



Activity 4: Debate

In some African communities, a man leaves his parents' home and joins his wife in her home. The woman is the head of the family.

Make research about a *Matrilineal Traditional African Family* in any community of your choice. Find out the arrangement of such a family system. Write short notes about how such a home is managed by the woman.

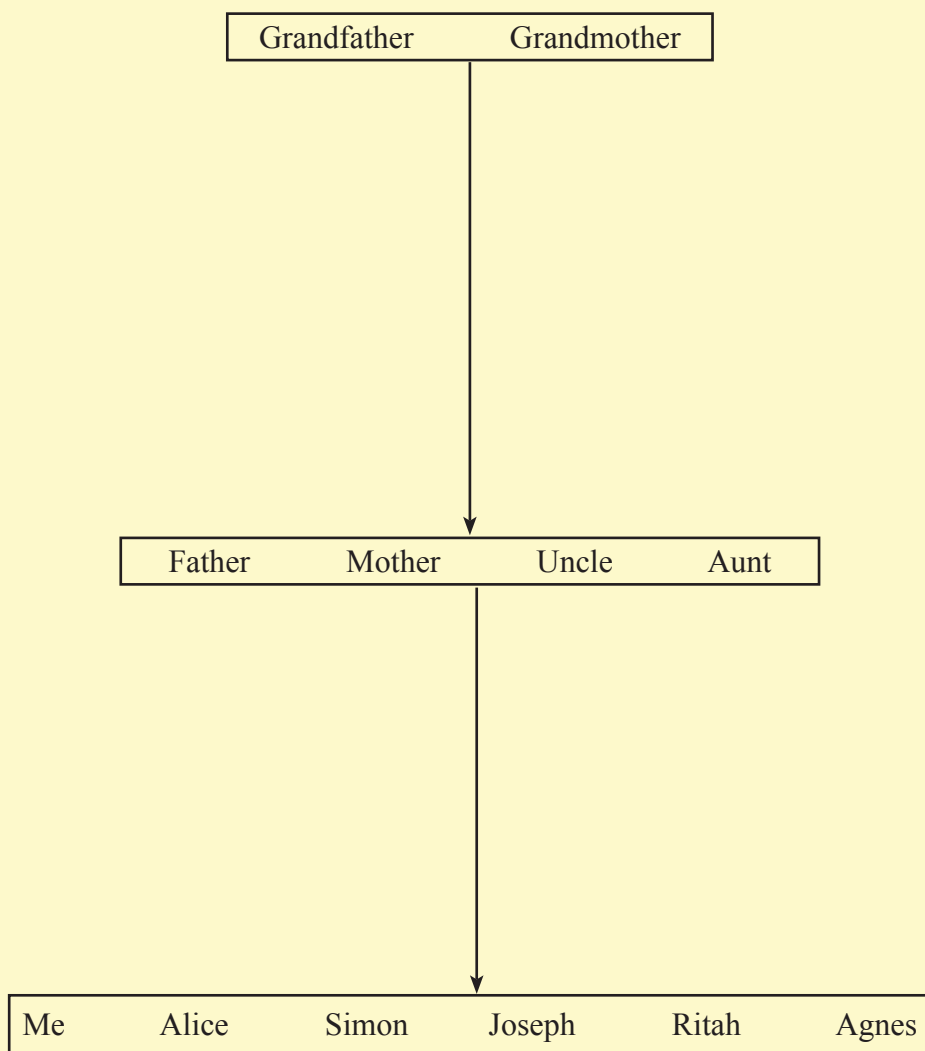
Use your notes to debate the motion, "**Only men can be the heads of families**".

Describing a family tree



Activity 1

Study the family tree below carefully and use it to describe the family members who live there.





Activity 2

Briefly share these questions

1. How does Alice call Ritah?
2. Which of the family members share the same parents?
3. How will Simon's children call those of Agnes?
4. Why do you think it is important to know our relatives?
5. Why is it unacceptable for related family members to marry each other?



Activity 3

Draw the family tree of the members who live in your family. Use the family tree to write a paragraph describing your family members. Share your family tree and description with other classmates.

Describing traditional birth customs



Activity 1

Discussion

Share these questions among your fellow members.

1. Why do you think the birth of a child is celebrated in a family and community?
2. Describe some of the customs and celebrations related to the birth of a child in your community.



Activity 2

Carefully read and enjoy the passage below



The birth of a child is often welcomed with joy and jubilation. In the past, Rwandan parents looked forward to having a child, especially a boy, to inherit the father's position and property. This is no longer the case today, because a girl child can now inherit property from her parents. To Rwandans, children, especially the girls, are sources of wealth because their parents will be given bride-price when they get married. Twins are often accorded special treatment, and rituals are performed to keep them alive. It is a common phenomenon in Africa for parents to have many children, thus making the families generally large. In the past, there were no established hospitals or maternity centres where women could give birth.

Thus, children were born at home with the assistance of neighbours or local midwives. Shortly after birth, the baby is given a thorough bath with cold water, and a magical lotion is applied to protect the child from evil forces.

For the first seven days after a baby is born, the mother and infant remain in the house, attended to by family members. This is a period of **seclusion**, meant for resting and recovering for the mother. It is also a time of **acclimatising** the baby to the new environment. During this period, relatives and friends give presents to the parents and the baby. **Fragile** and helpless, the infant is **susceptible** to disease and illness. Therefore, every precaution is taken to ensure that the baby is in good hands. The baby sleeps in the same bed with the mother.

As in many African societies such as that of the Yoruba, names are given to the baby on the eighth day. Names are important to the individual and family as a mark of identity and also reflect the people's cultural beliefs and practices. The naming ceremony is a special and **elaborate** social occasion for the family and the clan. In some societies, the clan or **lineage** head provides personal names for the baby. The names may reflect significant life experiences of the parents or the circumstances under which the baby was born. Names in African cultures and customs always carry specific meanings.

In Rwanda, the naming ceremony takes place outdoors in the evening of the eighth day when family members and friends gather together to celebrate.

The process begins with bringing the baby out into the public for the first time. The parents present the baby to those present for the naming ceremony. Because the mother and the baby have been in seclusion, this is the first time the baby appears in public. Although the naming ceremony is a social event, it also provides the opportunity for **family reunions**.



Food and drinks are prepared by the relatives and all the village children from three to ten years are invited to the naming ceremonies. They are given a piece of land to cultivate. They use sticks that have the shape of a hoe. After a few minutes, a male adult stops the farming activities by throwing water on them. They immediately run home because it is supposed to be raining. When they get home, they eat while the adults are watching them. When they have finished, they are each asked to give two names to the baby. All this is only ceremonial since none of these names is considered in the final name choice. After everybody has left, the mother gives names to the baby also, but as in the case of the children, her names are not official either. The father is the last one to give the names. He can do it just after the mother has finished, or he can wait for early next morning to name the child. The father may select a name from either the list provided by the young guests or the mother or even give his own. There are no family names. He may select the name of a grandfather, great grandfather, a nationalist or hero.

Source: (Adapted from "Culture and customs of Rwanda" by Julius O. Adekunle)

Exercise

Answer these questions about the passage you have read

1. Explain why in traditional Rwanda, the birth of a baby boy was welcomed with great joy. Has the tradition changed in your community? Is the birth of a girl child celebrated with similar anxiety as that of a boy?
2. Compare the benefits of having a girl child and a boy child in traditional Rwanda.
3. Describe the cultural rituals that were performed when twins were born.
4. What was the use of the magical potion?
5. Explain the relevance of putting the mother and baby under seclusion.
6. Describe the role of children during the naming of a child.
7. How does the naming ceremony promote a platform for family reunions?
8. What do you think is the relevance of inviting children to dine at the new child's parents' home?

Describing death customs



Activity 1

Research

Carry out research about the customs related to death in your community. What takes place when someone dies? What are the roles of the men, women and children during this sad moment? Who says the traditional prayers? Do people mourn? What happens during the burial? How is the deceased buried? What happens after? Is the heir installed immediately?

Present your research in the form of an essay or a composition. Try to make your composition interesting following the rubric of composition writing. You may share your compositions with other classmates.

Describing a traditional wedding



Activity 1

Discussion

1. Share these questions among yourselves:
 - (a) Have you ever attended a traditional wedding? Describe what takes place among your groups.
 - (b) Do you think traditional ceremonies like weddings are important in this modern era? Explain your opinion.
 - (c) Study the photographs in this text before reading and use them to explain how traditional weddings are carried out in Rwanda.





Activity 2

Carefully read and enjoy the passage

A Traditional Rwandan Wedding

Marriage has always been a very important cultural institution in Rwanda. Prior to and after the wedding ceremony there are a number of traditional practices that take place. The nature of these practices has changed over time, with several ceremonies being combined to take place over a shorter period. However, many elements remain as they were hundreds of years ago.

Many couples began with a relative of a bachelor pointing out a young lady as a potential bride for him. The bachelor's family would then select a man as their representative who would act as the go-between for their family and that of the bride to be. His role included intensive research on the lady, including her ancestry as well as the conduct of her relatives in society.

Following the research, the father of the potential groom, or a special envoy selected by the family, would visit the girl's father to declare the intention of his son to marry their daughter. If the girl's father accepted, arrangements would be made as to when the introduction ceremony would take place.

Next would be the ceremony where the representative of the bachelor's family officially requests the daughter as a bride. The ceremony is a battle of wits often involving traditional tongue-twisters as well as riddles and pranks from the girl's side.

The family of the would-be bride, as well as the people of her neighbourhood, were all consulted because the welfare of children is the responsibility of the community even when they get married.

This was followed by the payment of the bride price. The bride price was always strictly a cow, or several cows. Once the negotiations were over, the bride's side would invite the groom's side to share a drink. Then, before the groom's side left, they would often be given a drink which they were to enjoy on their journey home. In modern times, if one side has travelled a great distance they may even be invited to share a meal together with their future in-laws before they return home.

After the payment of bride price the families would meet again to discuss the date of the wedding. In modern times, this is often done privately between the bride, groom and their immediate families without involving many parties.

Traditionally, before her wedding day, a bride would spend several weeks in seclusion being cared for by one of her aunts. During this time her aunt would give her advice on how to take care of her future family. The bride would also undergo intensive beauty treatments, including daily applications of perfumed cow-ghee with special herbs to give her softer and smoother skin. She would also adhere to a diet regime reserved for brides.

On the day of the wedding, the bride would be seated in a traditional carrier. It would have two handles which would be placed on the shoulders of four strong men who would carry her to the groom. After arriving at her groom's home, she would be taken inside and a special banquet in honour of both the bride and groom would be held. The banquet would include traditional Kinyarwanda dancing and singing.

The final ceremony involved the wife's family visiting her at her new home and bringing a number of items to help her settle in. Prior to this, the wife would not have been seen in public and would have completely refrained from any work. In this ceremony, the wife would make a meal for her family and in-laws for the first time.

At the end of any visit, the visitors would be given a drink to take before going back to their home.

The wife's family would then journey home and the young couple would begin their new life together.

(Source: Akaliza Keza Gara)

Exercise

Answer these questions about the passage you have read

1. Do you support the view that “marriage is an important cultural institution in Rwanda?” Explain your opinion.
2. Explain the role of the family representative on the bachelor’s side.
3. What do you think was the importance of paying bride price?
4. Why was a bride given special care by her aunt before the wedding day?
5. Describe the wedding cultural practices that are still respected in today’s modern wedding and justify their relevancy.



Activity 3

Debate

Some people say that bride price should be abolished. Proponents of this argument have looked at today’s modern woman as empowered economically, politically and socially. What is your view?

“Should bride price be abolished or not?” Express your opinions.

Talking about modern weddings



Activity 1

Discussion

Share with your fellow members a modern wedding you have ever attended.

- (a) Compare the clothes the couples put on, the food, drinks, music and other articles with the ones of a traditional wedding.

- (b) What do you know about a civil or religious wedding in Rwanda?
- (c) Look at the photograph and use it to describe what takes place during a modern wedding.



A man and a woman get engaged



Activity 2

Read and enjoy the passage below

Rwandan weddings

Besides the day-to-day running of the shop, we've wanted to share more about what makes Rwanda special, and what we've all been up to outside of work as well as in it. Nothing comes any bigger than the recent engagement of our assistant manager, Claire, which she wanted to share with all of you.



Most couples around the world have a single ceremony when they want to marry. Not in Rwanda! Here people can have three: the traditional engagement ceremony, a civil wedding (no wedding here is legal without one) and a church ceremony. Years of planning and saving typically go into all of this.

The bride price giving, or traditional engagement ceremony, used to be the exclusive way Rwandans married. At its core, it is where the parents officially acknowledge the couple and their wish to live together. Today, it's the first of the wedding events that take place over the course of a month.

The bride's house is set up with three tents in a U shape: one rectangular one for the bride's family, a second tent facing it for the groom's family and a smaller third one in between for the couple and their friends. Most of the day's activities take place in the centre of the U.



First, the bride's family and friends arrive to take their seats. It's important for her guests to be more numerous than his, because she is the host of the event. When all of her guests arrive, the groom comes with all of his guests (family and friends – usually on a bus or two!). They bring gifts of beverages (soft drinks and alcohol) in large baskets.



Each family has a representative who speaks on their behalf, usually a wise old man. They begin by praying and then by welcoming each other, giving everyone a place to sit, drinks and making them comfortable. The groom's representative gives thanks and eventually gets to the matter of their son being in love with a girl, which is when a sort of comedic duel ensues. In fun, each representative tries to trick the other, a sort of test to see if the couple will be well matched. The representatives discuss the bride wealth of cows, symbols both of something to replace the loss of a beloved daughter as well as the mixing of the families through their herds (cows are very special in Rwanda). Poets come and sing of how beautiful and special the cows for bride wealth are.

Finally, the bride is able to come out with her entourage, generally four male guards, a girlfriend who is a mother, four other girlfriends and two young girls.





Finally, the bride and groom come together – she fastens a beaded crown (called *ikamba*) on his head.



Once the bride and groom have introduced each other to their families, the festivities can really begin with drumming and dancing. Luckily for us, entertainment for this event was provided by Ingoma Nshya, the famous all-women drumming group that created the Inzozu Nziza project! This wedding was already special, but the bride being a drummer meant that she was whisked up front to join in the music!



After the bride and groom have served food and drinks to each other in front of all, things calm down a bit and dinner is served to all guests. There's more music until the couple and attendants go inside to drink milk and receive guests individually. All in all, a Rwandan wedding is an experience not to be missed.

A word about the traditional costume

The bride and groom wear the costume pictured here exclusively for weddings. The headband and beaded “sticks” worn on a lady’s head is a Rwandan-style crown.



(Source: *Inzizi Nziza* and *Blue Marble Dreams*)

Exercise

Answer the questions based on the passage you have read

1. Explain how each of the ceremonies contributes to a modern Rwandan wedding.
2. Why is it relevant for the bride's family to have many guests?
3. Explain the role of spokesmen and how they go about their duties during a modern Rwandan wedding.
4. Weigh the symbolic meaning of cows as bride wealth.
5. Are there any similarities and differences you have noticed about a traditional and modern Rwandan wedding? What are they?

Recounting a wedding



Activity 1

Composition

Describe elaborately in writing a wedding you have ever attended. Give details of activities that made the wedding colourful.

Sentence connectors

Sentence connectors just like the phrase sounds, are words or a group of words used to join or connect sentences to clarify the sentence and make it meaningful. Sentence connectors are typically used in compound or compound complex sentences.



Activity 2

Gap filling

Your teacher will read to you a passage. Fill in the missing sentence connectors in the blank spaces to complete the paragraph below.

My friend and I were ushered in we sat in the best position; opposite each other to enable us to see all that was going on,, heads of the different families, in particular the men, went ahead to discuss why really their children would get married. Thereafter families were introduced and in appreciation, there was the exchange of presents that made them feel at home. At this juncture, the **groom** was introduced by the aunt to the congregation which was the giving of **bride price** to the girl's parents. The bride price is in the form of cows worth their daughter.



Later on, we were surprised by the **bride's procession**. She was escorted by women both young and old. They came with gourds of milk that were to be given to the groom's family were traditional dancers that made the occasion beautiful. The bride was dressed in beautiful traditional wear her bridal team that carried the gifts to the groom's family. Tradition has it that four spear men have to guard the bride. After that the bride and groom were ushered into their special tent that the two were ready to get married in church. A lot of **dancing and eating** event till people got tired and went home. It was such a great event and it's something I would love to have on my introduction day.



The bride and the groom feeding the guests from 'ibyansi'. This activity crowns the wedding ceremony

Source: Rwanda on line/modern wedding



Activity 3

Use the sentence connectors in your own sentences.

Exercise

Answer these questions about the passage you have filled in and read

1. Describe the materials from which the bride's traditional wear is made.
2. If a visitor to Rwanda asked you about a Rwandan wedding, how would you describe it to him or her?
3. Why do the families sit opposite each other or her?
4. Why do you think the groom is introduced to the parents of the bride?

5. Of what significance are the gourds of milk given to the groom's family?
6. Why do you think four spear men should guard the bride?
7. Explain the importance of food, drinks and music in a wedding?
8. Of what relevance is the church or mosque in a wedding?



Activity 4

Research

Through using the internet or inquiring from your community members, carry out research about how either a traditional or modern wedding is conducted in other communities elsewhere in the world, where customs are different from a typical Rwandan wedding. Describe what takes place during the ceremony while comparing and contrasting it with the Rwandan wedding. Share your compositions with other classmates for further discussion and comparison of your research findings.

Talking about work distribution in the family (gender roles)



Activity 1

Discussion

Share your opinions about the following issues.

1. How do you view a woman today?
2. Do you think women enjoyed the same privileges in the past as they do today?
3. What are some of the roles women play today that they used not to in the past?



Activity 2

Read the passage carefully comparing work distributed between men and women in the past and today in Rwanda

Marriage, Motherhood, and Division of Household Labour

Gender roles in traditional Rwanda were structured around a household division of labour that allowed women substantial autonomy in their roles as child-bearers and food producers but preserved male authority over other family affairs. Because their biological capacity to bear children and their roles as mothers strongly determined women's status, their influence was ultimately captive to cultural interpretations of these capacities. As a result, Rwandan women navigated a cultural space that had the potential to both enhance and suppress their power within the household and family.

Several traditional Rwandan expressions refer to a connection between women's leadership and a strong household. Men, however, remained the ultimate arbiters of most family decisions. As Réseau des Femmes, a women's civil society organisation, notes "Rwandan tradition holds that, as the chief of the household, the man is respected by all members of the family. Important decisions are therefore made by him, even if he sometimes consults his wife before making them."

Importantly, gender roles in the home differed according to the social status and material wealth of the family. In the words of one older gentleman: "In the rich homesteads, women reflected high levels of management and control of family affairs.

Men actually never entered the backyard, and a man who tried to know what went on there was considered greedy, uncultured, and unmanly." The wealthier certain men became, the less time they had to control family affairs as they sought to demonstrate their allegiance to the king (or others with political status) in order to secure protection for property and the promotion of their own social status.

Thus, their wives had significant autonomy and control over the family property, household workers, and children.

These women also maintained personal property, such as cows, that they could use to acquire friends and a loyal, grateful clientele. An expert noted: "As [they] climbed the social ladder, women's value increased, as opposed to women in the lower-class levels."

In poor families, wives still controlled internal family issues, such as the use of farm proceeds, but men more closely oversaw and managed the family property, leaving women with less control over household decision-making. Men in poor homesteads took part in direct production of the family's wealth. While this meant that men assumed more control over property, it also often resulted in a more equitable division of household labour, with men going to gardens with their wives, assuming the most difficult farming roles, and tending livestock.

Traditionally, Rwandan women were not permitted to own land. If a male head of household died, property passed to male heirs or to the man's brothers. In the case of divorce or the husband's death, a woman had no claim over the family property if she had not borne children; she would quietly return to her family of origin or marry into another family. Women with children were required to marry a brother of the deceased in order to retain their status as members of their marital family.

Women may have influenced day-to-day decisions regarding the management of land, but they had little ability to direct larger decisions regarding the sale or lease of property. Because men were thought to make occasionally abrupt, irrational decisions, cultural norms urged men to consult their wives before finalising any sale or gift. One expert stated, "Women decided who gets a cow from the family. Even giving cows to children required that the wife be consulted first."

When the family bull was to be given (lent) to a neighbour or friend for the purpose of mating, the woman had to give her consent first. In the cultural sense, women were heads of their families."

However, such gestures were more of a formality than requirement; a woman's failure to consent to such matters did not prevent a man's action. Cultural prohibitions against making family matters public prevented women from disputing land ownership, a problem which continues today, despite the 1999 law establishing women's right to inherit and own land.

Household gender roles also varied by region. Some interviewees referred to a perception that women in the central and southern parts of the country were treated with greater gentleness. Women were not meant to perform hard chores such as building houses or collecting firewood and water, and they did not work alone in their gardens; rather, they always worked hand in hand with their husbands, especially in poor households. Men were responsible for more physically demanding tasks, such as clearing the bush and the initial tilling of the land, while the women did the less labour-intensive tasks of planting, weeding, and harvesting the crops. To some, this protective tendency signifies that women were treated as the weaker sex and seen as unable to manage hard tasks. But to others, this division of labour demonstrated respect, and a man whose wife engaged in hard chores was viewed as an irresponsible husband.

Rwandan culture placed great importance on marriage, and married women and men were given special respect and recognition in society. As with other cultural practices, marriage, in some ways, recognised and respected women's independence and, in other ways, subordinated women within a patriarchal system of authority. In the days preceding a wedding, for instance, aunts and other elderly women counselled a bride on the duties of marriage. This advice generally focused on the woman's responsibility to respect her husband and his family and emphasised her obligation to be subservient to her husband.

Married women were no longer permitted to act as girls, climbing trees or milking cows. In the northern region, though, where the bride price could be exorbitant, a woman was also expected to recover the cost incurred by her husband in paying her family to legalise a marriage.

The husband provided a combination of sheep, goats, cows, hoes, pots, local beer, and money; the wife was then expected to labour as compensation to her husband.

On the other hand, a Rwandan bridegroom was required to leave his family and live with his bride in her family's homestead during the first days of marriage. This practice was intended to help the girl adjust to her husband before she made the transition to his home and assumed the responsibilities of wife and mother. It also provided an opportunity for the bride's family to evaluate the capacity of their new son-in-law to care for their daughter. During his stay at the bride's home, the bride's family required the groom to work, take part in all male chores, and display a high level of discipline. If he did anything considered offensive, he could lose his wife and be sent home in disgrace. Not much is known about the frequency with which this practice was employed in pre-colonial Rwanda, or how often families sent young men home. The stories persist, however, as cautionary tales.

Social taboos and traditions arose to reinforce respect for motherhood and to protect women and children from danger or abuse. The word "mother" also has connotations of "creator" and "life giver". Her family and in-laws would pamper and exempt a woman from certain chores during pregnancy and immediately after delivery of a child.

On some occasions, chiefs would punish men who did not conform to these expectations. In poor communities, neighbours guaranteed a steady supply of milk to a woman who delivered a baby. One Rwandan woman in her sixties described society's respect for women in this way: "While traveling with a child, a woman never had to carry milk for the baby as any home she approached along the way welcomed her and provided her with milk for the child, and for herself."

Gender roles in the public sphere

women's public roles in traditional Rwandan culture perhaps provide the more relevant context for evaluating the extent to which indigenous gender practices underlie women's modern political achievements.

As with women's household roles, however, accounts from interview participants and available literature present conflicting attitudes regarding women's place in traditional politics. In some ways, women's leadership and participation in public life were respected and solicited, but they were often also rejected or feared.

Although Rwandan culture is sometimes celebrated as exceptional among African cultures for promoting women's influence in the public sphere, in many cases women were expected to defer to men or to wield influence indirectly through their husbands. Traditionally, women did not speak publicly, especially in the presence of men. A woman who dared challenge men in public was considered insolent. In interviews, many elders—who continuously referred to Rwandan traditional culture's respect for women—contended that the major limitation on women was lack of freedom to express themselves in public.

Women were not allowed to participate directly in public deliberations; rather, they were expected to play an indirect role in the customary system of justice. Through their personal networks, women would lobby their husbands and influence court decisions by proxy.

Women's absence from public proceedings such as traditional court hearings is evidenced by the local word for witness which translated literally means "a man". Only recently did the term for witness change in order to make it gender-neutral and formally include women witnesses.



Activity 3

Note making and summary

In the table below, write notes comparing the roles of men and women in traditional and modern Rwanda. Do the work in your exercise book.

	Traditional Rwanda	Modern Rwanda
Men		
Women		



Activity 4

Use your notes to write a summary comparing the roles men and women played in the past with the roles they play today.

“Used to”



Activity 5

Use the notes from your table to write sentences using ‘**used to**’ comparing the roles of men and women in the past with today’s roles.

For example:

- (a) Men **used to** clear the land.
- (b) Women **used to** stay at home doing household chores.
- (c) Now women and men share household roles.



Activity 6

Debate

Do you support the view about the changing roles where women today are playing roles which were originally played by men? Explain your opinions.



Unit 4: Fractions and Percentages

My goals

After studying this unit, I will be able to:

- ◉ Do calculations and percentages, write in numbers and talk through the working orally.
- ◉ Read calculations, or texts on the Rwandan economy.
- ◉ Plan, write and evaluate texts on the Rwandan economy.
- ◉ Discuss the Rwandan economy, paying attention to percentages.
- ◉ Appreciate the role of Mathematics and Science in our daily lives.

Calculating with fractions



Language use: Listening and speaking



Activity 1

Look at the loaf of bread in **Fig.1** and the bread cut into slices in **Fig.2**. Why do you think the loaf of bread is cut into toasts or slices?

Fig. 1



Fig. 2

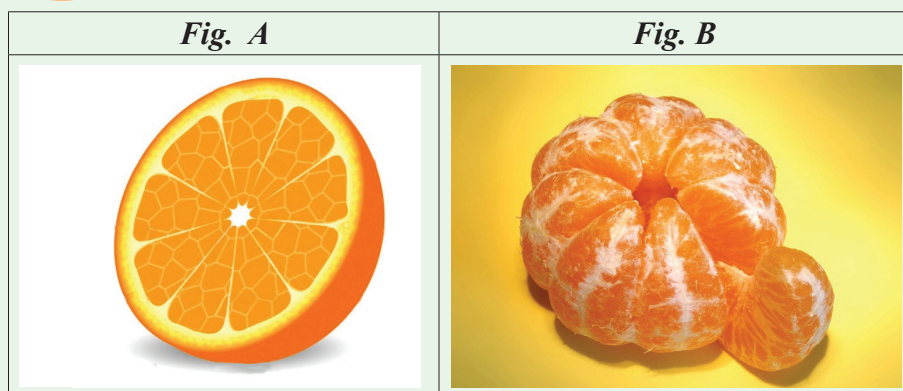


On the basis of the photographs answer these questions

1. How many slices make up the whole loaf of bread?
2. Suppose Kaneza eats 9 slices out of 18 slices, describe the bread she has consumed as a percentage.
3. Suppose a family consumes two-thirds of the bread, describe the amount of bread that will remain.
4. Express the bread the family has consumed as a percentage.
5. Assuming there were 100 slices and Kaneza ate as much as she ate out of the 18 slices of bread, find and describe the amount of bread she would have consumed.
6. Now express the fraction Kaneza would have eaten out of 100 as a percentage.



Activity 2

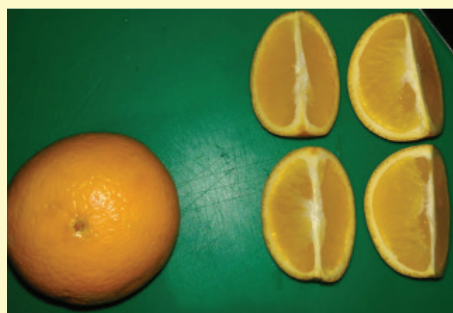


1. Get an orange. Peel it and divide it into 2 equal parts. If you eat a half, what percentage of an orange would you have eaten?
2. Suppose you divide the orange into 4 equal parts, and you eat one of them, express the fraction of the orange eaten as a percentage.
3. Assuming you divided the orange into 5 equal parts and you consumed two-fifths, what percentage of the orange would have remained?
4. Cut the orange into 10 equal parts. Suppose you eat 7 pieces out of the ten.
 - (a) What fraction would you have eaten?
 - (b) What percentage of the orange would remain?
5. If one eats three-quarters of an orange:
 - (a) Convert and describe what he/she has eaten into a decimal fraction.
 - (b) Express and describe what he/she has eaten as a percentage.
6. If Nkurunziza and Mukantamage shared 18 slices of bread. Nkurunziza got $\frac{12}{18}$ and Mukantamage ate a third of Nkurunziza's.
 - (a) How many slices did Mukantamage eat?
 - (b) How many more slices did Nkurunziza eat than Mukantamage?
7. Describe the amount of the bread that was not eaten as a fraction and as a percentage.
8. Describe the difference between the amount of bread Nkurunziza and Mukantamage ate as a percentage.



Activity 3

Discussion



Get two oranges, tomatoes, pineapples or any other fruit. Cut the first one into two equal parts and the second one into four equal parts.

Exercise

Answer these questions and compare your answers.

1. How do we call each of the two equal parts cut from the fruit?
2. How is each part of the four equal parts called?
3. How many quarters make a half?
4. How many quarters are there in three quarters?
5. How many quarters are in two halves?
6. Express the following as decimal fractions.
 - (a) A quarter
 - (b) A half
 - (c) Three quarters
 - (d) An eighth
 - (e) A third

Application of fractions and percentages in our daily lives



Activity 1

Discussion

Convert the marks you scored in the end-of-month's or end-of-term examinations as fractions. Express the fractions as decimals and describe them to your class members.



Activity 2

School community



1. Count the number of learners in the school and express the number of girls as a percentage.
2. Express the number of boys as a percentage and a fraction.
3. Express the number of newcomers in the school as a percentage and a fraction.
4. Express the number of absentees as a percentage and a decimal fraction.



Activity 3

Clinic or hospital



Go to a nearby clinic or hospital. Inquire from the medical staff the diseases that affect people in the community and their respective specific numbers.

1. Draw a table to record or represent the data collected. Express the patients treated per sickness as a percentage as well as a fraction.
2. Use the percentages to determine the common sicknesses in the area.
3. Identify the diseases which have equivalent numbers of patients.
4. If you are in charge of health in your district, suggest measures you would recommend for your people to mitigate the common sicknesses. Present your ideas in an essay or paragraph form.



Activity 4

Market or shop



Visit a nearby trading centre. Inquire from the traders about the foodstuffs which are on high demand and those which aren't demanded often by customers. Record the different food items sold in the market or shop and count the number of traders dealing in each item. Present your data in a table.

Exercise

Answer these questions

1. Express the number of traders per item as a percentage and a fraction.
2. Compare the items which have an even number of traders with those which have an odd number of traders.
3. Use the percentages and fractions to determine the commonest foodstuffs consumed in the community.

4. Discuss the reasons why you think these items are on high demand.
5. Supposing you are a trader in that community, what items wouldn't you trade in? Give reasons for your opinion.



Activity 5

Transport



Visit a busy road. Observe and count the number of vehicles passing on the road for one hour.

1. Draw a table to record your data.
2. Use the data in the table to express the following in percentages, fractions and decimal fractions.

bicycles; salon cars; buses; lorry; motorcycles

Assuming you want to invest in transport business, use the data to describe the type of transport business you would engage in and give reasons for your choice.



Activity 6

Extend your thinking! Geography

Look at the orange and study the earth in the photographs below.

Fig. 1

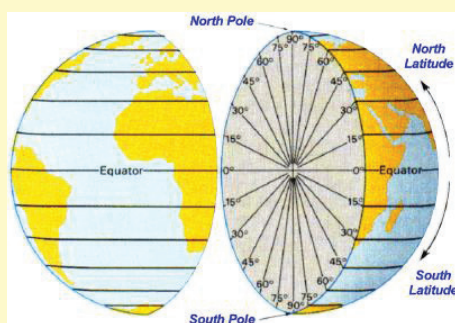


Fig. 2

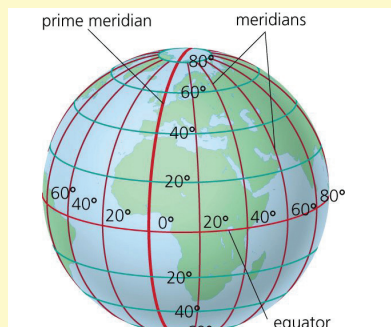
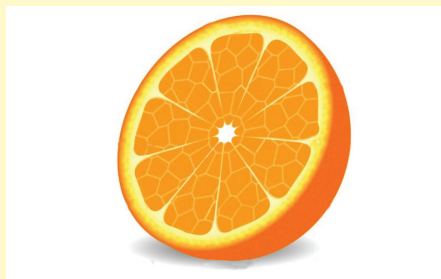


Fig. 3



- What relationship do you think exists between the orange and the globe?
- Explain how geographers can use the knowledge of the slices of the orange and apply it to the globe to locate places on earth, countries and continents.
- Find out how geography use longitudes to measure the time of a place (time zone). Share your findings with other group members.
- Express and describe the main longitudes and latitudes on the globe in **Fig. 2** as fractions and percentages.
- Discuss the main importance of the Equator and Greenwich to geographers.



Activity 7

Research

Visit your population statistics bureau or use its website if your school has a computer laboratory with internet. Find out how fractions and percentages are used to describe the population census of Rwanda.



Listening practice



Activity 1

Your teacher will read to you a passage about the summary of an imaginary Rwanda National Budget by the Minister of Finance. Please listen carefully.



Activity 2

Gap filling

Use the information you heard from your teacher to complete the passage below.

Good evening of Rwanda. I am to present the summary of the national budget allocations. The salary of civil servants has been increased by The education sector has been allocated FRW 5 billion. The sector has been allocated 15% more than the education sector. The ICT sector has been allocated more than the education sector. The tourism sector has been allocated 5% less than the sector. Security has been allocated 10% more than the education sector.

The industrial sector has been allocated more than the education sector. Finally, the sector has been allocated 12% than the education sector. This is the final financial from the Ministry of Finance.

With the recent in financial research and credit control systems, we anticipate the exports to increase by The national will grow by 3.4% and imports will drop by 0.2% in the next months. This will account for a steady and economic growth hence controlling inflationary gaps in the Rwandan economy.

I thank you for listening to me.



Activity 3

Use the information above and answer the following questions.

1. If the salary of a teacher was FRW 150,000 before the reading of the national budget, what is his or her new salary?
2. Find the sector that was allocated the highest percentage and explain why you think that sector was given the biggest share of the national budget allocation.
3. Calculate how much money was allocated to the following sectors:
 - (a) Agriculture
 - (b) Security
 - (c) Tourism
 - (d) Health
 - (e) Industry
4. How much more money was allocated to agriculture than the health sector?
5. What was the national total budget?
6. Express the given decimals in the passage as fractions and percentages.

7. Explain how the relationship between the exports and imports will account for a steady and sustainable economic growth in Rwanda.
8. Write your own sentences using the following words in the box below to show that you have understood their meaning.

quarter; fifth; denominator; decimal; percent; divide; multiply; worth; account for; import; industry; equivalent to; figures



Activity 4

Think of other situations where fractions and percentages can be used to solve our problems in our daily lives. On the basis of the applications you have discussed, explain how the concept or idea of fractions and percentages in Mathematics helps in solving problems in our daily lives. Share your answers with your classmates.



Activity 5

Puzzle

Think about this!

A man has three children. The eldest is 0.5 years of the father's age. The last born is 0.4 years of the eldest child's age. The second born is twice as old as the last born.

1. Assuming that the father is 50 years old, find and describe how old each child is.
2. Express the age of each child as a fraction of the father's age.
3. Suppose the father is 100 years, how old will each child be? Compare your answers with other classmates.



Activity 6

Research (quantitative data analysis)

Visit different nearby health centres. Ask the medical personnel to provide you with information about the rate of HIV/AIDS infections in the current year as compared to the previous years. Write a report about your findings and compare your answers with other classmates.



Activity 7

Drama project

Organise a drama scene in which the spread, symptoms and prevention of HIV/AIDS are depicted.

Calculating with percentages



Activity 1

Dialogue

Gashumba: Hello Mutesi. I'm carrying out research about the gender and the employment sector in Rwanda. Could you please be of help and offer me some advice?

Mutesi: Most certainly.

Gashumba: What is your general view about women's enrolment in universities? Has it increased compared to what it was before?

Mutesi: Oh, yes! Women's enrolment in universities has increased, but, as a whole, women still attain lower educational levels than men. Men and boys remain more likely than women to receive education and training in Rwanda.

Gashumba: Could you provide me with some statistics to back up your argument.

Mutesi: Well, literacy rates are estimated at 47.8 percent for women, 58.1 percent for men. 25 percent of women have never attended school, compared with only 17 percent of men.

Gashumba: How about apprenticeship programmes?

Mutesi: Just 5.8 percent of Rwandan women benefit from apprenticeship training compared to 9.1 percent of men.

Gashumba: Could you please make for me a comparison in the vocational training sector?

Mutesi: Only 2.6 percent of women receive vocational training compared with 7.3 percent of men.

Gashumba: Of the rural areas and the towns, where are the differences in women's education sharply felt?

Mutesi: These disparities are even more dramatic in rural areas, where the majority of Rwandan women live.



Activity 2

Conduct research about any sector of the economy that interests you. Find out the percentage or fraction distribution between men and women or girls and boys in Rwanda. Compose your dialogue about the situation.

Compare your dialogue with those of your classmates.

Describing the Rwandan economy



Activity 1

Study the photograph below carefully. It is about agriculture in Rwanda.



Composition

Write a composition detailing the contribution of agriculture in Rwanda. In your composition discuss the various forms of agricultural activities, expressing them in fractions and percentages. Compare your composition with those of your classmates.



Activity 2

Research

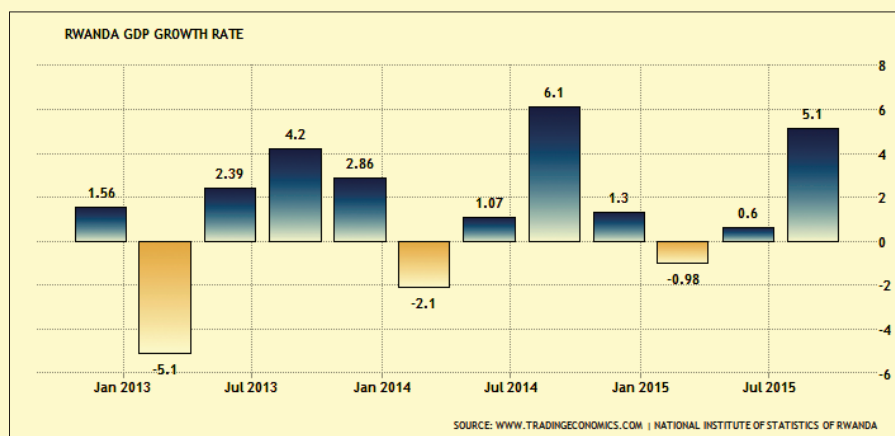
Visit your computer laboratory to research into activities that contribute to Rwanda's economic development. Write sentences expressing their contribution in percentages or fractions. Share your answers with other classmates.



Activity 3

Graphical data interpretation

Study the graph and write a paragraph describing Rwanda's GDP growth rate since 2013. Compare your answers with other classmates.



Reading and comprehension



Activity 1

Read and enjoy the following passage about the Rwandan economy. Express your views about some of the issues as you read the passage.

The growing appetite for Rwandan vegetables abroad is pressing local farmers to transit from subsistence to commercial farming to meet the growing demand.

Since 2011, vegetables have boosted the country's exports value by \$20M, with an average of 7% growth every year. In 2011, Rwanda earned \$4M, increasing to \$5M and \$6M in 2012 and 2013 respectively, then dropping to \$5M in 2014 due to reduced productivity.

Rwanda could turn into regional hub for horticulture



Emmanuel Hategeka, former Permanent Secretary, Ministry of Commerce and Industry, told KTPress that there is a huge demand for Rwandan vegetables, fruits and flowers, around the world owing to their quality.

All fruits are organic and grown on fertile volcanic soils under tropical weather conditions, ideal for quality yields, but the majority of Rwandan farmers grow the fruits and vegetables at a subsistence level.

Rwanda is seeking more investors to increase volumes. Two potential investors from Mauritius and Kenya have expressed interest in vegetable and fruit growing and should begin exporting late this year.

Some of the major vegetables and fruits grown in Rwanda include onions, cabbage, tomatoes, baby peas, avocados, carrots, passion fruit, pineapples and maize.

Most of them are exported to the DRC, but there are other bigger markets such as the UK, Belgium, the Netherlands and France. Other export destinations include Burundi and Uganda.

During the vegetable and fruit exports peak in 2013, Hategeka said, Rwanda was experiencing both informal and formal cross-border trade within regional markets.

Meanwhile, as part of the effort to increase volumes of vegetables and fruits, there is also an opportunity for investing in cold chain storage facilities from farm gate to the market.

Currently, Rwanda has one cold facility, at the Kigali International Airport.

There is urgent need to invest in cold chain facilities to ensure the vegetables and fruits don't lose the required standards, especially on the international market.

However, Dieudonne Musafiri, an Imports Manager at Akagera Business Group, says, "Cold chain refrigerated trucks are expensive, but it is a lucrative business because there is high demand for them. There wouldn't be any losses incurred."

Despite the shortage of cold storage facilities, high transport costs to international markets is another major obstacle facing the sector.

For example, exporting one kilogram of vegetables to Europe costs \$2.5. The trade ministry says it is helping exporters to negotiate for at least \$1 per kilogram.

Source: KT Press (Umuhinzi)

Answer these questions

1. How has the demand for vegetables abroad boosted vegetable growing in Rwanda?
2. Express the revenue loss Rwanda suffered as a percentage.
3. Account for the drop in the percentage you have mentioned above.
4. Explain what makes Rwanda an ideal fruit growing environment.
5. How will the investors boost fruit and vegetable growing in Rwanda?

6. Compare the cold chain storage facilities with farm gate to the market.
7. By having one cold storage facility, how does this situation affect Rwanda's fruit and vegetable industry?
8. Analyse other hindrances to fruit and vegetable farming and suggest possible interventions that can help the local farmers.



Unit 5: Discoveries and Inventions

Introductory activity: Read the following text and answer questions below:

Medical discoveries and inventions

With the idea that modern healthcare is rooted in discoveries of the past, let's take a look at seven major medical **milestones** of the 20th century.

In 1929, Sir Alexander Fleming, of St. Mary's Hospital Medical School in London, United Kingdom, shared his observation that the culture medium on which a **penicillium mold** grew attacked certain types of bacteria. But chemists and bacteriologists working separately were unable to isolate the active substance in the **mold ooze**. Mold is a type of fungus that consists of small organisms found almost everywhere.

In 1940, Oxford researcher Sir Howard Florey brought together a multidisciplinary team who were finally able to isolate the drug **penicillin**. Penicillin became widely popular in the years surrounding World War II—not only for the treatment of battle wounds, but also for the treatment of syphilis. Moreover, penicillin led to a **surge** in healthcare utilization in the post-war era.

American scientists John Enders, PhD, Thomas Weller, MD, and Frederick Robbins, MD, announced in 1949 that they had grown **poliovirus** in **cultured** human **embryonic skin** and **muscle cells**, thus taking tissue **culture mainstream**. This discovery led to methods of measuring immunity to polio and the Nobel Prize for the trio in 1953.

As late as 1952, **geneticists** didn't know how **Deoxyribonucleic acid (DNA)** worked. All of this changed with the 1953 discovery of the **double helix** (the DNA double helix is an elegant structure that allows the genetic information to be stored, protected, replicated, and repaired) by James Watson, PhD, and Francis Crick, PhD. Their discovery of DNA's structure was rooted in Gregor Mendel's theory on the principles of **single gene inheritance** in 1866, as well as Sir Archibald Garrod's **elucidation** of the inheritance pattern of alkaptonuria (black urine disease) which is a very rare inherited disorder that prevents the body fully breaking down two protein building blocks (amino acids) called tyrosine and phenylalanine) in 1923.

Drs. Watson and Crick, as well as Maurice Wilkins, PhD, were honored with the Nobel Prize for **Physiology** or Medicine in 1962 for their discovery. In addition to Dr. Wilkins, Rosalind Franklin, PhD, helped produce x-ray diffraction images instrumental to the deduction of Drs. Watson and Crick that DNA is a three-dimensional helix.

Comprehension questions

1. Outline major medical milestones of the 20th century.
2. Explain how penicillin was discovered.
3. Write in full form of the acronym DNA.
4. Explain Archibald Garrod's contribution to the discovery of the double helix in 1923.



Vocabulary practice

Use each of the following words in your own sentence.

1. milestones
2. penicillium mold
3. mold ooze
4. penicillin
5. surge
6. poliovirus
7. cultured
8. embryonic skin
9. muscle cells
10. culture mainstream
11. single gene inheritance
12. elucidation
13. physiology



Activity

Write a composition explaining why penicillin is no longer commonly prescribed to treat infections. Tell other antibiotics that are in use today.

Recounting a famous discovery



Language use



Activity 1

Discussion

Share your opinions about these questions and compare your answers with other classmates.

1. Explain the role of scientists in our communities.
2. Think about the life people in the past lived without advanced science and technology. Compare their life with the life today where we live in a modern scientific world.
3. How have scientists made our lives more comfortable and interesting?
4. Whom do you regard as your favourite scientist? Why?

Describing a famous invention



Activity 1

Discussion

1. Share with your classmates or Biology teachers what you know about Gregor Mendel. Explain the relevance of his discovery about genetics to our lives.
2. Discuss why he is referred to as “the father of genetics”.



Activity 2

Read and enjoy the story about Gregor Mendel

Gregor Mendel, the father of genetics



Mendel was unhappy with how inheritance of traits was being explained

People had known for millennia about selective breeding. They knew that by breeding from those individuals that showed the most desirable traits, future generations were more likely to show these desirable traits.

- Guard dogs might be bred from parents that were loyal and friendly to their owners, but were suspicious or even aggressive with strangers.
- Cattle might be bred from cows that yielded the most milk and bulls that yielded the most meat.
- Wheat might be kept and sown the following year from those plants which had produced the most abundant crop.

The main theory of heredity in Mendel's time was that offspring were a smooth blend of their two parents' traits.

Mendel set himself the very ambitious task of discovering the laws of heredity.

To achieve this, he embarked on a mammoth-sized, highly systematic, eight-year study of edible peas, individually and carefully recording the traits shown by every plant in successive generations.

His work involved growing and recording the traits in about 30,000 plants.

One of the keys to his success was breeding from closely related pea varieties which would differ in only a small number of traits.

Seed		Flower	Pod		Stem	
Form	Cotyledons	Color	Form	Color	Place	Size
						
Grey & Round	Yellow	White	Full	Yellow	Axial pods, Flowers along	Long (6-7ft)
						
White & Wrinkled	Green	Violet	Constricted	Green	Terminal pods, Flowers top	Short (<1ft)
1	2	3	4	5	6	7

The seven traits of pea plants that Mendel chose to study: seed wrinkles; seed colour; seed-coat colour, which leads to flower colour; pod shape; pod colour; flower location; and plant height.

Mendel's results for flower colour

Mendel found the same results for all traits, but we shall look at flower colour as an example.

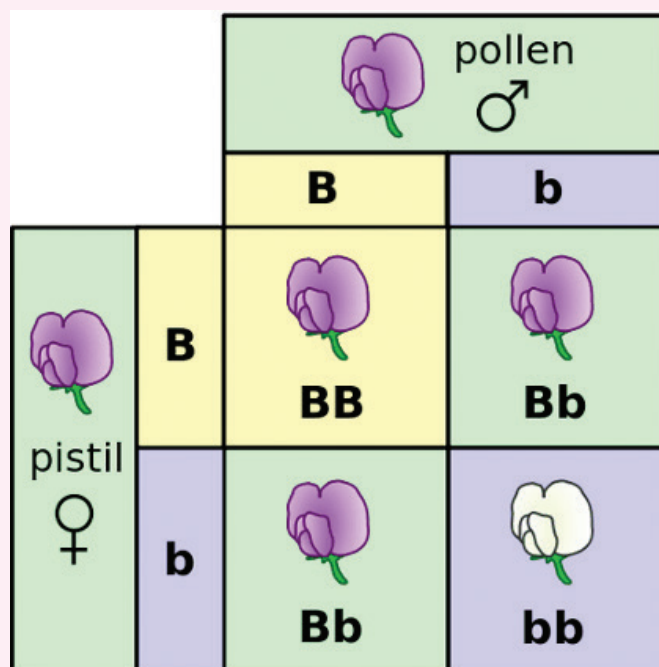
When Mendel bred purple-flowered peas (BB) with white-flowered peas (bb), every plant in the next generation had only purple flowers (Bb).

When these purple-flowered plants (Bb) were bred with one another to create a second generation of plants, some white flowered plants appeared again (bb).

Mendel realised that his purple-flowered plants still held instructions for making white flowers somewhere inside them.

He also found that the number of purple compared to white was predictable.

75 percent of the second-generation plants had purple flowers, while 25 percent had white flowers. He called the purple trait *dominant* and the white trait *recessive*.



A Punnett square

Both of the starting plants have purple flowers but they contain the genes for purple (*B*) and white (*b*). The pollen from the male plant fertilises the egg in the female flower. In this variety of plant, purple flowers are caused by a dominant gene (*B*). Dominance is indicated by a capital letter. White flowers are caused by recessive genes, indicated by the small letter (*b*). Both the male and female parent plants in the diagram above carry the dominant gene *B* for purple and the recessive gene *b* for white flowers. The ratio of purple flowers to white flowers in their offspring will be 3:1 as shown in this diagram. For a white flower to appear, the offspring must inherit the recessive gene from both parents. Purple appears with any other combination of genes inherited from the parent plants. (Image by Madeleine Price Ball)

Mendel's conclusions

Mendel's most important conclusions were:

- The inheritance of each trait is determined by something (which we now call genes) passed from parent to offspring unchanged. In other words, genes from parents do not 'blend' in the offspring.
- For each trait, an organism inherits one gene from each parent.
- Although a trait may not appear in an individual, the gene that can cause the trait is still there, so the trait can appear again in a future generation.

Scientists who did research later found that Mendel's results do not only apply to pea plants. Trait inheritance in most plants and animals, including humans, follows the patterns Mendel recorded.

In Mendel's honour, these very common patterns of heredity are now called **Mendelian inheritance**.



Activity 3

Write notes about Mendel's discovery about genetics.



Activity 4

In your own words, explain what you learnt about Mendel's genetic discovery.



Activity 5

Research

Visit your computer laboratory. Use the internet to carry out research about two scientists and make notes to compare their discoveries. Compare your work with that of other classmates.

Describing a famous scientist



Activity 1

Discussion

There have been many scientific inventions and discoveries, all of which are very useful in solving our world problems; such as in transport, communication, and health, among others. Think about the transport sector. Before, people would travel miles and miles on foot but today, someone can travel around the world in just a few minutes or hours. Which scientists do you know of that made discoveries, inventions or innovations in the transport sector? What did he or she invent to solve our transport challenges?



Activity 2

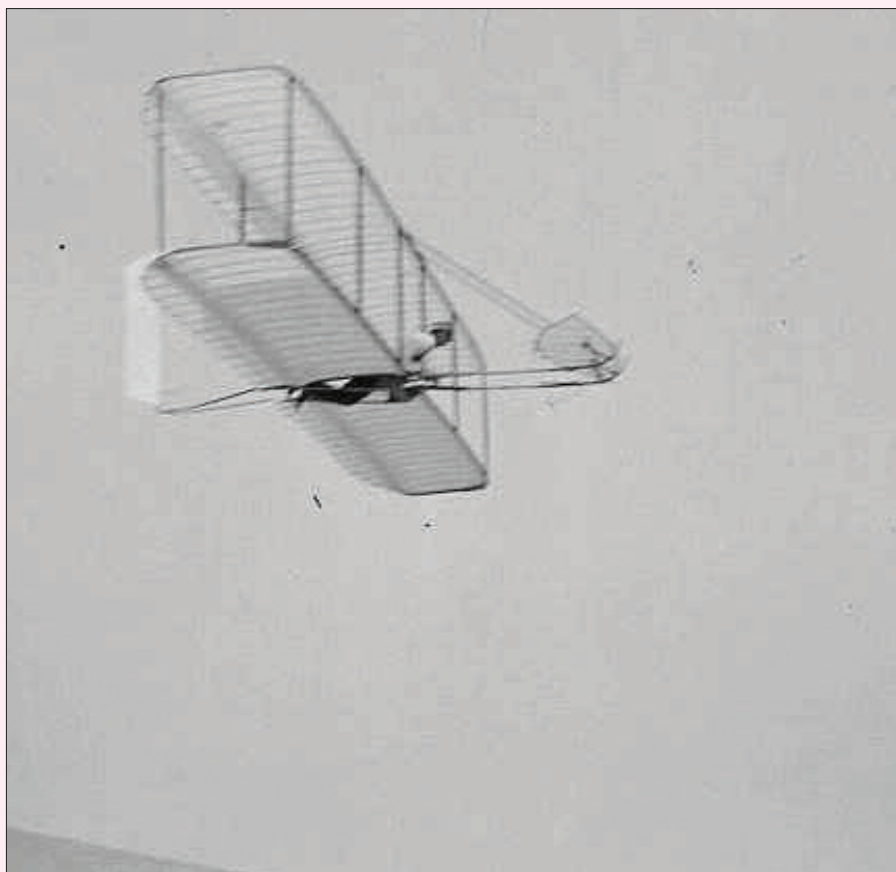
Read and enjoy the passage below carefully



Orville and Wilbur Wright brothers: Air pioneers

Orville and Wilbur Wright are credited with inventing the aeroplane. They were the first to make a successful human flight with a craft that was powered by an engine and was heavier than air.

This was quite a milestone and impacted on transportation throughout the world. It took some time to perfect, but in later years people could travel long distances in much less time. Today, trips that previously would have taken months by boat and train, can be made by plane in a few hours.



The Wright brothers testing their plane project

Orville and Wilbur Wright were born four years apart, in different cities. They shared a curiosity about the world and a love of tinkering that would make history.

Wilbur was born in 1867 on a small farm near Millville, Indiana. Orville was born in 1871 in a house in Dayton, Ohio. Their father was a bishop in the Church of the United Brethren in Christ. (The Wrights had five children in all: Reuchlin, Lorin and Katharine were the names of the other children.)

Life in the Wright house was strict but loving. Both parents encouraged their children to enjoy school and learn as much as they could. A large library of books about all kinds of subjects helped the Wright children quench their thirst for knowledge from a very early age.

Orville and Wilbur's fascination with flight began with a present their father gave them—a flying toy. It had a paper body and other parts made of cork and bamboo. Rubber bands provided the power. The young boys (7 and 11) were thrilled to make the little toy fly across the room, so much so that they broke it. They remembered how it looked, though, and promised each other that someday they would fly in the air, just like the little toy.

The boys continued to be interested in mechanical things and flight. Orville sold kites at school to make money. Wilbur started reading all he could about how birds flew and machines worked.

Though the boys were good students, neither graduated from high school. (Not many did in those days, actually.) Wilbur was hit in the face with a baseball bat when he was a teenager and suffered from irregular heartbeats the rest of his life. He stayed at home for awhile, during which time their mother developed tuberculosis (which, at that time, was a devastating disease with no known cure). Wilbur recovered and then stayed at home to care for his mother. Orville left high school on his own, to start a printing business. He and Wilbur designed a printing press that worked very well. The two later sold the printing business and opened a bicycle shop. They were both very good mechanics and could fix just about anything anyone asked them to fix. (They inherited this skill and desire from their mother, who was the family mechanic.)

It was in the bicycle shop that the idea of the aeroplane was born.

The Wrights had made kites, very large ones, in fact. By 1900, they were making ones so large that people could fly in them, sort of. These were called gliders, and Orville and Wilbur actually built one or two that were large enough for a person to ride in. They flew on nothing but air current, and the person could get a ride of about 10 seconds before the glider came down to the ground.

They flew the machine three times that day, mainly because each time they managed to land without crashing. Each flight was a bit longer, and the final flight of the day carried Wilbur 852 feet. He was in the air for a full 59 seconds.



The Wright plane taking off

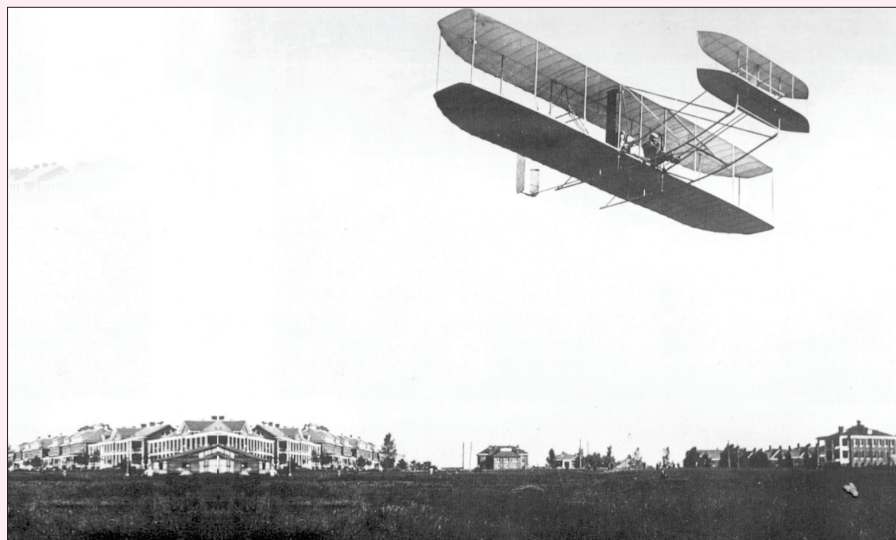
The Wright plane wasn't a hit overnight, however. No one else knew about the flight. The brothers returned to their bicycle business in Dayton and also continued to refine their aeroplane invention. Not long after that, they had built a plane that could fly 25 miles and go 40 miles an hour. They even had a model that could fly circles—and not go off-balance and crash to the ground!

In 1908, Wilbur flew one of their planes in front of royalty in Europe. In the same year, the rest of America discovered the aeroplane when a newspaper reporter witnessed a flight and wrote about it. The story was soon in newspapers all over the country. The Wrights were suddenly famous.



The Wright brothers operating their plane in air

The very next year, they opened a business to make aeroplane, the Wright Co. They found great fame and success making aeroplane. Unfortunately, Wilbur died in 1912 of typhoid fever. Orville lived on, however, eventually selling his business and watching his and his brother's dream become a reality in the modern industrial age.



A dream finally a reality. The Wright plane successfully flying in air

Source: A Childhood of Curiosity

Exercise

Answer these questions about the passage you have read

1. Why is Orville and Wilbur's invention of a plane referred to as a "milestone" in air transport?
2. Explain what inspired the Wright brothers to invent the aeroplane.
3. How was the idea of making a flying plane born in the bicycle shop?
4. Explain how the gliders that the Wright brothers made worked.
5. How did the aeroplane invention by the Wright brothers get known in Europe?



Activity 3

Imaginary interview

The Wright brothers did not go far in school. Actually they were about the same level as we in Senior Four or Five, yet they made this spectacular invention.

Imagine you met the Wright brothers. Think about the questions you would ask them about their aeroplane invention. Use their knowledge to think about a scientific invention you could make. Describe your amazing scientific invention or discovery and explain the process you would go through to create it. Describe the functionality and the problem it would solve. Present your description in an expository essay. Compare your answers with those of your classmates.

Before modern-day scientists explained natural forces using scientific inquiry and investigations, early man used to explain natural forces using his own knowledge and interpretation; most of which, actually, relied heavily on divine philosophy. Scientists have helped much to demystify these natural phenomena. They have also helped us to make scientific predictions and as a consequence take precautionary measures. For example, we can explain the concept of global warming, diseases, nutrition, etc. using science.



Activity 4

Discussion

Most of the earth's forces such as gravitation pull or kinetic forces are explained through physics.

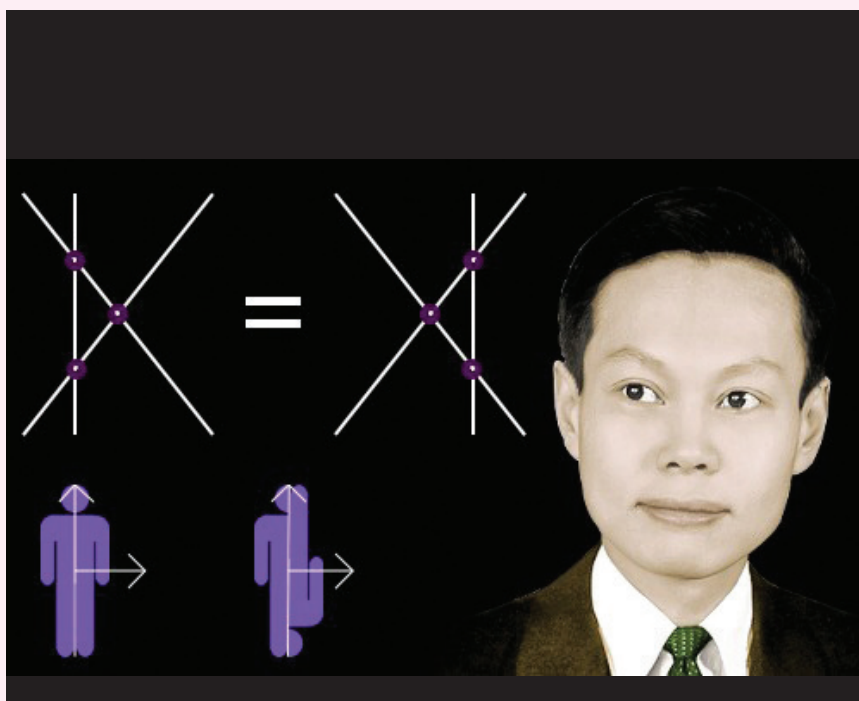
- (a) Who would you regard as the father of physics?
- (b) What did he or she do?
- (c) Describe his or her life.
- (d) Do you think scientists are born scientists; or they are inspired to dwell on science as they grow up?



Activity 5

Read and enjoy the life story of the famous scientist, Chen-Ning Yang

The famous scientist: Chen-Ning Yang



Chen-Ning Yang thought the unthinkable and won the 1957 Nobel Prize in physics. Yang and his co-worker Tsung-Dao Lee showed that parity – a property that physicists had believed was always conserved – like energy, momentum and electric charge – need not be conserved.

Yang also worked with Robert Mills to produce Yang-Mills theory, which today lies at the heart of the Standard Model in physics.

Early life and education

Chen-Ning Franklin Yang was born on 22 September 1922 in the city of Hefei, China.

His family moved to Beijing when he was young after his father, Wu-Chih, became a professor of mathematics at Tsinghua University. His mother, Meng-hua, was a housewife.

Yang was schooled in Beijing until 1937, when the Japanese invasion of China forced his family to return to Hefei, and then, a year later, move to the city of Kunming. The Japanese army did not reach Kunming in the south-west of China, although it was bombed by the Japanese air force.

Yang enrolled at the National Southwestern Associated University in Kunming and was awarded a bachelor's degree in physics in 1942.

In 1944 he was awarded a master's degree in physics for his work in statistical mechanics. He was awarded his degree by Beijing's Tsinghua University, which had relocated to Kunming.

Yang worked as a teacher until he won a United States government scholarship in 1946, which took him to the University of Chicago. There his doctoral advisor was Edward Teller, the father of the hydrogen bomb.

In 1948 Yang was awarded a PhD in physics for his work on nuclear reactions.

Chen-Ning Yang's research work

After the award of his PhD, Yang stayed at Chicago for a year, working with one of the giants of 20th century physics, Enrico Fermi.

In 1949 he was invited to become a theoretical physics researcher at the Institute for Advanced Study in Princeton.

The institute had been founded in 1930 with the goal of employing the best mathematicians and physicists in the world; Albert Einstein was there from 1933 until his death in 1955.

Parity conservation

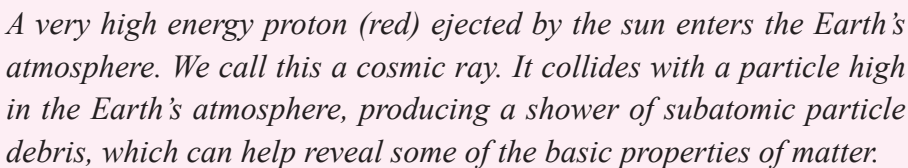
Atom smashing

During the 1950s, increasingly complex results had been coming out of particle accelerators and cosmic ray detectors, causing increasing confusion among physicists.

The accelerators were pushing ions and particles to enormous speeds, then smashing them into one another. Physicists hoped the debris from the collisions would reveal more about what matter is and how it behaves.

Cosmic rays – high energy particles reaching the Earth from the sun and the stars – also produced interesting debris.

The debris from both accelerators and cosmic rays contains subatomic particles, which are generally unstable, quickly decaying into other particles.



Two unstable particles, the *theta-meson* and the *tau-meson*, were causing a lot of heads to be scratched.

BUT the *theta* decayed to produce two pions, while the *tau* decayed to produce three pions.

$$\Theta^+ \rightarrow \pi^+ + \pi^0$$

$$T^+ \rightarrow \pi^+ + \pi^+ + \pi^-$$

The theta and tau particles seemed to be identical, except the theta decayed to give two pions, while the tau produced three pions.

Most physicists took it as a fundamental law of the universe that when any particle decayed, its *parity* stayed the same.

Parity must never be broken: this meant, in a very simplified way, that the same particle could not possibly decay sometimes into two pions, and at other times into three pions. Physicists believed there was a fundamental symmetry in the universe. If parity were broken, the fundamental symmetry they believed in would also be broken.

Physicists regarded parity as a property that was *conserved* in the same way that energy, momentum, and electric charge are always conserved.

Yet the only difference physicists could find between the theta-meson and the tau-meson was that they decayed differently. Otherwise these mesons seemed identical.

A daring hypothesis: Broken parity

What if there really were only one meson – a meson that sometimes decayed into two pions and sometimes into three pions?

Most physicists thought the idea was ludicrous; if there was one thing they could rely on Mother Nature to do, it was to preserve parity and symmetry.

Enter Yang and Lee

At the Institute for Advanced Study, Yang had started working with Tsung-Dao Lee. They had actually first met in China at the National Southwest University.

Yang was now a full professor of theoretical physics, having been promoted in 1955.

In summer 1956, Yang and Lee thought the unthinkable. What if parity really could be broken? At this time, Yang was 34 and Lee was 29 years old.

The meson decay they were looking at involved *the weak nuclear force* – the force responsible for nuclear fission and beta particle emission from atomic nuclei.

The two physicists read everything they could and carried out a large number of calculations; they wanted to see if there truly was a fundamental physical law preventing parity being broken for interactions involving the weak nuclear force. There was already good evidence that parity could *not* be broken for interactions involving the *strong nuclear force*.

They published their work late in 1956, showing they could find nothing to stop parity being broken for weak interactions *and* they described experiments they had devised which could *prove* whether parity was broken.

The unthinkable is true = Nobel Prize

A team of physicists at the Cryogenics Physics Laboratory at the National Bureau of Standards in Washington carried out one of the experiments designed by Yang and Lee, cementing Yang and Lee's place in the history of science.

In 1957 Yang and Lee won the Nobel Prize in Physics: they had thought the unthinkable, their calculations showed the unthinkable was possible, and they had devised experiments that had established that the unthinkable was actually true: the theta and tau mesons were actually the same particle and Mother Nature did not preserve parity. Symmetry had also been broken. At a deep level, this means that nature can tell the difference between left and right.

In the more sombre words of the Nobel Prize Committee, Yang and Lee's prize was for their "penetrating investigation of the so-called parity laws which has led to important discoveries regarding the elementary particles."

Even in the face of the theta-tau puzzle, most physicists had not seriously contemplated the possibility of parity breaking. Physics giant Richard Feynman was pleased that at one point he gave the odds of parity breaking being discovered as *low* as 1 in 50!

Particle physics had been held back for years by the incorrect assumption that parity could not be broken in weak interactions. Yang and Lee set particle physics free again.



The theta-tau puzzle was solved when Yang and Lee paved the way for the discovery that tau and theta mesons are identical: they represent different behaviours of the K^+ meson. Sometimes a K^+ meson decays to form two pions; sometimes it decays to form three pions.

Exercise

Answer these questions about the passage.

1. Use your own words to explain the important scientific principle that Yang discovered.
2. By his father being a professor of mathematics at Tsinghua University, do you think this inspired Yang's discovery of the physics law? Explain your opinion.

3. At only 26 years, Yang had already attained a PhD in physics, the highest degree award in any field of study. Explain the contribution of his education to his important discovery.
4. Carry out research about Professor Albert Einstein and find out why he is known as the father of modern physics. Do you think that Yang's working in the same university with Professor Albert Einstein, broadened his mind to discover the scientific law? Explain your opinion.
5. In your own words, explain precisely what the Meson problem was all about and the confusion it was causing among most physicists.
6. Explain how Yang solved the parity puzzle.

Describing African scientists



Activity I

Discussion

We have discussed European, American and Asian scientists in the previous sub-units. In this sub-unit, we are going to discuss African scientists and their prolific innovations, inventions and discoveries.

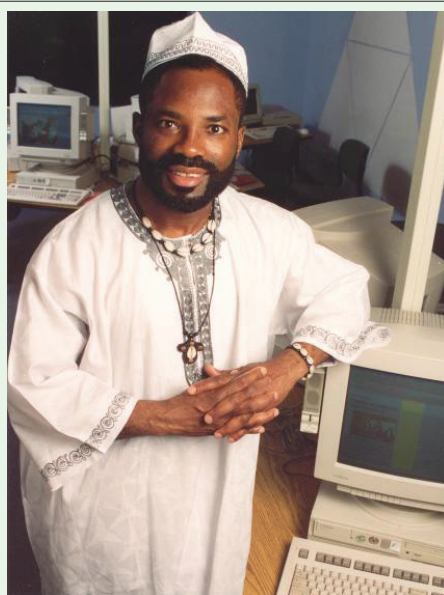
Are there some African scientists you know of? Share them and their scientific works with your group members. Choose a group secretary to present your findings to the class for further discussion and comparison. If you do not know any African scientist, then visit the internet facility of your school laboratory. If your school does not have a computer, conduct research from science textbooks from your library or ask your teachers.



Activity 2

Research on African scientists

Visit your school laboratory and find out about the life and scientific discoveries or works of these famous African scientists. Compare your findings with those of your classmates. If your school does not have a computer laboratory, ask your science teachers.



Dr Philip Emeagwali of Nigeria



Professor Gebisa Ejeta of Ethiopia



Tebello Nyokong of Lesotho



Afate Gnikou of Togo

Speculating about the future

Third conditional



Activity 1

Look at this sentence. What does it mean?

If Alexander **hadn't** discovered antibiotics, many people **would have** died.



Activity 2

Look at the scientists and their discoveries or inventions that you have learnt about in this unit. Predict what would have happened if they hadn't made those discoveries. Write sentences about your speculations.



Activity 3

Carry out research about the scientists in the table below and their discoveries or inventions on the internet, or by asking your science teachers, and write sentences speculating what would have happened if they hadn't made their discoveries. Compare your sentences with those of your classmates.

Benjamin Franklin	Michael Faraday
Marie Curie	Elizabeth Blackwell
Louis Pasteur	Isaac Newton
Maria Mayer	Barbara McClintock
Ivan Pavlov	Ernest Rutherford



Activity 4

Gap filling

Predict what would have happened in these sentences and complete them.

1. If the Wright brothers hadn't invented the aeroplane,
2. If their father hadn't given them a gift of a toy plane, the Wright brothers
3., the idea of the aeroplane wouldn't have been born.
4. If the Wright brothers hadn't made the kites,
5. If the newspeople hadn't covered the first flight,
6. If Mendel hadn't set for himself the ambitious task of discovering the laws of heredity,
7. If Chen-Ning Yang hadn't studied physics,
8. If the Meson problem hadn't persisted, Yang
9. If Dr. Phillip Emeagwali hadn't developed the world's fastest computer,
10. If Professor Gebisa Ejeta, the sorghum breeding research would not have been successful.

Grammar highlight: Third Conditional

We can use the third conditional to talk about 'impossible' conditions. Impossible because they are in the past and we cannot change what has happened.

Examples

If I had worked harder at school, I would have got better grades.

If I had had time, I would have gone to see him. But I didn't have time.

If we had bought that house, we would have had to rebuild the kitchen.

If we had caught the earlier train, we would have got there on time but we were late.

Notice that the main clause can contain '**would**', '**could**' or '**might**'.

If I had seen him at the meeting, I would have asked him. (But he wasn't there so I didn't.)

If I had seen him at the meeting, I could have asked him. (But he wasn't there so it wasn't possible.)

If I had seen him at the meeting, I might have asked him. (But I'm not sure. Perhaps if the opportunity had arisen.)

If I had paid more attention in class, I would have understood the lesson. Also notice that sometimes the 'if clause' is implied rather than spoken.

I'd have done it. ("if you had asked me but you didn't.")

I wouldn't have said that. ("if I'd been there.")

He wouldn't have let him get away with that. ("if he had tried that with me.")

Revision on the third conditional



Activity 1

Gap filling

In this exercise, you will practise forming the third conditional. Basing on the example sentence, complete the third conditional sentences by filling in the spaces. For example:

I didn't pass the test, because I hadn't studied hard enough.

"If I had studied harder, I would have passed the test."

1. He crashed his car because he fell asleep while driving.
If he asleep while driving, he his car.
2. We couldn't go to the concert because we didn't have enough money.
If we enough money, we to the concert.
3. I lost my job because I was late for work.
I my job if I late for work.
4. The wind was so strong that the bridge collapsed.
If the wind so strong, the bridge

5. I couldn't call Mutesi because I had lost her number.
..... Mutesi if I her number.

Exercise

Multiple choice

For each question, read the situation and choose the best sentence using the third conditional.

1. I wasn't thirsty. I didn't drink the lemonade.
 - A. If I was thirsty, I would drink the lemonade.
 - B. If I had been thirsty, I would've drunk the lemonade.
 - C. If I would have been thirsty, I drank the lemonade.
2. I didn't know Butera was in town. I didn't call her.
 - A. If I had known Butera was in town, I would have called her.
 - B. I had called Butera if I had know she was in town.
 - C. I would had called Butera if I have known she was in town.
3. I didn't know watching this documentary was important for our exam. I didn't watch it.
 - A. If I knew this documentary was important, I had watched it.
 - B. If I would have known this documentary was important, I had watched it.
 - C. If I had known this documentary was important, I would've watched it.
4. I walked home from the disco. My friend was too drunk to drive.
 - A. I hadn't walked home from the disco if my friend wasn't too drunk to drive.
 - B. I wouldn't have walked home from the disco if my friend hadn't been too drunk to drive.
 - C. I wouldn't had walked home from the disco if my friend hadn't been too drunk to drive.
5. I didn't go to the store. I thought it closed at 5 pm. It closed at 6 pm.
 - A. If I had known the store had closed at 6 pm, I would've gone.

- B. If I knew the store would have closed at 6 pm, I would've gone.
 - C. I would've gone to the store if I know it had closed at 6 pm.
6. I ate the yoghurt in the fridge. I thought it was mine, not yours.
- A. If I would have known the yoghurt was yours, I wouldn't have eaten it.
 - B. If I had known the yoghurt was yours, I wouldn't have eaten it.
 - C. I hadn't eaten the yoghurt if I knew it was yours.
7. I am really hungry now. I didn't have any breakfast.
- A. If I had some breakfast, I wouldn't be hungry now.
 - B. If I would had had some breakfast, I wouldn't be hungry now.
 - C. If I had had some breakfast, I wouldn't be hungry now.
8. I didn't see Tony at the party. I wanted to speak to him about his vacation in Kenya.
- A. If I saw Tom at the party, I would've spoken to him.
 - B. If I had seen Tom at the party, I would've spoken to him.
 - C. If I would have seen Tom at the party, I would've spoken to him.

Predicting discoveries and inventions in the future



Activity I

Research

We are witnessing many scientific innovations like the computer and satellite technology and indeed many more inventions, discoveries and innovations are in the pipeline. You have probably heard people predict some of them. Discuss the scientific inventions you think will happen in the coming years. If you do not know, then use the internet to find out or ask your science teachers and community members.

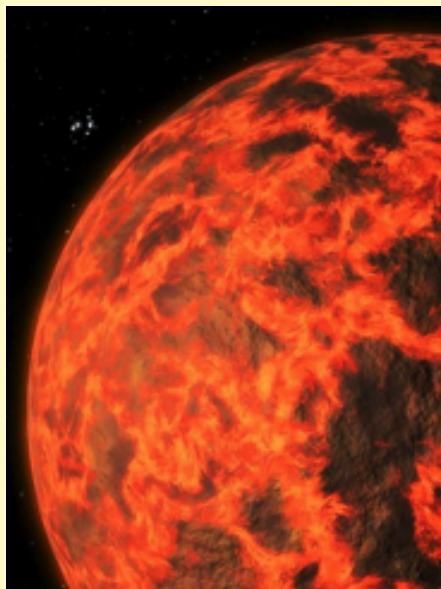


Activity 2

Research

In groups, study the photographs carefully. Describe them with your classmates.

Fig. A



Planet Mars – the red planet

Fig. B



Human beings on planet Mars

Fig. C



The flying car

Fig. D



Telephone conferencing

Answer these questions

1. Look at **Fig. A** of the planet Mars, also called the red planet. Find out why it is called the red planet. Have you heard of the one-way ticket to Mars? It is an expedition in which a USA billionaire called Elon Musk has invested to land humans on planet Mars to live there permanently after the scientists in **Fig. B** discovered that the planet could support human life. Visit your school's internet laboratory, search for the topic 'one-way ticket to Mars'. Write an essay about how the whole process will be conducted, the possible challenges humans who will live on the planet will face and the possible mitigation measures scientists have put in place.
2. Look at **Fig. C** (the flying car). It is anticipated to solve the problem of traffic jams in towns and cities. Again use the internet to find out how the car will operate.
3. **Fig. D** is a telephone conferencing gadget. **Conference** means a gathering. This gadget is already in use with plans to modify it so that it can address hundreds of thousands or millions of people in a community. How does it work? Find out from the internet.
4. Have you heard of the Airbus; of the road that will be constructed to rotate around the world cutting through the major cities of the world; food that will be grown in floating gardens in air; cities and towns built on water by scientists; the first head transplant that will take place in December 2017, by Professor Doctor Sergio Canavero, an Italian neurosurgeon; etc? Research about all of them and any other astonishing future or current scientific inventions, innovations and discoveries and find how they will affect the world. Present your work in an essay.
Please work together and compare your answers.

Future perfect



Activity 3

Discussion

1. Predict the inventions that will happen in future. What do you think life as influenced by scientific innovations will be like in the year 2500?
2. What impact do you think these scientific inventions, innovations and discoveries will have on our lives?
3. Do you think by 2500, a cure for HIV/AIDS will have been found?
4. What do you predict will be the effect of science and technology, including ICT, on the lifestyles of the people who will be living by that time, 2500 and beyond?

Exercise

Use the predictions to write sentences or paragraphs about those scientific inventions and discoveries and the effect they have on our lives and the environment using the future tense 'will'. Compare your answers with those of your classmates.

Example

By the year, 2050, it is predicted by the UN that there will be two billion more people in the world, creating a demand for 70 percent more food. By that time, 80 percent of us will be living in cities, and most of the food will be farmed in the cities. I predict that scientists will invent air floating farms to meet the very great food demand for the urbanites.



Unit 6: Natural and Industrial Processes

My goals

After studying this unit, I will be able to:

- ◉ Describe a natural, biological, environmental, industrial or mining process.
- ◉ Plan, write and evaluate texts with a sequence of sentences, describing a process.
- ◉ Write a sequence of sentences describing a process, with a diagram, paying attention to connectors of time or cause and effect.
- ◉ Make notes and summary of a text.
- ◉ Respect natural and industrial processes role in Rwanda's economic development.



Language use

Describing a natural process



Activity 1

Discussion and research

Look at the various natural occurrences like thunderstorms, earthquakes, stars, clouds, rain water, and others. Have you ever wondered about the processes these natural phenomena go through to form?



Activity 2

Look at the photograph of a cloud below. Discuss the importance of clouds.





Activity 3

Read the passage below to find out how clouds are formed

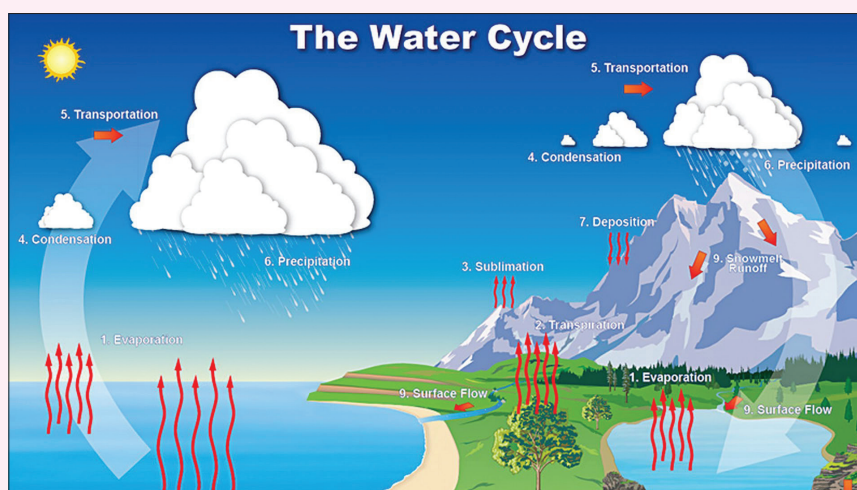
What are clouds?

A cloud is a large collection of very tiny droplets of water or ice crystals. The droplets are so small and light that they can float in the air.



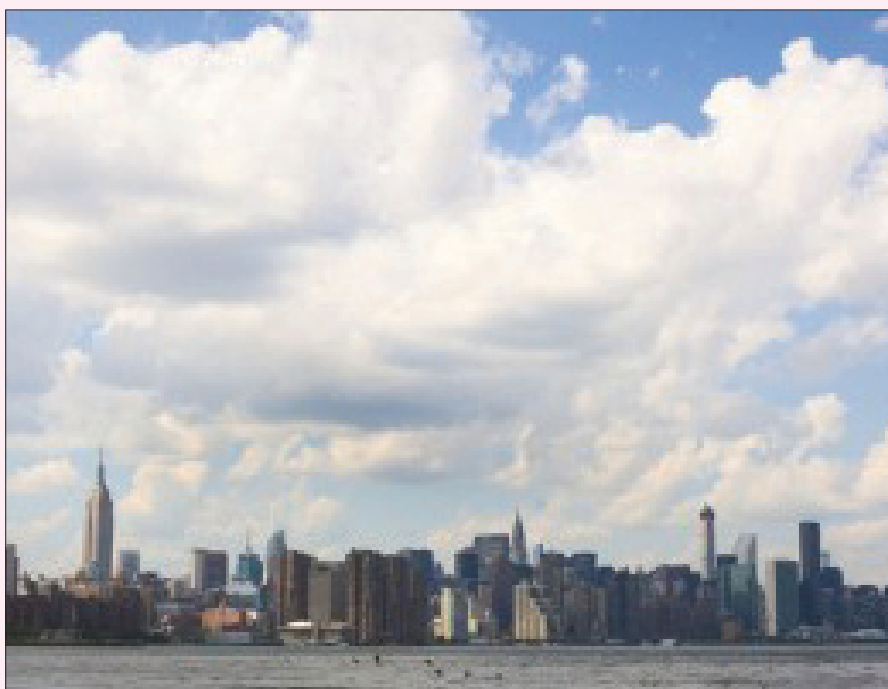
How are clouds formed?

All air contains water, but near the ground it is usually in the form of an invisible gas called water vapour. When warm air rises, it expands and cools. Cool air can't hold as much water vapour as warm air, so some of the vapour condenses onto tiny pieces of dust that are floating in the air and forms a tiny droplet around each dust particle. When billions of these droplets come together they become a visible cloud.



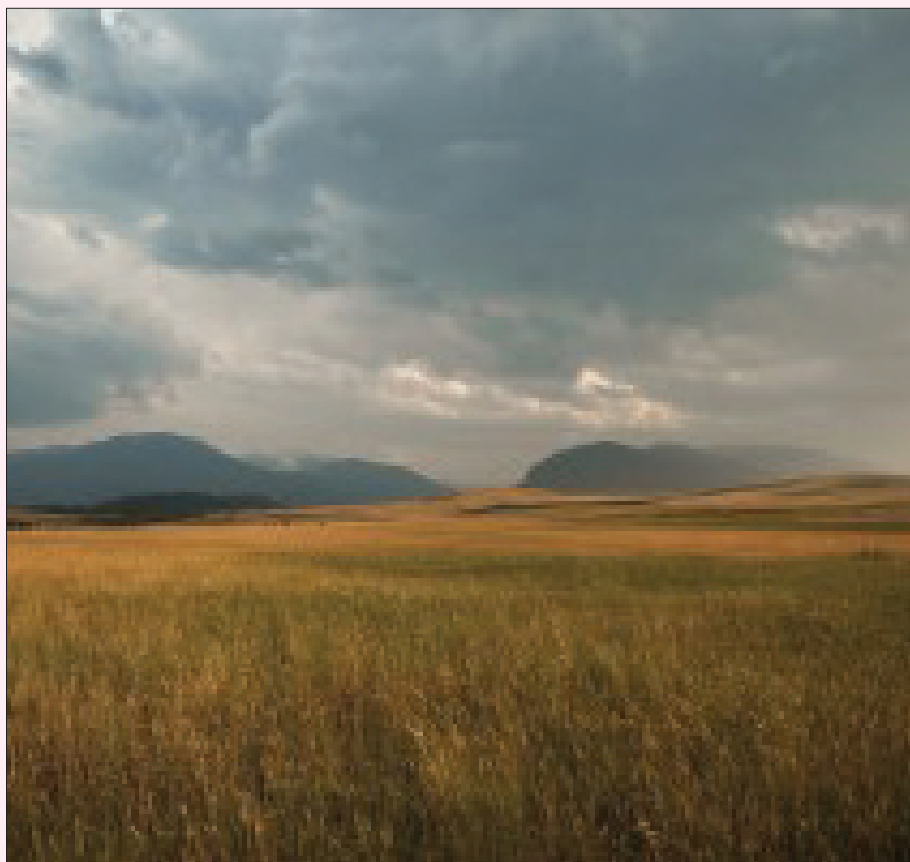
Why are clouds white?

Since light travels as waves of different lengths, each colour has its very own unique wavelength. Clouds are white because their water droplets or ice crystals are large enough to scatter the light of the seven wavelengths (red, orange, yellow, green, blue, indigo and violet), which combine to produce white light.



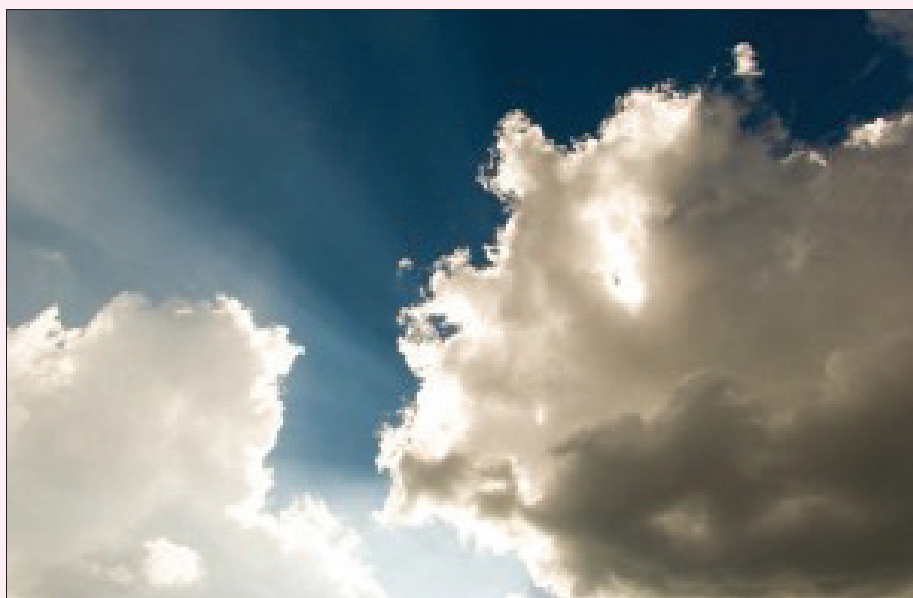
Why do clouds turn grey?

Clouds are made up of tiny water droplets or ice crystals, usually a mixture of both. The water and ice scatter all light, making clouds appear white. If the clouds get thick enough or high enough, all the light above does not make it through, hence the grey or dark look. Also, if there are lots of other clouds around, their shadow can add to the grey or multicoloured grey appearance.



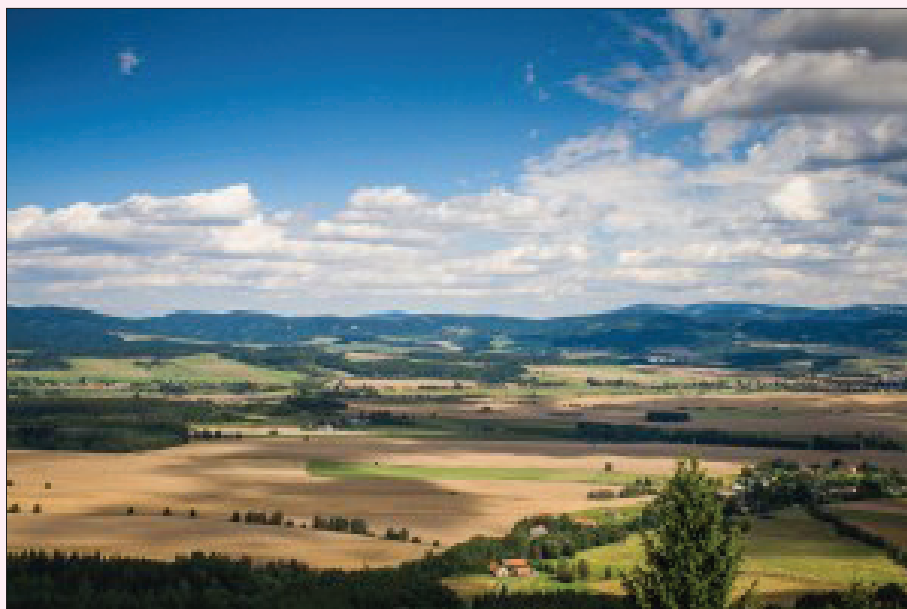
Why do clouds float?

A cloud is made up of liquid water droplets. A cloud forms when air is heated by the sun. As it rises, it slowly cools until it reaches the saturation point and water condenses, forming a cloud. As long as the cloud and the air that it is made of is warmer than the outside air around it, it floats!



How do clouds move?

Clouds move with the wind. High cirrus clouds are pushed along by the jet stream, sometimes travelling at more than 100 miles per hour (mph). When clouds are part of a thunderstorm they usually travel at 30 to 40 mph.



Why do clouds form at different heights in the atmosphere?

The characteristics of clouds are dictated by the elements available, including the amount of water vapour, the temperatures at that height, the wind, and the interplay of other air masses.



How is fog formed?

There are many different types of fog, but fog is mostly formed when southerly winds bring warm, moist air into a region, possibly ending a cold outbreak. As the warm, moist air flows over much colder soil or snow, dense fog often forms. Warm, moist air is cooled from below as it flows over a colder surface. If the air is near saturation, moisture will condense out of the cooled air and form fog. With light winds, the fog near the ground can become thick and reduce visibility to zero.



(Source: Weather Wiz Kids)



Activity 4

Research

Think about a natural observable feature and conduct research about how it forms. Describe the process to your classmates.

Describing a biological process



Activity 1

Discussion

Just like any living thing needs food to survive, plants also make the food they consume for their survival. In your Science or Biology lessons, you should have learnt about the process by which plants make their food.

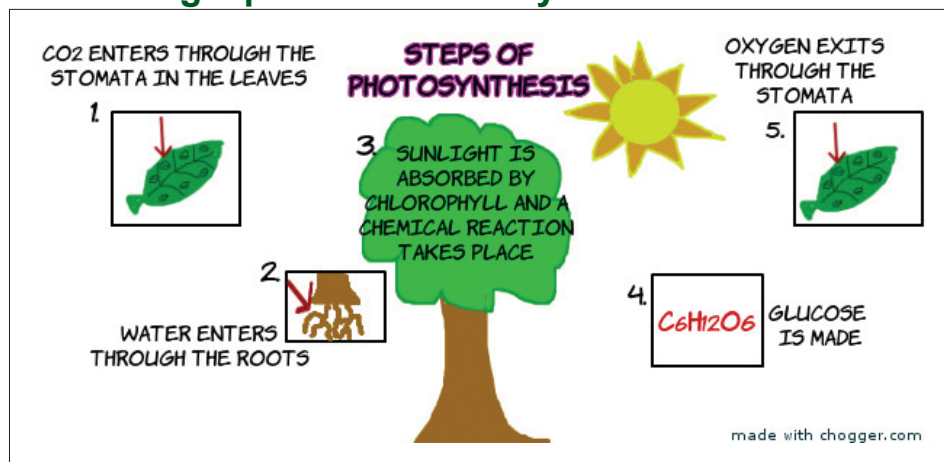


Activity 2

Research and essay writing using connectors of time and cause and effect

Study the picture below carefully. Use it and your own Science or Biology knowledge to write about the process by which plants manufacture their food called **photosynthesis**. Write down the process and choose a secretary who will present your essays to the class for further discussion and comparison of your findings.

Describing a process: Photosynthesis



Describing an environmental process

In all our studies, we have emphasised the relevance of protecting our environment, yet human-induced factors, especially through industrialisation, continue causing insurmountable damage to the environment.



Activity 1

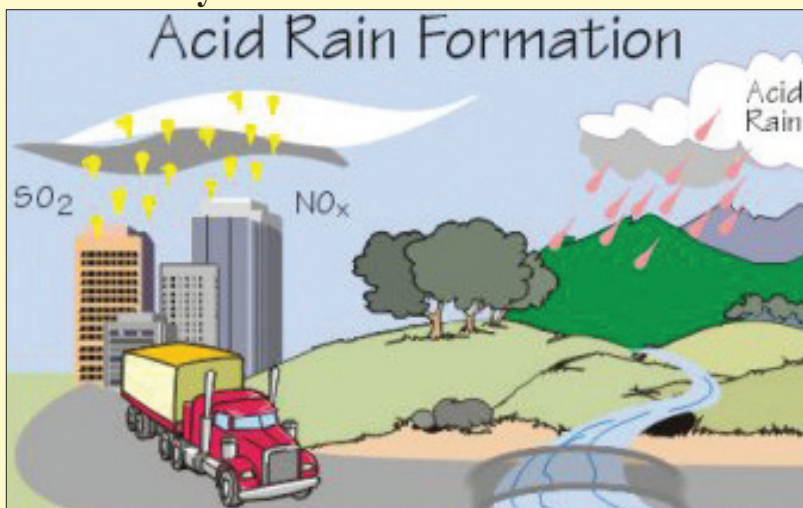
Discussion

- (a) Have you ever heard about acid rain? What is it?
- (b) What causes acid rain?
- (c) Describe the effects of acid rain.
- (d) What piece of advice would you suggest to prevent acid rain?



Activity 2

Study the diagram carefully. Read the passage below it to match what you see in the text.



(Photo credit: Environmental Protection Agency (EPA))

Factories produce bad toxic gases called SO_2 and NO_x and release them into the air (these are represented by the yellow dots in the diagram). When SO_2 and NO_x combine with the air, acid rain is created.

Acid rain is caused by a chemical reaction that begins when compounds like sulfur dioxide and nitrogen oxides are released into the air. These substances can rise very high into the atmosphere, where they mix and react with water, oxygen, and other chemicals to form more acidic pollutants, known as acid rain. Sulfur dioxide and nitrogen oxides dissolve very easily in water and can be carried very far by the wind. As a result, the two compounds can travel long distances where they become part of the rain, sleet, snow and fog that we experience on certain days.

Human activities are the main cause of acid rain. Over the past few decades, humans have released so many different chemicals into the air that they have changed the mix of gases in the atmosphere. Power plants release the majority of sulfur dioxide and much of the nitrogen oxides when they burn fossil fuels, such as coal, to produce electricity. In addition, the exhaust from cars, trucks and buses releases nitrogen oxides and sulfur dioxide into the air. These pollutants cause acid rain.

Acid rain has a pH below 5.6. Normal rain has a pH of about 5.6, which is slightly acidic. (The pH value is a measure of acidity or alkalinity, ranging from 0 to 14. A pH measurement of 7 is regarded as neutral. Measurements below 7 indicate increased acidity, and those above 7 indicate increased alkalinity.)

The principal natural phenomena that contribute acid-producing gases to the atmosphere are emissions from volcanoes and from biological processes that occur on the land, in wetlands and in the oceans. The effects of acidic deposits have been detected in glacial ice thousands of years old in remote parts of the globe. Principal human sources are industrial and power-generating plants and transportation vehicles. The gases may be carried hundreds of miles in the atmosphere before they are converted to acids and deposited.

Since the industrial revolution, emissions of sulfur and nitrogen oxides to the atmosphere have increased. Industrial and energy-generating facilities that burn fossil fuels, primarily coal, are the principal sources of increased sulfur oxides. These sources, plus the transportation sector, are the major originators of increased nitrogen oxides.

The problem of acid rain has not only increased with population and industrial growth, it has become more widespread. The use of tall smokestacks to reduce local pollution has contributed to the spread of acid rain by releasing gases into regional atmospheric circulation. The same remote glaciers that provide evidence of natural variability in acidic deposition show, in their more recently formed layers, the increased deposition caused by human activity during the past half century.

Effects of acid rain

Acid rain causes acidification of lakes and streams and contributes to the damage of trees at high elevations (for example, red spruce trees above 2,000 feet) and many sensitive forest soils. In addition, acid rain accelerates the decay of building materials and paints, including irreplaceable buildings, statues and sculptures that are part of our nation's cultural heritage. Prior to falling to the earth, sulfur dioxide (SO₂) and nitrogen oxide (NO_x) gases and their particulate matter derivatives—sulfates and nitrates—contribute to visibility degradation and harm public health.

Environmental effects of acid rain

The most obvious environmental effect of acid rain has been the loss of fish in acid-sensitive lakes and streams. Many species of fish are not able to survive in acidic water. Acid rain affects lakes and streams in two ways: chronic and episodic. Chronic, or long-term acidification results from years of acidic rainfall. It reduces the alkalinity (buffering capacity) and increases the acidity of the water. Chronic acidification may reduce the levels of nutrients such as calcium, which, over time, may weaken the fish and other plants and animals in an aquatic ecosystem. Episodic acidification is a sudden jump in the acidity of the water. This can result from a heavy rainstorm. It also happens in the spring, because the sulfates and nitrates will concentrate in the lowest layers of a snowpack. In the spring, when that snow melts, it will be more acidic than normal. Episodic acidification can cause sudden shifts in water chemistry. This may lead to high concentrations of substances such as aluminum, which may be toxic to fish.



Dead fish in a lake polluted by acid rain

Most of the effects on forests are subtle. Acid deposition may influence forest vegetation and soils. Acid rain has been cited as a contributing factor to the decline of the spruce-fir forests throughout the eastern United States. Acid rain may remove soil nutrients such as calcium and magnesium from soils in high elevation forests and cause damage to needles of red spruce. Acid rain may also help weaken the natural defences of some trees, making them more vulnerable to some diseases and pests.

Acid rain deposits nitrates that can lead to increases in nitrogen in forests. Nitrogen is an important plant nutrient, but some forest systems may not be able to use all they receive, leading to nitrogen saturation. In the eastern United States, there is evidence of nitrogen saturation in some forests. Nitrates can remove additional calcium and magnesium from the soils. Continued nitrogen deposition may alter other aspects of the nutrient balance in sensitive forest ecosystems and alter the chemistry of nearby lakes and streams.



Maize plantation prematurely dried by acid rain

Excess nitrogen may cause eutrophication (over-nourishment) in areas where rivers enter the ocean. This may lead to unwanted growth of algae and other nuisance plants. As much as 40% of the total nitrogen entering coastal bays on the Atlantic and Gulf coasts may come from atmospheric deposition.

Effects of acid rain - human health

Acid rain looks, feels and tastes just like clean rain. The harm to people from acid rain is not direct. Walking in acid rain, or even swimming in an acid lake, is no more dangerous than walking or swimming in clean water. However, the pollutants that cause acid rain—sulfur dioxide (SO_2) and nitrogen oxides (NO_x)—do damage human health. These gases interact in the atmosphere to form fine sulfate and nitrate particles that can be transported long distances by winds and inhaled deep into people's lungs. Fine particles can also penetrate indoors. Many scientific studies have identified a relationship between elevated levels of fine particles and increased illness and premature death from heart and lung disorders, such as asthma and bronchitis.

Based on health concerns, SO_2 and NO_x have historically been regulated under the Clean Air Act, including the Acid Rain Programme. In the eastern U.S., sulfate aerosols make up about 25 percent of fine particles.

By lowering SO₂ and NO_x emissions from power generation, the Acid Rain Programme will reduce the levels of fine sulfate and nitrate particles and so reduce the incidence and the severity of these health problems. When fully implemented by the year 2010, the public health benefits of the Acid Rain Programme are estimated to be valued at \$50 billion annually, due to decreased mortality, hospital admissions and emergency room visits.

Decreases in NO_x emissions are also expected to have a beneficial impact on human health by reducing the nitrogen oxides available to react with volatile organic compounds and form ozone. Ozone impacts on human health include a number of morbidity and mortality risks associated with lung inflammation, including asthma and emphysema.



Activity 3

Summary writing

In 100 words, describe the causes and effects of acid rain. Compare your summaries with those of your classmates.

Describing an industrial process

Using the passive voice and sentence connectors



Activity 1

Work

In our previous classes, we learnt about the passive voice. Share with a classmate what you know about the passive voice and why it is an appropriate tense for describing processes. You may exhibit knowledge by writing a simple process of getting a product using the passive tense. Compare your paragraph with those of your classmates.



Activity 2

Sentence connectors

Read these sentences. Share their meaning among yourselves.

1. Science is amusing but also wearying; it is fascinating *yet* challenging.
2. Be proud to stand up for purity *because* that way alone leads to a magnetic personality.
3. *On the other hand*, if you do not pay attention to the scientific details, science can turn out to be harmful.
4. Last month, he was given the final warning against drinking. *Even so*, he did not heed the warning and was eventually expelled.
5. We could not allow such a habitual drunkard to join us; *besides*, he had already exhibited ill manners that he was bent on not changing.

Note

The words and phrases (sentence connectors) in italics, make connections between one sentence or clause and another, doing some of the work of making clear the relationship between the ideas expressed.



Activity 3

Work

Study the following sentence connectors. Discuss their meaning and use them in sentences of your own.

1. Expressing addition: *too, also, equally, moreover, additionally (in addition to), at the same time, in the same way, similarly, furthermore, as a matter of fact, etc.*
2. Expressing cause and effect: *as a result, therefore, consequently, so, thus, because, of that.*

3. Expressing comparison: *similarly, unlike*.
4. Expressing concession: *however, nevertheless, and yet, besides, a the same, through, in spite of (despite), in any case, still, anyway, even so*.
5. Expressing contrast: *on the one hand/on the other hand, on the contrary, however, but, yet, nevertheless, in spite of*.



Activity 4

Writing work

Having shared knowledge about the passive tense and sentence connectors, think of a product whose production process you are familiar with.

Use the passive tense and sentence connectors to describe the process of making the product. Compare your descriptive composition with those of your classmates.



Activity 5

Research

Think of a product. It could be an article of clothing, food product, beverage or anything else. Visit a factory where that product is made. Observe the process the product goes through until it is produced. The guided tour and explanations by the production staff will provide useful information for your research.

Make notes about every production stage. Write down the process using the notes you took. Try to present your descriptive essay using the passive voice.

Write down the steps and share them with your classmates. If there are any by-products made from the main product, explain them and discuss their importance.



Activity 1

Read the passage below describing the process of making sugar

Make brief notes and then a summary of the process of making sugar. Share the notes and summary with other classmates. Before reading, first study the photographs about the process of making sugar, then match them with the story.

How cane sugar is made — the basic story

Fig 1



Fig 2



Fig. 3



Fig. 4

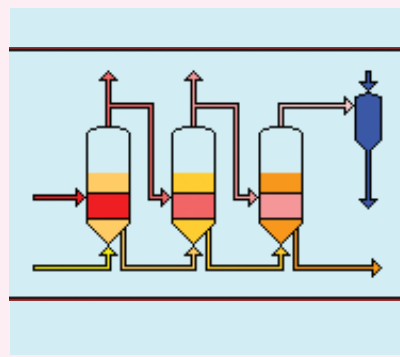


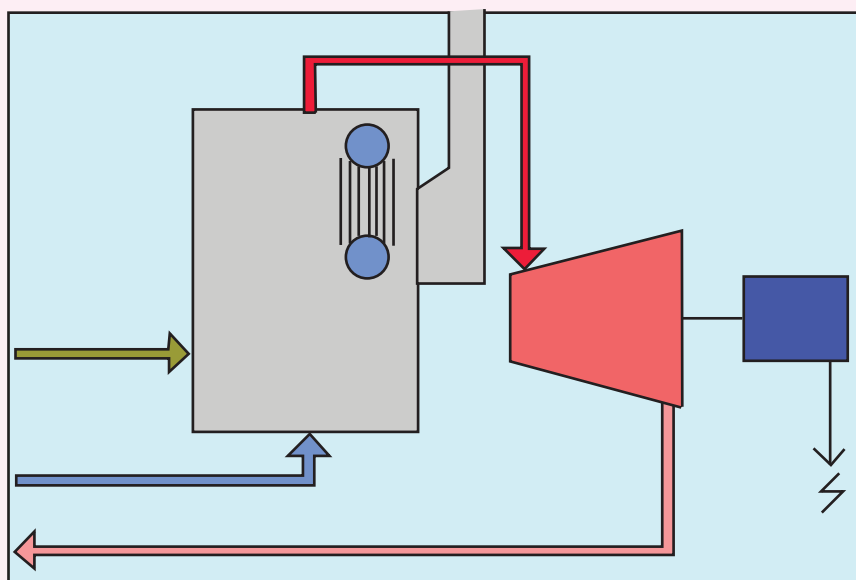
Fig. 5



Fig. 6



Fig. 7



Growing the cane

Sugar cane is a sub-tropical and tropical crop that prefers lots of sun and lots of water – provided that its roots are not waterlogged. It typically takes about 12 months to reach maturity although the time varies widely around the world from as short as six months in Rwanda to 24 months in some places. Where it differs from many crops is that it re-grows from the roots so the plant lasts through many cycles.

Harvesting

Sugar cane is harvested by chopping down the stems but leaving the roots so that it re-grows in time for the next crop. Harvest times tend to be during the dry season and the length of the harvest ranges from as little as 2 ½ months up to 11 months. The cane is taken to the factory: often by truck or rail wagon.

Extraction

The first stage of processing is the extraction of the cane juice. In many factories the cane is crushed in a series of large roller mills: similar to a mangle [wringer] which was used to squeeze the water out. The sweet juice comes gushing out and the cane fibre is carried away for use in the boilers. In other factories a diffuser is used as is described for beet sugar manufacture. Either way the juice is pretty dirty: the soil from the fields, some small fibres and the green extracts from the plant are all mixed in with the sugar.

Evaporation

The factory can clean up the juice quite easily with slaked lime (a relative of chalk) which settles out a lot of the dirt so that it can be sent back to the fields. Once this is done, the juice is thickened up into a syrup by boiling off the water using steam in a process called evaporation. Sometimes the syrup is cleaned up again but more often it just goes on to the crystal-making step without any more cleaning. The evaporation is undertaken in order to improve the energy efficiency of the factory.

Boiling

The syrup is placed into a very large pan for boiling, the last stage. In the pan even more water is boiled off until conditions are right for sugar crystals to grow. You may have done something like this at school but probably not with sugar because it is difficult to get the crystals to grow well. In the factory the workers usually have to throw in some sugar dust to initiate crystal formation. Once the crystals have grown the resulting mixture of crystals and mother liquor is spun in centrifuges to separate the two, rather like washing is spin dried. The crystals are then given a final dry with hot air before being stored ready for dispatch.

Storage

The final raw sugar forms a sticky brown mountain in the store and looks rather like the soft brown sugar found in domestic kitchens. It could be used like that but usually it gets dirty in storage and has a distinctive taste which most people don't want. That is why it is refined when it gets to the country where it will be used. Additionally, because one cannot get all the sugar out of the juice, there is a sweet by-product made: molasses. This is usually turned into a cattle food or is sent to a distillery where alcohol is made.

Power

So what happened to all that fibre from crushing the sugar cane? It is called "bagasse" in the industry. The factory needs electricity and steam to run, both of which are generated using this fibre.

The bagasse is burnt in large furnaces where a lot of heat is given out which can be used in turn to boil water and make high pressure steam. The steam is then used to drive a turbine in order to make electricity and create low pressure steam for the sugar making process. This is the same process that makes most of our electricity but there are several important differences.

When a large power station produces electricity it burns a fossil fuel [once used, a fuel that cannot be replaced] which contaminates the atmosphere and the station has to dump a lot of low grade heat. All this contributes to global warming. In the cane sugar factory the bagasse fuel is renewable and the gases it produces, essentially CO₂, are more than used up by the new cane growing. Add to that the factory use of low grade heat [a system called co-generation] and one can see that a well run cane sugar estate is environmentally friendly.

The passive voice



Activity 1

Study the sentence below taken from the reading passage.

The bagasse is burnt in large furnaces where a lot of heat is given out which can be used, in turn, to boil water and make high pressure steam.

What do you note about the subject of the sentence above and its relationship with the verb?



Activity 2

Writing sentences using the passive voice

Identify 10 sentences in which the passive voice has been used in the text which you read first. Write them in your exercise book, and discuss with a classmate their meanings.

Describing a mining process



Activity 1

Discussion

Describe the mining process of minerals.



Activity 2

Read the text below carefully.

For each sub-section of a paragraph, write one main sentence to summarise the paragraph.

Introduction

Tin (Sn) is one of the few metals which have been used and traded by humans for more than 5,000 years. One of its oldest uses is in combination with copper to make bronze. Copper was first coated with tin in the first century AD and tin-plated iron was manufactured in the 16th century. It has the advantageous combinations of a low melting point, malleability, resistance to corrosion and fatigue, and the ability to alloy with other metals. It is also non-toxic and easy to recycle.

Occurrence

Cassiterite (SnO_2) is by far the most important tin ore, although small amounts of tin are recovered from sulphide minerals such as stannite ($\text{Cu}_2\text{FeSnS}_4$). Tin occurs in both primary and secondary deposits. Primary deposits are typically associated with granite intrusive rocks which form when magma bodies are embodied into rock beneath the earth's surface, rather than on it as in the case of volcanic rock. Primary deposits can occur within the granite or within pegmatites or aplites (dyke-like rocks) associated with the granite. They occur also in rocks surrounding the margins of the intrusive rocks as veins, disseminations, skarns or carbonate replacements generated by tin-bearing fluids derived from the granite magmas. Secondary deposits (placers) derive from the weathering and erosion of primary tin deposits. Cassiterite is chemically resistant, heavy and readily forms residual concentrations. These concentrations may develop over a primary deposit (eluvial) and on slopes below the deposit (colluvial). When the cassiterite reaches a drainage system, it may be transported to a river channel and concentrated into an alluvial placer deposit.

A placer deposit buried by younger sediments or lava is known as a deep lead. Deposits in oceanic submerged river channels are important sources of tin. More than half of the world's tin production is from deposits such as these, mainly in Malaysia, Indonesia and Thailand.

Mining

The main method of mining large placer tin deposits is by bucket-line dredging. The alluvium containing the tin is excavated and transported by a continuous chain of buckets to the interior of the dredge where it is washed and roughly concentrated. In East Africa particularly, smaller deposits, or those unsuitable for dredging (e.g. because the bedrock is very rough) are worked by gravel pumping. The alluvium is broken up by a high pressure jet of water and the resulting slurry is pumped to the concentrating plant. The impure cassiterite concentrate is further concentrated by gravity methods which involve passing the concentrate in a stream of water over equipment such as jigs, spirals, or shaking tables. This separates the heavy cassiterite from the lighter minerals such as quartz. Magnetic or electrostatic separation removes the heavy mineral impurities. The end product is a cassiterite concentrate containing about 70% tin. Vein and disseminated tin deposits are mined by the same methods used in hard-rock mining of other non-ferrous ores such as zinc. The ore is broken by drilling and blasting, transported to a concentrator where it is crushed and ground and then concentrated by gravity methods. The concentrate is usually of a lower grade (about 50% tin) than placer concentrate because of the fine grain size of the cassiterite and the difficulty of removing all the associated sulphide minerals. Although flotation is not as efficient for tin ores as it is for sulphide ores, it is used increasingly to improve the amount of tin recovered and to recover tin from the residues of earlier treatment.

Smelting

Cassiterite is reduced to tin by heating with carbon at 1200°C to 1300°C. Reverberatory furnaces are used to smelt tin concentrate and, for additional tin recovery, to re-smelt slag, which is left after the ore has been smelted.

A furnace charge consists of cassiterite, a carbon-reducing agent, and limestone and silica fluxes. Smelting takes 10 to 12 hours. The molten batch is tapped into a settler from which the slag overflows into pots. The molten tin from the bottom of the settler is cast into slabs or pigs (of about 34 kg) for refining, and the cooled slag, which contains 10 to 25% tin, is crushed and re-smelted.

Refining

Tin produced by smelting concentrate or slag commonly contains metallic impurities which must be removed by refining before the tin is marketed. Refining may be by heat treatment or by electrolytic processes. Heat treatment is the more widely used method and involves heating the tin from smelters on an inclined hearth to a temperature just above the melting point of pure tin, but below that of the melting point of the impurities. The relatively pure molten tin flows into a kettle and impurities remain behind in a residue which is re-treated to recover more tin. As there is not a great demand for tin of extremely high purity, the more costly electrolytic method is rarely used. Tin concentrate sometimes also contains tantalum and niobium. The concentrate is smelted in an electric furnace and tantalum and niobium are recovered from the slag. The tin produced here contains a small amount of antimony and is used for alloys.

Uses

There are many important uses for tin. Most is used to produce tinplate, or steel coated with tin which is used for food packaging. Tin and tin alloys are used also for solder, especially in the electronics industry. It is commonly used as an alloy for bearing metal and as an alloy in metallic coatings. Inorganic compounds of tin are used in ceramics and glazes. Organic compounds of tin are used in plastics, wood preservatives, pesticides and in fire retardants.

Describing the greenhouse effect



Activity 1

Writing and evaluating a text

Carefully read the text below. It is a summary paragraph about greenhouse gases and their effect.

Greenhouse gases are certain gases in the atmosphere (water vapour, carbon dioxide, nitrous oxide, and methane, for example) that trap energy from the sun. Without these gases, heat would escape back into space and the Earth's average temperature would be about 60° F colder. Because of how they warm our world, these gases are referred to as greenhouse gases.



Activity 2

Research

Now carry out research about the greenhouse effect and write a text describing its formation process in the atmosphere. Remember to give a title to your text. Your piece of writing should flow in organised paragraphs and you should paraphrase your essay. **Paraphrasing** means using your own words to write a text, not lifting a sentence, paragraph or the entire text from the original source of material. Use the text to get knowledge, but be free to include your own ideas, and factual details to suit your writing. Present essays of not more than three paragraphs for further discussion with your classmates.



Unit 7: Globalisation and Global Citizenship

My goals

After studying this unit, I will be able to:

- ⦿ Appreciate the contribution of all cultures to the creation of a global society.
- ⦿ Describe class family connections with and visits to a foreign country.
- ⦿ Describe Rwanda's international trade and sources of income.
- ⦿ Discuss a multinational company in Rwanda.
- ⦿ Use the present perfect/ present perfect passive voice.

Talking about making global connections



Language use: Listening and speaking



Activity 1

Study the diagrams below.

- (a) What do you think they mean?
- (b) Explain the message you think they communicate.

Fig 1



Fig 2



Activity 2

Your teacher will read to you a passage. Listen carefully and do the activity that follows it.

What is globalisation?

Globalisation is a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology.

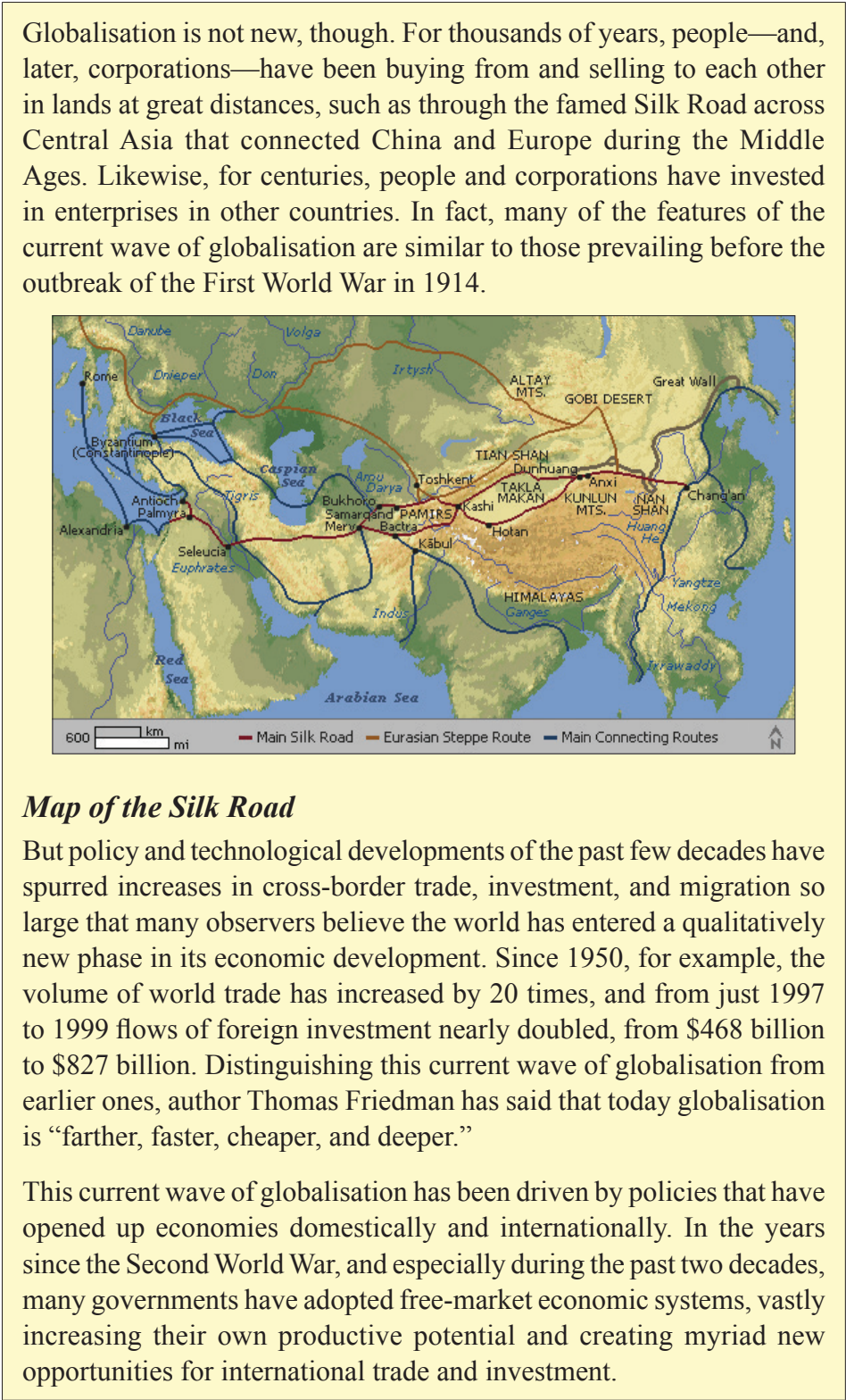
This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world.

Globalisation is not new, though. For thousands of years, people—and, later, corporations—have been buying from and selling to each other in lands at great distances, such as through the famed Silk Road across Central Asia that connected China and Europe during the Middle Ages. Likewise, for centuries, people and corporations have invested in enterprises in other countries. In fact, many of the features of the current wave of globalisation are similar to those prevailing before the outbreak of the First World War in 1914.

Map of the Silk Road

But policy and technological developments of the past few decades have spurred increases in cross-border trade, investment, and migration so large that many observers believe the world has entered a qualitatively new phase in its economic development. Since 1950, for example, the volume of world trade has increased by 20 times, and from just 1997 to 1999 flows of foreign investment nearly doubled, from \$468 billion to \$827 billion. Distinguishing this current wave of globalisation from earlier ones, author Thomas Friedman has said that today globalisation is “farther, faster, cheaper, and deeper.”

This current wave of globalisation has been driven by policies that have opened up economies domestically and internationally. In the years since the Second World War, and especially during the past two decades, many governments have adopted free-market economic systems, vastly increasing their own productive potential and creating myriad new opportunities for international trade and investment.



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A detailed map of the Silk Road trade routes across Eurasia. The map shows the Main Silk Road (red line) connecting the Mediterranean Sea to the Indian Ocean. Other routes include the Eurasian Steppe Route (orange line) and Main Connecting Routes (blue lines). Key locations marked include Rome, Byzantium (Constantinople), Antioch, Palmyra, Alexandria, Seleucia, Euphrates, Tishkent, Dunhuang, Anxi, Kashi, Hotan, Kaban, Kabul, Samarkand, Bactria, Merv, Bukhoro, Tianshan, Takla Makan, Kunlun Mts., Nan Shan, Chang'an, and the Great Wall. Major rivers like the Danube, Volga, Dnieper, Tigris, Euphrates, Indus, Ganges, Yangtze, Mekong, and Irrawaddy are shown. The map also labels the Black Sea, Caspian Sea, and the Arabian Sea. A scale bar indicates 600 km and 400 miles. A legend at the bottom identifies the route types: Main Silk Road (red), Eurasian Steppe Route (orange), and Main Connecting Routes (blue). A north arrow is located in the bottom right corner.

Map of the Silk Road

But policy and technological developments of the past few decades have spurred increases in cross-border trade, investment, and migration so large that many observers believe the world has entered a qualitatively new phase in its economic development. Since 1950, for example, the volume of world trade has increased by 20 times, and from just 1997 to 1999 flows of foreign investment nearly doubled, from \$468 billion to \$827 billion. Distinguishing this current wave of globalisation from earlier ones, author Thomas Friedman has said that today globalisation is “farther, faster, cheaper, and deeper.”

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Governments also have negotiated dramatic reductions in barriers to commerce and have established international agreements to promote trade in goods, services, and investment. Taking advantage of new opportunities in foreign markets, corporations have built foreign factories and established production and marketing arrangements with foreign partners. A defining feature of globalisation, therefore, is an international industrial and financial business structure.

Technology has been the other principal driver of globalisation. Advances in information technology, in particular, have dramatically transformed economic life. Information technologies have given all sorts of individual economic actors—consumers, investors, businesses—valuable new tools for identifying and pursuing economic opportunities, including faster and more informed analyses of economic trends around the world, easy transfers of assets, and collaboration with far-flung partners.

Globalisation is deeply controversial, however. Proponents of globalisation argue that it allows poor countries and their citizens to develop economically and raise their standards of living, while opponents of globalisation claim that the creation of an unfettered international free market has benefited multinational corporations in the Western world at the expense of local enterprises, local cultures, and common people. Resistance to globalisation has, therefore, taken shape both at a popular and at a governmental level as people and governments try to manage the flow of capital, labour, goods and ideas that constitute the current wave of globalisation.

According to Wikipedia Free Encyclopaedia, the term “citizenship” refers to an identity between a person and a city, state or nation and their right to work, live and participate politically in a particular geographical area.

When combined with the term “global”, it typically defines a person who places their identity with a “global community” above their identity as a citizen of a particular nation or place. The idea is that one’s identity transcends geography or political borders and that responsibilities or rights are or can be derived from membership of a broader class: “humanity”.

This does not mean that such a person denounces or waives their nationality or other, more local identities, but such identities are given “second place” to their membership of a global community.



Activity 3

Discussion

Use the knowledge you have listened to from the listening passage. Weigh the benefits and costs of globalisation. Write an essay. Compare your essays with those of other classmates.

In general usage, the term globalisation may have much the same meaning as “world citizen”. What do you think the phrase “world citizen” implies? Discuss the benefits and shortfalls of world citizenship.



Activity 4

Dialogue

Practise and act out the dialogue below with a classmate.



Joan:

Hello David. Did you hear the recent government proposal of exploring the possibility of investing in video conferencing to connect school children and teachers to the outside world?

David: Oh yes, I did hear. What do you think? Wouldn't it be excellent if our government connected us to the global world using the internet so that we could communicate to each other and exchange ideas! Won't that be so wonderful?

Joan: Trust me. Whoever thought about this proposal indeed thought very well for us school-going children and our valued teachers. The proposal should be made into a bill, tabled in parliament and passed quickly. There are so many benefits we shall derive out of it, besides the exchange of ideas you have mentioned!

David: I have already heard about the 'World Links for Development' programme which has helped to connect schools, teachers and students of various countries around the globe. In a televised dialogue with one of the beneficiaries, I really envied him when he enumerated the many benefits of global connections using the internet.

Joan: What did he precisely say?

David: Many things, but I am most certain this is the trend we are becoming a part of. Besides, information and communication technology itself has, of course, changed dramatically around the world. There is more of it; it is more powerful; it is faster; it is cheaper; it is available to many more people; and many more people know how to, and do use it as part of their daily lives. The information and communication tools to make connections between teachers and learners across national borders have improved a lot, are very useful, sustainable, environmentally friendly and even exciting.

Joan: Wow, what an exciting world we are going to enjoy!



Activity 5

Discussion

Read through the dialogue again. Use it to discuss the benefits of people around the world being linked to each other through the use of the internet. Choose a secretary to share your views with the class for comparison and further discussion of your opinions.



Activity 6

Research/Conducting a survey

Your teacher will take you to a tour agency. Find out the number of people who leave Rwanda and those who come into Rwanda. Find out from the tour staff the reasons why people leave Rwanda and why others come into Rwanda. Present your findings in a table.

Reasons	Emigrants (people leaving Rwanda)	Immigrants (people coming to Rwanda)
	1.	1.
	2.	2.
	3.	3.
	4.	4.

'People around the world travel to different countries.' Use the table above to write a composition about the reasons and benefits these people gain by travelling to these countries. Compare your essay with those of your classmates.



Activity 7

Essay writing

Some of you could be having family connections or friends in foreign countries and may have visited other countries. Write a letter to your pen pals or family friends informing them about your cultures, or any other subject of your choice. Exchange your letters with your classmates.

Describing international trade



Activity 1

Discuss these questions

- (a) Visit nearby shops and supermarkets. Or, look at the labels on some of the products in your home that you use. On some of the labels are written the countries where they are made or manufactured. Describe the goods that you see on the Rwandan markets that are not produced in our country. Why do you think our country cannot produce those goods? Do you know of some products and services that Rwanda exports to other countries? Describe them.
- (b) Look at cars. Most of them are manufactured in Europe and Asia. Why do you think we cannot as per now manufacture them in Rwanda?
- (c) Do you have some suggestions you can recommend so that Rwanda starts manufacturing the products she imports?
- (d) Explain how Rwanda benefits by exporting her products and services to other countries.



Activity 2

Read the passage below carefully

Rwanda is predominantly a country of rural farmers, with few natural resources. About 90% of the population is engaged in agriculture and the remainder in the service sector. Tea and coffee are the main export commodities of Rwanda trade. Since 2001, growth has been driven by exports to the tune of 5% in the last five years.

Rwanda trade: Exports

Despite the setback caused by the 1994 genocide, Rwanda has spared no efforts to put its economy back on track. The signing of an Enhanced Structural Adjustment Facility with the International Monetary Fund (IMF) in 1998 saw the beginning of privatisation, with support from the World Bank. Rwanda's exports include: tea; coffee; coltan; cassiterite; iron ore; tin and animal hides.

Currently, Rwanda's road to recovery and robustness is largely dependent on the fluctuation in tea and coffee prices in the international market. In 2000, coffee production stood at 14,578,560 tons and in 2002, tea became the largest export item at 15,000 tons, translating into revenues of US\$18 million. Animal hides and tin ore are Rwanda's other export goods. Most of Rwanda's exports go to China (9.1%), Germany (7.3%), the US (4.5%), Thailand (8.6%) and Belgium (4.1%). The total revenues generated by exports in Rwanda's economy are around US\$213 million (2009 est.).

Rwanda Trade: Imports

Rwanda's trade imports are far larger than its exports and are in the region of \$786 million (2009 est.). The main countries that goods are imported from include Kenya (15%), Uganda (13.1%), China (6.2%), Belgium (5.2%), and Germany (4.5%).

France and Israel are also countries that Rwanda imports from. The main imports are: machinery and equipment; steel; cement and construction material; Petroleum products and foodstuffs.

The US is an important exporter to Rwanda, accounting for almost \$10 million in imports annually since 1990-93, and over \$40 million in 1994 and 1995. In 2007, the amount rose to approximately \$17 million, a 20% increase over the 2006 level. Being a member of the Common Market for Eastern and Southern Africa (COMESA) and the East African Community, roughly 90% of Rwanda's imports come from COMESA countries and 34% from other African countries.

(Source: Economy Watch)

Exercise

Answer these questions about the passage you have read

1. How does Rwanda's being predominantly an agricultural economy affect the country?
2. What do you think can be done to improve the agricultural sector so that Rwandan agricultural produce can become more competitive on the international market?
3. Describe Rwanda's main export commodities.
4. Explain the contribution of coffee production to Rwanda's economy.
5. Compare Rwanda's imports and exports.



Activity 3

Data presentation and information transfer

Use the passage to draw pie charts showing Rwanda's imports and exports to other countries as far as her international trade is concerned. Choose a secretary to present while interpreting your pie charts to the class.

The present perfect tense



Activity 1

Study these two sentences carefully with a classmate. Explain the meanings of the two sentences.

- (a) Rwanda *is* a predominately agricultural economy.
- (b) Rwanda *has been* a predominately agricultural economy.

Exercise

Multiple choice

Rewrite the sentences by choosing the correct word from the brackets.

1. Who among the three workers (has/have) absconded from duty?
2. The girl (has/have) gone for a study tour at the National Statistics of Rwanda offices.
3. Tea and coffee (has/have) been Rwanda's main export commodities for quite a long time.
4. Despite the setback caused by the 1994 genocide, Rwanda (have/has) spared no efforts to put its economy back on track.
5. The signing of an Enhanced Structural Adjustment Facility with the International Monetary Fund (IMF) in 1998 (have/has) seen the beginning of privatisation, with support from the World Bank.
6. Rwanda's road to recovery and robustness (have/has) largely been dependent on the fluctuations in tea and coffee prices in the international market.
7. The total revenues generated by exports in Rwanda's economy (has/have) been around US\$213 million.
8. Rwanda's trade imports (has/ have) been far larger than its exports.
9. Machinery and equipment (has/have) been Rwanda's main import products.
10. Being a member of the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (have/has) boosted Rwanda economy.

Describing international organisations

Rwanda belongs to quite a number of international organisations.



Activity 1

Research

Use the internet of your school to identify the international organisations that Rwanda belongs to. Also, find out how Rwanda benefits by being a member of these international organisations. Report back to your classmates. Compile a report about your findings. Write an essay and compare it with other classmates.

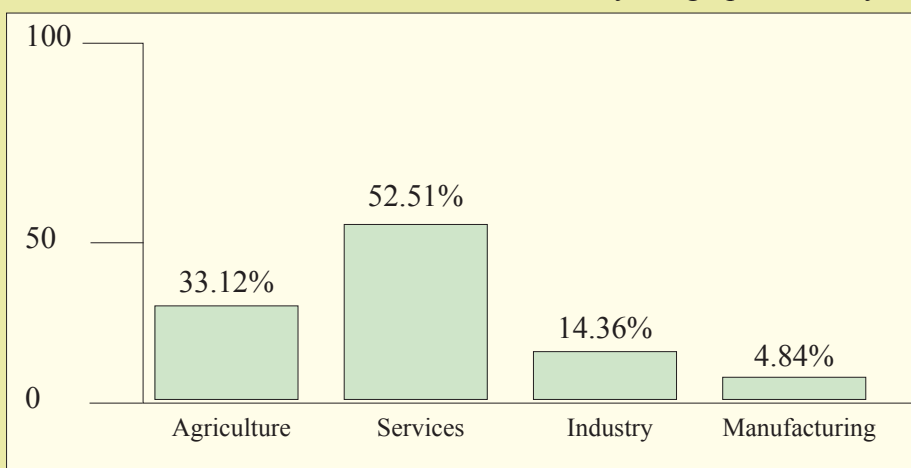
Describing sources of income



Activity 1

Graphic data presentation and information transfer

The following graph is a broad analysis of Rwanda's sources of income extracted from the source: Global EDGE. Study the graph carefully.



Source: global EDGE



Activity 2

Present the data in the graph in a pie chart. Use the data to write a paragraph describing Rwanda's sources of income.



Activity 3

Research

If 90% of the Rwandan population work in agriculture, and it accounts for 33.12% of the economy, carry out research using the internet or consult relevant textbooks on the contribution of other sectors to Rwanda's economy. Draw a pie chart showing Rwanda's sources of revenue from your research. Describe the information in your pie chart about Rwanda's sources of revenue and compare your pie chart with those of other classmates.

Multinational trade



Activity 1

Discussion

Let us study the meaning of the three words **multi** meaning many; **national** meaning countries; and **trade** referring to the exchange of commodities. When joined together, the term **multinational trade** means many countries trading amongst themselves; it is also called **overseas trade**.

1. Identify multinational corporations operating in Rwanda and their products.

2. Compare the size of the companies, staff, technology and products of multinational corporations from Europe, Asia, North America and South America operating in Rwanda with indigenous companies or private firms in developing countries like Rwanda. Present your work in an essay.

Fig. 1	Fig. 2
	
<i>German car exports</i>	<i>Rwanda coffee production</i>

3. Use the photographs in **Fig. 1** and **Fig. 2** above to account for the emerging multinational corporations in Rwanda and other African countries.



Activity 2

Discussion

Look at factors of production like technological advancement, among many others.

Explain how the differences in the factors of production account for the goods and services manufactured between developing countries and developed nations, such as those in Europe, Asia and America.

What do you think are the effects of multinational corporations on indigenous firms in developing countries like Rwanda?

Choose a secretary to present your findings to the class for further discussion and comparison of your answers.

Describing multinational companies



Activity 1

Research

Visit any multinational company operating in Rwanda. (Remember to go with your valid school identification card.) Inform the management or authorities that you are on a study visit to carry out research about that multinational corporation.

Ask them to give you information about the products, operation and reasons why they chose to extend their trade activities to Rwanda, plus any other additional information that may be relevant for your research. Make notes as you carry out your research.

After, organise your notes and write a detailed report about the multinational corporation you visited. Organise it in headings, paragraphs and numbering (scan and skim through some of the passages in this textbook to help you do this activity). Share your findings with your classmates.

Describing a multinational company in Rwanda



Activity 1

Read the passage carefully

Rwanda to export cement as new plant boosts production



Anastase Murekezi, the Rwanda Prime Minister (R), on a guided tour of the new CIMERWA cement plant

(Photo credit: Timothy Kisambira)

Rwanda's only cement manufacturer, CIMERWA Ltd, unveiled a new plant expected to increase production and boost export revenues.

The new state-of-the-art plant in Muganza sector, Rusizi district, was inaugurated by the Prime Minister, Anastase Murekezi.

The factory, worth \$170 million, has the capacity to produce six times the current capacity of 100,000 tonnes per year.

Speaking at the launch, Murekezi said the new plant presents an opportunity for the country to start exporting cement to its neighbours, while creating employment opportunities for Rwandans.

Increasing production capacity, according to Murekezi, makes it possible for the plant to export up to 30% of total production (200,000 tonnes) to other countries, such as DR Congo and Burundi.

This, according to the Prime Minister, will help drive sustainable economic development and poverty reduction.

And, most importantly, exporting cement to neighbouring countries means Rwanda will be able to reduce its trade deficit gap with at least an additional \$92 million per year in foreign revenues, according to the National Bank of Rwanda (NBR).

Rwanda's current cement demand is estimated at about 450,000 tonnes per year.

However, demand across the borders in DR Congo and Burundi is more than 900,000 tonnes.

Legodi Busisiwe, the Chief Executive Officer of CIMERWA Ltd, said the new plant would play a critical role in enhancing competitiveness of the local construction sector through reduced logistical costs.

"The new plant seeks to bring on board high quality products that will help boost the capacity of the country's infrastructure," he said.

Busisiwe hailed the country's new investment code as a step forward in attracting more investments into the country.

The new plant comes at a time when the government is trying to narrow the country's trade deficit gap by boosting its exports to the tune of at least 28% every year.



CIMERWA cement factory, Muganza sector, Rusizi district

The country's trade deficit improved by 6.0% from \$722.56 million in 2014 to \$6779.22 million during the first five months of 2015.

There is hope that exporting cement could further narrow this gap.

Bringing down cement prices

Meanwhile, there is hope among market players that increasing cement production will reduce the high prices of CIMERWA cement in the country.

Currently, one bag of cement costs FRW 11,000, which is higher than imported cement that goes for between FRW 8,500 and FRW 9,000.

Ephraim Karekezi, a Kigali-based engineer, believes the new plant will help bring down cement prices.

“The cost of construction is high simply because of high prices of raw materials, including cement. Therefore, the new cement plant offers sector players the greenlight in addressing the question of affordability and propelling the sector towards economic excellence,” said Karekezi.



CIMERWA cement bags ready for the market

Figures from the National Institute of Statistics of Rwanda indicate there has been a significant increase in the construction sector's contribution to the national economy.

The sector contributed FRW 109 billion to GDP during the first quarter of 2015, up from FRW 106 billion in the same period of 2014.

Real estate activities contributed FRW 91 billion to the national economy, up from FRW 83 billion during the first quarter of 2014.

More employment opportunities

Frederick Harerimana, the mayor of Rusizi district, said the new plant offers immense opportunities to the construction industry and the employment sector.

According to Vivens Kalinganire, the human resource manager at CIMERWA, the new factory is expected to create more than 100 new jobs in addition to the current 126 employees by the end of the year.

Source: The New Times, by Peterson Tumwebaze. Published 19 August 2015

Exercise

Answer these questions

1. How will Rwanda benefit from the new cement plant?
2. In your own words, explain what you understand by the phrase 'trade deficit gap'.
3. Describe how the cement plant will reduce the trade deficit gap.
4. Using your knowledge of Economics, explain how the increase in cement production at CIMERWA will reduce the high prices of cement.
5. How is the cement plant poised to benefit from the significant increase in the construction sector of the national economy?

Present perfect passive voice



Activity 2

Look at these sentences carefully.

- (a) CIMERWA, the new factory, has created more jobs this year.
- (b) New jobs have been created this year by CIMERWA, the new factory.

What do you realise about the tenses and the subject clauses of the sentences above?

Exercise

Gap filling

Rewrite the sentences as instructed without changing the meaning.

1. The new cement plant has boosted our economy.
(End: the new cement plant.)

2. The factory workers have manufactured 100 types of cars.
(Start: 100 types)
3. The CEO has announced new jobs in his company.
(End:CEO.)
4. The new trade tariffs have barred many industries from joining the multinational trade.
(Start: Many industries)
5. The new manager has instructed her workers to study the market trends and adjust their systems of operation and production.
(End: new manager.)

Sentence completion

Complete sentences 6-8 meaningfully.

6. by the construction workers.
7. The new directive has been
8. Indigenous firms have been by the multinational corporations.



Unit 8: Living in a Foreign Country

My goals

After studying this unit, I will be able to:

- ◉ Describe recent activities, current activities, possibilities, plans and future activities.
- ◉ Compare cultures and describe emotions.
- ◉ Read a letter from someone living in a foreign country.
- ◉ Write sentences using 'may', 'might', 'could'.
- ◉ To use: 'can', 'may', 'have to', 'paragraphs', 'more', 'fewer', 'no'.

Describing recent activities



Language use



Activity 1

Discussion

Share with your classmates these questions.

- (a) What is your dream destination?
- (b) What have you heard about people who go to Europe or America, or any other countries outside Rwanda? Describe their experiences in those countries.
- (c) Why do you think most people would love to visit those countries?
- (d) If you have ever travelled to Europe or America or any other country overseas, describe to your classmates what you saw. If you have never travelled there, visit the internet facility of your school's computer laboratory. Search about a country overseas you would love to visit and find the interesting details you would see. Describe those things to your classmates.



Activity 2

Discussion

Study the following photographs carefully that show New York City in the United States of America and the City of London in the United Kingdom. Describe what you see in each photograph and compare the two cities.

New York City



London



Activity 3

Look at the child in the picture holding the Rwanda national flag and United States of America flag. What message does the girl communicate?



Activity 4

Read the letter below carefully and compare the life in Rwanda with that in the United States of America. Choose a secretary to present your findings to the class for further discussion and comparison of your answers.

My dear friend,

Thank you for the email. I stay with an aunt who has been living in the United States since she was eighteen years old and she invited me to stay with her many times. One day I decided to go. Staying with her and her family was one of the greatest experiences in my life. Besides learning a new language, I made new friends and I really got into the culture of a great and beautiful country.

When I arrived there, I got very excited. First, I was excited because it was my first time in a foreign country, and second because I was going to experience something really new in my life. On the other hand, learning English wasn't an easy process because my aunt used to speak just Portuguese with me; I used to take English classes just twice a week and all the students were foreign too. My experience of learning English in a regular course was limited to this little experience and a short period taking English as a second language at the local college. Thus, from that period until the end of the time there, I learnt the language with the people from the city and the new friends I had met.

Besides the experience of studying a new language, making new friends was the best aspect of living abroad. I had a girlfriend who lived in a beautiful city by the Pacific Ocean and I used to spend every weekend with her. We used to go out often and one of these times I met my first American boyfriend. He was handsome and very kind and we had a great time together. He took me to many interesting places and showed me the authentic American way of life by introducing me to his family, his friends and his culture. Moreover, going out constantly and talking to him helped me to improve the skills with the language and mainly to be familiar with the American people and their habits and customs.

Another great experience I had was working as a babysitter. Once I read in the newspaper an advertisement looking for a foreign girl to take care of two children. At first I got really scared about the big responsibility of taking care of two children, but I decided to live this new adventure. The family's house was in a very nice place by the ocean and the children were very cute and curious about my "weird accent". In spite of the fact that this new experience wasn't easy due to my lack of practice at that time, everything went well and the whole situation was very meaningful to my life.

During the time I was living in the foreign country, I realised that living abroad does more for you than just being bilingual; it enables you to form new relationships and to learn about the real culture of a country. I never returned to the United States, but I will never forget this memorable experience in my life.

Kayitesi

Debate the motion as a class

“Living in Rwanda and living in Europe; which do you prefer?” Give reasons for your opinions.

Procedure for the debate



Activity 5

1. Ten people will take part in the debate. Five students will support the motion and the other five will be against it.
2. Elect a chairperson, timekeeper and secretary to moderate the debate. The timekeeper will help the speakers keep time; The secretary will record what is said and announce the results; the chairperson is the overall person in charge of moderating the debate session.
3. Each speaker should prepare their points for debating well in advance.
4. Each speaker should use three minutes. Points of information, order, clarification, etc. will be raised and the chairperson will decide which to allow or reject.
5. The rest of the class should listen attentively while taking notes.
6. The chairperson will choose a few students from the audience to debate (propose or oppose) the motion.
7. The secretary will read the summary points from the audience to agree or disagree with the motion. The secretary will declare the side with majority points the winner.
8. Finally, the chairperson will close the debate.

Describing current activities

Present continuous tense



Activity 1

Look at the photograph below of Imperial College in London and read the sentence below it

Discuss with a classmate the meaning of the sentence. Use the sentence to explain the time of the action in the present continuous tense.



Imperial College in London

I am studying at Imperial College in London. (Is the speaker still at the college or not?)

Exercise

Below are some of the sentences extracted from the letter you read above. Rewrite them in the present continuous tense. Share your answers with your classmates.

1. I stay with an aunt who has been living in the United States since she was eighteen years old.
2. I made new friends and I really got into the culture of a great and beautiful country.
3. I was excited because it was my first time in a foreign country.
4. I used to take English classes just twice a week.
5. I learnt the language with the people from the city and the new friends I had met.
6. I used to spend every weekend with her.
7. He took me to many interesting places and showed me the authentic American way of life by introducing me to his family, his friends and his culture.
8. Moreover, going out constantly and talking to him helped me to improve the skills with the language and mainly to be familiar with the American people and their habits and customs.
9. I was working as a babysitter.
10. I realised that living abroad does more for you than just being bilingual.

Describing possibilities



Activity 1

Study the photographs and read about London.

Attractions that will amaze you about this wonderful city in the world.

There are things that would catch your eye if you visited London and leave you speechless regarding the great architectural designs of buildings. From the modern **Coca-Cola London Eye**, to the historic **Tower of London**, London's top 10 tourist attractions are a must-see on any London sightseeing trip. Even better, many London landmarks are free to visit. There are also plenty of children-friendly places to visit in London, such as the **SEALIFE London Aquarium** and Kensington's **Science Museum**.



(Source: British Museum)

Founded in 1753, the British Museum's remarkable collection spans over two million years of human history. You will enjoy a unique comparison of the treasures of world cultures under one roof, centred around the magnificent Great Court.

World-famous objects such as the Rosetta Stone, Parthenon sculptures, and Egyptian mummies are visited by up to six million visitors per year. In addition to the vast permanent collection, the museum's special exhibitions, displays and events are all designed to advance understanding of the collection and cultures they represent. Some of the facilities in this wonderful museum are:



(Source: National Gallery, by the British Museum)

The crowning glory of Trafalgar Square, London's **National Gallery**, is a vast space filled with Western European paintings from the 13th to the 19th centuries. Here, you will find works by the finest art masters such as Van Gogh, Da Vinci, Botticelli, Constable, Renoir, Titian and Stubbs.



(Source: Natural History Museum, by the British Museum)

As well as the permanent (and permanently fascinating!) dinosaur exhibition, the **Natural History Museum** boasts a collection of the biggest, tallest and rarest animals in the world. Here you will see a life-sized blue whale, a 40-million-year-old spider, and the beautiful Central Hall.



(Source: Tate Modern, by the British Museum)

Sitting grandly on the banks of the Thames is **Tate Modern**, Britain's national museum of modern and contemporary art. Its unique shape is due to it previously being a power station. The gallery's restaurants offer fabulous views across the city.



(Source: The Coca Cola London Eye)

The Coca-Cola London Eye is a major feature of London's skyline. It boasts some of London's best views from its 32 capsules, each weighing 10 tonnes and holding up to 25 people. Climb aboard for a breathtaking experience, with an unforgettable perspective of more than 55 of London's most famous landmarks – all in just 30 minutes!



(Source: Science Museum)

From the future of space travel to asking that difficult question: “Who am I?”, the **Science Museum** makes your brain perform Olympic-standard mental gymnastics. See, touch and experience the major scientific advances of the last 300 years; and don't forget the awesome Imax Cinema.



(Source: The Wembley Stadium)

Take the unforgettable Wembley Stadium tour. Go behind the scenes into England's changing rooms. Walk in the footsteps of legends, through the players' tunnel towards the hallowed turf. Stand triumphantly in front of the Royal Box with The Cup. Until your dream of playing at Wembley comes true, the only way to experience all this and more is to book your Wembley Stadium tour now.

The tour also includes 'The FA150 Exhibition' celebrating the history of the Football Association's tenure as the original governing body of the world's most popular sport. The exhibition includes the Original Rules of Association Football from 1863 and the 1966 Jules Rimet Trophy (aka The World Cup).



(Source: The tower bridge)

Using 'may', 'might', 'could'



Activity 2

After reading the passage, identify the places you would love to tour and the things you would do in those places. Form sentences using **may**, **might**, **could**. Use the example below to guide you. Share your answers with your classmates.

1. I *might* stay in London.
2. I *could* study in York.
3. I *may* rent a room at the university.

Grammar highlight: The modal verbs ‘**might**’, ‘**could**’, ‘**may**’ show ideas of possibility or permission. Others, like ‘**must**’, ‘**have to**’ show obligation. ‘**Can**’ shows ability. ‘**Should**’, ‘**ought to**’ are model verbs of advice.

Describing plans



Activity 1

Great Britain, also known as the United Kingdom, comprises four countries, namely England, Scotland, Northern Ireland and Wales. The photographs below show some of the cultural aspects and the mountainous nature of Scotland. Study them and describe what you see.



A Scot playing a bagpipe



Traditional Scottish clothing (kilts)



Hogwarts express train between Fort William and Mallaig in North-West Scotland



Ancient Scottish warriors



Activity 2

Carry out research about the interesting culture and social life in Scotland. Assume you are living in Scotland. Use your research to write a letter describing the interesting places to visit and social life to explore. Exchange your letters so that you can read through and compare them.

Describing future activities



Activity 1

Read this statement with a classmate. What is the time the action will be taking place?

Examples

- (a) I *will be climbing* mountains in Scotland.
- (b) She *will be having* a drink with her friends.



Activity 2

Rewrite the following sentences in the future as shown in the examples above

1. I visit St. Mungo's tomb every Friday.
2. We shall go to Glasgow Cathedral next week.
3. Mary Queen of Scots granted the lands of Provand to William Baillie, a canon of the Cathedral.
4. The visitor enjoyed the experience of the Glenmorangie Distillery tour.
5. You may have to retrain yourself!
6. The children will arrive in the royal yacht Britannia which is perhaps the most famous ship in the world.
7. She has served the British royal family for over 40 years.
8. Guests are piped aboard via the Royal Brow and taken on a tour, then welcomed into the State Apartments where they can enjoy cocktails and canapés.
9. We will visit the historic Melrose Abbey.
10. The wheel will swing in the Tamfourhill area of Falkirk.
11. We will meet each other at Kelvingrove Art Gallery.
12. The tourists will visit the Melrose Abbey on Thursday.
13. We shall surf the Glasgow Science Centre on the internet.
14. We will watch Blair Drummond Adventure on television.

Comparing cultures



Activity 1

Discussion

Share your opinions about these questions.

- (a) Compare the social and cultural lifestyles of Rwanda with the Western lifestyles.
- (b) Do you think there are certain customs we can borrow from the Western countries into our cultures? Which ones?
- (c) Describe the impact that Western cultures have had on our cultures.

Choose a secretary to present your findings to the class for further discussion and comparison of your opinions.



The English always say 'sorry'. They queue up for buses.



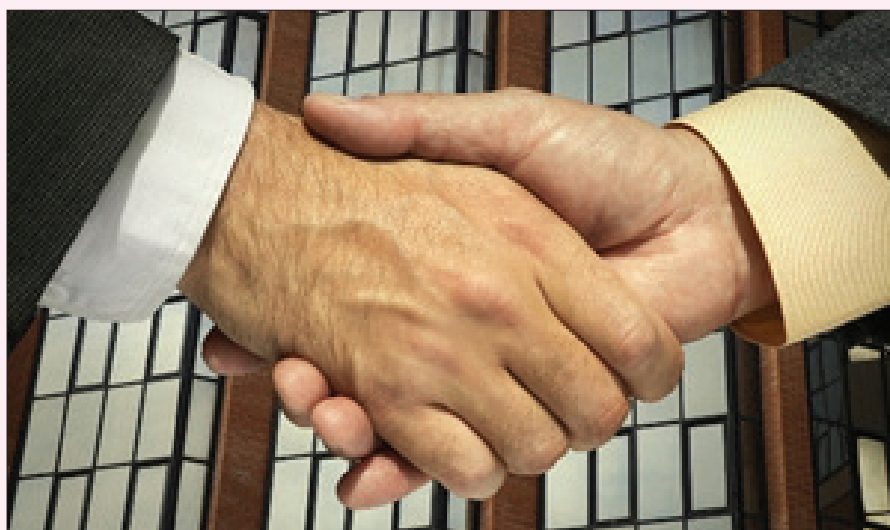
Activity 2

Read the two passages below carefully

Culture and social etiquette in the United Kingdom

There are no strict etiquette rules that you have to stick to when in the UK. It is advisable, however, to demonstrate decent manners and respect to the local culture and traditions.

The first, and most important step, is to be aware of the clearly distinct nations which form the UK. The United Kingdom of Great Britain and Northern Ireland consists of England, Scotland, Wales and Northern Ireland. The citizens of any of these countries may be referred to as “British”. This term is also the safest to use when not certain of a person’s heritage. When certain of heritage, you are free to call the different residents as follows: English, Scot, Welsh or Irish. While the four countries share many customs, each has its own set of traditions and history.



Greetings and meetings

When first meeting a Briton, he or she may seem reserved and cold, but that is just an impression. In reality, they are very friendly and helpful to foreigners. A handshake is the common form of greeting, but try to avoid prolonged eye contact, as it may make people feel ill at ease. Use last names and appropriate titles until specifically invited to use first names. It is proper to shake hands with everyone to whom you are introduced, both men and women; the appropriate response to an introduction is “Pleased to meet you”.

Time and punctuality

British people are very strict when it comes to punctuality. In Britain people make a great effort to arrive on time, so it is considered impolite to be late, even by a few minutes. If you are delayed, be sure to inform the person you are meeting. Here are some situations when you are obliged to be on time, as well as some situations when it is advisable:

- For formal dinners, lunches, or appointments you always come at the exact time appointed.
- For public meetings, plays, concerts, movies, sporting events, classes, church services, and weddings, it's best to arrive a few minutes early.
- You can arrive any time during the hours specified for teas, receptions and cocktail parties.

The British often use expressions such as “drop in any time” and “come see me soon”. However, do not take these literally. To be on the safe side, always telephone before visiting someone at home. If you receive a written invitation to an event that says “RSVP”, you should respond to the sender as soon as possible, whether you are going to attend or not.



Body language and dress code

British people are not very keen on displaying affection in public. Hugging, kissing and touching are usually reserved for family members and very close friends. You should also avoid talking loudly in public or going to extremes with hand gestures during the course of communication. The British like a certain amount of personal space. Do not stand too close to another person or put your arm around someone's shoulder.

When it comes to clothes, there are no limits and restrictions on how to dress. Just make sure that you respect the general rules when in formal situations. Observation will reveal that people in larger cities dress more formally, especially in London. Men and women wear wools and tweeds for casual occasions. Slacks, sweaters and jackets are appropriate for men and women. Do not wear a blazer to work -- it is country or weekend wear. On formal occasions, always select an outfit that fits the dress code. When attending a holiday dinner or cultural event, such as a concert or theatre performance, it is best to dress formally.

General advice

Men should open doors for women and stand when a woman enters a room, although it is generally accepted for men and women both to hold the door open for each other, depending on who goes through the door first.

It is important to respect the British desire for privacy. Don't ask personal questions about family background and origin, profession, marital status, political preferences or money issues. It is considered extremely impolite to violate a queue, so never push ahead in a line. It is also considered very rude to try to sound British or mimic their accent.

Remember that humour is ever-present in English life. It is often self-deprecating, ribbing, sarcastic, sexist or racist. Try not to take offence.

Cultural etiquette dictates that when invited to someone's home, you should bring a small gift for the hostess. Give flowers, chocolates, wine, champagne or books. Feel free to express your gratitude and delight with the visit on the next day with a note or a telephone call.



Women's rules

Women in Britain are entitled to equal respect and status as men, both at work and daily life. The British have the habit to use 'affectionate' names when addressing someone, so do not take any offence if they call you love, dearie, or darling. These are commonly used and not considered rude.

It is acceptable, but may be misconstrued, for a foreign woman to invite an English man to dinner. It is best to stick with lunch. Also, if you would like to pay for your meal, you should state it at the outset.

(Source: Kirina Boykova / Expatica)

Describing cultures

Describing Rwandan culture



Greetings are a central part of social etiquette in Rwanda. In rural areas it is important to greet everyone that passes your way – *MWARAMUTSE* (in the morning) and *MWIRIWE* (in the afternoon). People shake hands with the right hand. Friends often lay a hand on the other's hip while the right hand touches the shoulder. To show respect of social status people hold their right forearm with their left hand while shaking hands. Men often share a touching of the sides of their foreheads, first right, than left. Holding hands between people of the same sex is a sign of friendship. When two people of the opposite sex talk there is very little to no touching. When a man is greeting a woman it is best to wait for the women to extend her hand.

Eye contact might be more indirect during a conversation; women and children might look down or away to show respect.

It is best to avoid asking about someone's ethnicity or making referrals to the civil war. Almost every Rwandan has a story related to the 1994 genocide, a trauma so severe that it is difficult for many to cope with, which is why it is improper to ask people what happened to them. Many lost loved ones. Good topics of conversation include food, sport (soccer, running), Rwanda's landscape, Australia, etc. Rwandans love a good joke but avoid sarcasm as it might not translate.

In many situations people are flexible with appointed times, they don't tend to be overly punctual. This is different in business situations where punctuality is valued.

Rwandan people have a set of gestures for pointing to and calling people. If you want to point to someone hold out the arm with the palm open and upward. It is considered very rude to point at a person with your index finger. Calling someone to come over is done by extending the arm with the palm turned down and bringing in the fingers towards you, like a scratching motion. Rwandans also have proper ways to give or receive things. Children learn to offer both hands when receiving an object, especially from an adult, which shows respect.

The family unit in Rwanda includes husband, wife and children. People from several related households comprise another kinship. The eldest or most influential male is considered the head of this unit. Marriage is very important as marriage and having a child mark a person's transition to full adulthood. To get married one has to pay a price for his bride to her father. Ritual occasions such as weddings serve as important recreational functions. Having children is very important, because dying without having them means that no one will honour the deceased's spirit. Children who receive the privilege of education are expected to financially assist the family later.

Clothing is very European but mostly second-hand as not many can afford to buy new clothes. Rwandan people place great importance on looking their best and take great pride in their appearance. Men always wear long pants as shorts are only worn by young children and schoolboys. In most rural areas, women have to wear clothing that covers their legs.

Diet is high in starches and low in protein and fat. The most common foods are various banana types, potatoes and beans (sometimes fish). Meat is eaten very rarely. The most common is goat while beef is the most desired but will only be available when someone has sacrificed a bull or cow on a ceremonial occasion. Cattle are valued as a source of prestige and milk. While food is not always offered to guests, drinks are. It is seen as an insult not to offer a drink where others are drinking. Be aware that it is not accepted for some women to drink alcohol. Bread, coffee and tea are popular for breakfast.



Activity 3

Summary writing

In about 100 words, make a comparison and contrast summary about the cultural lifestyle of Britons and Rwandans based on the two passages you have read. Compare your summaries with those of your classmates.



Activity 4

Research and essay writing

Conduct research about the cultural lifestyles (greeting, food, clothing etc.) of another country of your choice. Compare their customs with those of Rwanda. Compare your findings with those of your classmates.

Talking about emotions

Letter writing



Activity 1

Assume you are in Europe. Use one of the countries you researched about, and write a friendly letter describing the experiences and the new life you are living. Compare your letters with those of your classmates.

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