

**Frankfurt Zoological Society's**

**North Luangwa**

**Conservation Education Programme**

**Teachers' Conservation Guide**



**This is YOUR North Luangwa**





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## Using the Teachers' Conservation Guide

### I. Structure

The Teachers' Conservation Guide for conservation lessons is divided into four modules:

1. Living Things
2. Natural Systems
3. Protecting our Planet
4. Conservation in Action

The Conservation Teacher (CT) is responsible for delivering the first three modules through the information provided in this Teachers' Conservation Guide (TCG), while the North Luangwa Conservation Education Programme Officer (CEP Officer) will deliver the fourth module throughout the year during his visits to the schools. The three modules that the CT delivers are designed to take the learners through a progression from *acquiring knowledge* → *raising questions* → *uncovering problems* → *identifying solutions*.

#### 1. Living Things

Learners will explore the natural world in a systematic fashion, learning about the principal groups of living things and developing an understanding of how these are grouped and classified according to observable differences. They will also explore some of the interactions between humans and living things, including our use of crops and domesticated animals.

#### 2. Natural Systems

Learners will explore the mechanisms that drive the natural world: food chains, the water cycle, soil and the role that plants play in the ecosystem. They will carry out activities that encourage them to use their powers of observation in order to understand how these mechanisms function and to develop an understanding of the natural world as a dynamic web of interrelated processes that work together to maintain a healthy ecosystem.

#### 3. Protecting our Planet

Learners will begin to explore the relationship between humans and the natural world. They will be encouraged to identify human activities that harm the natural world and to consider the consequences of these activities. They will develop an understanding of why we all depend on a healthy ecosystem, and they will be guided to identify ways in which they can address some of the problems that human activities may cause. Some of these activities will lead to them creating materials that may be used to educate their community, or to take action for conservation. Learners will be required to show evidence that they can take some of these activities beyond the classroom and out into their communities at the Conservation Celebration Days.

At the end of each module, there is a page titled 'Mathematics for Conservation'. These have been designed to reinforce numeracy skills, as detailed in the Mathematics section of the Zambian National Curriculum.

#### 4. Conservation in Action

This module will use the history of black rhinos in Zambia, the threats to survival of the species, and the reintroduction programme in North Luangwa National Park as a case study of conservation in action. Through this, learners will gain a deeper insight into some of the challenges to conservation locally, the structures that exist in their area to promote conservation, and the consequences to their communities of not protecting the Luangwa Valley ecosystem.

### II. Classroom management and delivery

To ensure that learning activities are delivered effectively, the following guidelines are recommended:

**Group work** Grade 5 classes should be divided into smaller groups of learners and the majority of activities, particularly those that are based around discussions, should be carried out in these groups. This is to create a safe environment in which learners may discuss their ideas and share their knowledge together and to help develop their teamwork and cooperation skills, without the pressure of having to stand up in front of the class when required to contribute.

It is recommended that the learners' groups are decided upon at the start of the academic year, and that these remain the same throughout all of the lessons. To encourage a sense of group identity, each group could be named after an animal or plant, through which they may be known. CTs may encourage academic achievement by keeping a running score of how each group is doing in order to encourage competitiveness within the classroom. It is recommended that each group consists of a minimum of 5 learners up to a maximum of 10 learners. In very small or very large classes, this may not be possible but it is important to remember that the number of groups should be kept at a manageable level, with 10 groups being the maximum recommended number in a class.

**Learning Mentors** Although it is understood that Grade 6 and 7 learners are keen to participate in the CEP, the Programme is aimed at Grade 5 learners, and to ensure effective learning, they must be directly engaged in all learning activities, which is rarely achievable if the learning environment is dominated by a large number of older learners. To this end, it is recommended that no Grade 6 and 7 learners be allowed to attend the conservation education classes. If it is decided by the school that they should/can do so, it is strongly recommended the number of Grades 6 & 7 learners is restricted, and that they act as Learning Mentors for the Grade 5 learners. Encourage the Grades 6 & 7 teachers to use a fair process (e.g. top 5 science learners each week) to select the Learning Mentors to participate, and then rotate them for the following week. By creating a rota system for Learning Mentors, CTs may ensure that all Grade 6 and 7 learners who wish to do so may have the opportunity to participate in lessons from time to time, even if they are not able to be present throughout the entire Programme.

One Learning Mentor should be assigned to each group with the purpose of assisting them during discussion activities, by drawing on their existing knowledge to provide ideas and guidance to drive discussions forward. This is intended to ensure that the Learning Mentors are recalling and making use of their prior learning. Their participation in group discussions is welcomed, but when the time comes for groups to feed their ideas back to the rest of the class, CTs should ensure that these contributions are made by Grade 5 learners only. Learning Mentors should also provide the Grade 5 learners with assistance with spelling during written activities, and be on hand to help them with any other needs as required. The CT may also make use of them to help with reading out text, writing on the chalkboard, handing out/collecting materials at the start and end of the lesson, supervising the learners in any activities outside of the classroom, and providing any other assistance, as and when necessary.

The above points are guidelines, and every CT will be able to judge how best to apply these in his or her own classroom. Your own ideas and initiatives in implementing these guidelines are welcomed. However, when the NL CEP Officer visits the schools, his lessons must be delivered to a class that is composed of Grade 5 learners only.

### **Teachers' Conservation Guide and Activity Books**

As a CT you will use this TCG to help deliver the conservation course by using the detailed lesson plans outlined for each subject. Every Grade 5 student will be issued individually with an Activity Book (AB) to work through the topics during the lessons, and the completion of these is expected to be their work. Activity Books will only be provided for the total number of Grade 5 learners in a class (not for any other Grades, see notes above). The TCG and AB work hand-in-hand to achieve the **Learning Outcomes**. These are specific targets that every learner is expected to be able to achieve during each lesson. You can use the AB to check that your learners are meeting these targets. Completion of the activities in the AB will form a portfolio of work for each learner throughout the delivery of the Conservation Education Programme. The best work will be assessed during the Conservation Celebration Days.

It is the CTs' responsibility to ensure that the Activity Books are properly cared for. It is recommended that these are collected at the end of each lesson and stored in the school, rather than allowing learners to take them home. At the end of the academic year, once the learners have completed all the activities in the books, the learners may take them home to keep. When they do so, they should be encouraged to show their work to their families, in order to spread their learning to a wider audience.

### **Lesson plans (see pages 9-10)**

The lesson plans are intended to provide structured guidelines for delivering the lesson, including instructions for all learning activities and guidance on how to make use of the Learning Mentors. They are divided into three sections:

1. *Overview.* This outlines the title, overall goal and specific learning objectives of the lesson. It also provides guidance of relevant integrated links to the Zambian National Curriculum and a list of the activities included in the lessons, detailing which Learning Outcomes each one relates to, and the resources necessary to carry out the activities.
2. *Lesson plan.* This provides an overview of how the CT can structure the lesson, including guidance on timing for individual activities and suggestions on how the CT can work with the Learning Mentors to deliver these. Please note that this information is for guidance. CTs may find that some activities require more or less time than suggested, and may have their own ideas on how to work with the Learning Mentors. We welcome the opportunity for you to apply your expertise and initiative in adapting this plan to suit the needs of your class.
3. *Notes*
  - a. *Activities Guidance.* This section provides guidelines on leading learning activities with your class. There is space in the Activity Book for the outputs of each activity to be completed.
  - b. *Contents Guidance.* This section details the correct answers and factual information for each one of the learning activities.
  - c. *Additional Information.* This section provides further information, should you wish to explore any of the themes in the lessons further with your learners.

### **III. Conservation Celebration Days**

The format of the annual Conservation Celebration Day will be changing in 2013, incorporating a greater number and variety of activities. This is for several reasons: firstly, it will allow more opportunities for learners to explore what they have learned over the course of the Programme, and to apply their creativity in demonstrating this learning to a wider audience; it will allow greater opportunities for evaluation of the course, in order to assess its success in delivering conservation education and promoting good environmental citizenship; and finally, it is hoped that the new format will provide a more engaging experience for learners by widening opportunities for participation, competition and sharing of knowledge and experience between schools. It is our hope that this will provide a rich opportunity for learners to truly celebrate their participation in the Programme.

The following information is an overview of events planned for the day. More specific details, including scoring criteria for each category and a schedule of events, will be sent out to participating schools at the end of the first semester.

#### **A. Song and dance**

The song and dance section will be judged separately from the drama, but it must be the introduction and exit for the performance, as has been customary. The main theme of the song and dance must be about local wildlife. There is no limit to the amount of learners who may participate. The song must be told in English. If the song is not in English, then a translation must be given that explains what the song is about.

#### **B. Drama**

A play must be created that tells the story of black rhinos in North Luangwa. This play must be based on the content of the CEP Officer's lessons (not the TCG). The play must demonstrate the protection that is now offered to rhinos in NLNP. The play may contain any number of characters, and must not include the use of more than one firearm as a prop, and no rhinos can be killed without the consequences of arrest, court case and custodial sentence being demonstrated for the character responsible. The song and dance section (above) will be an integral part at the beginning and ending of the drama and the total performance must last no longer than 15 minutes. When writing the play, as the CT, you must bear in mind the following Learning Outcomes and demonstrate as many as possible through the roles, characters, dialogue and scenes in the play:

- Where black rhinos live in the wild and the role they play in their habitat.
- The history of rhinos in Zambia: the threats to their conservation; why poaching happens; why and when they went extinct in Zambia, and their reintroduction to North Luangwa; the consequences of rhinos being poached to extinction.
- The organisations that exist to protect wildlife in North Luangwa – ZAWA, NLCP and the CRBs; the benefits that these organisations bring to local communities.
- The relationship between communities and the National Park; the purpose of the CRBs; why people need to live within a healthy ecosystem.
- Things that we can do to protect wild rhinos in NLNP.

### C. Role play

This presentation is delivered by one pair of learners from each school. In role play, one of the actors must pretend to be a journalist, researching a report or an article on rhino poaching. S/He is carrying out an interview with the other actor, who must pretend to be one of the following characters:

- The last rhino left alive
- A rhino calf whose mother has been killed by poachers
- The spirit of a poached rhino

The journalist needs to ask the rhino character about his/her story and give the audience a sense of what the rhino character feels like, the reasons why those things have happened, and the direct consequences of those things happening to the other character. The role play must last no longer than 5 minutes.

### D. School Conservation Celebration Display

The display is one of the centrepieces of the CCD and will be on show for all the other schools to see, as well as VIPs, judges and the audiences on the day. After the celebrations, it will go back to your own school to be displayed there for the following year to show to other classes, teachers, your community, parents and school visitors. It is a very important part of the CEP, and will be judged accordingly, to show the commitment and respect your school gives to conservation. Each display will measure 2m x 2m. Each display must include **ONE** example of the best piece of work from the learners' activity books in **EACH** of the following categories:

1. Water Cycle Poem (page 29 of the Activity Book)
  2. Taking Action for Conservation Letter (page 37 of the Activity Book)
  3. Taking Action for Conservation Plan (page 41 of the Activity Book)
  4. Taking Action for Conservation Response - this should display responses from any one of the "Take Action" activities from the Activity Book. This could be in the form of a *reply* to a letter, or, if any follow-up actions have been taken, then you must display evidence of this
  5. Educate Your Community Poster (page 43 of the Activity Book)
  6. Conservation Declaration (page 50 of the Activity Book) - the best Conservation Declaration agreed by the class must be recreated as a poster as the central piece in the display. It should measure 50cm x 75cm.
  7. Why Rhinos Are Important Article (page 60 of the Activity Book)
  8. One of the "Educate your Community" activities must be recreated (page 35, 43 or 45 of the Activity Book)
  9. Additionally, choose 4 other best pages from Activity Books to add to the display
- Therefore, your display will comprise 12 best pieces of work from the Activity Books.

## Lesson Plan Guidance Notes

Each of the 20 conservation education lessons you will deliver are outlined in the rest of this manual. Each lesson plan has instructions and guidance notes for you to use, and these have been formatted as follows (see *italics* for explanations):

### OVERVIEW

<b>Subject:</b> <i>Title of lesson</i>
<b>Lesson aim</b> <i>This is a statement that summarises the overall purpose of the lesson.</i>
<b>Learning Outcomes</b> <i>These are the things that the learners should be able to do by the end of the lesson in order to demonstrate their learning. It is important that these are clearly defined, using specific actions (e.g., describe, define, explain, compare, make, prepare, build, draw, etc) in a definite quantity, so that they may be evaluated.</i>  <i>Evidence of these having been achieved is demonstrated through successful completion of the activities in the learners' Activity Book.</i>
<b>Links to other skills/curriculum areas:</b> <i>This section indicates areas from the Zambian National Curriculum (specifically, from Integrated Science and Social Development Studies) that link to the contents of the lesson. These have been mapped out for Grades 5, 6 and 7.</i>
<b>Activities</b> <i>This section lists the learning activities in the lesson and indicates which activities relate to which Learning Outcome (designated by the initials LO, e.g., LO1 = Learning Outcome 1)</i>
<b>Resources needed</b> <i>This is a checklist to make sure that you don't forget anything that you need for the lesson. Make a note of everything that you will need at least one day before the lesson so that you are fully prepared.</i>



## LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<p style="text-align: center;"><b>Introduction</b> <b>5 mins</b></p>	<p style="text-align: center;">Recap of previous lesson and introduction to this lesson</p>	<p style="text-align: center;">This section introduces the lesson to the learners</p>	<p style="text-align: center;">This section provides direction for the learners and Learning Mentors</p>
<p style="text-align: center;"><b>Content</b> <b>50 mins</b></p>	<p style="text-align: center;">This section details the activities (as listed in the previous table) that will be carried out, and the timing needed for them.</p>	<p style="text-align: center;">This section explains the role of the CT in guiding the activities and working with the Learning Mentors</p>	<p style="text-align: center;">This section provides guidance on how the Learning Mentors may be used for each activity</p>
<p style="text-align: center;"><b>Conclusion</b> <b>5 mins</b></p>	<p style="text-align: center;">Recap and conclusion</p>	<p style="text-align: center;">Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class</p>	<p style="text-align: center;">This section provides direction for the learners and Learning Mentors</p>

### NOTES

#### **Activities Guidance**

This section provides instructions on the activities that will be used to deliver the lesson content. It will include guidance on how to incorporate the delivery of factual content into the activity and how to produce material that can be used to evaluate learning.

#### **Content Guidance**

This section provides the CT with sufficient information to be able to work through all of the learning objectives with the class.

#### **Additional Information**

This section will provide additional information that the CTs may use to expand upon the Learning Outcomes and the factual content of the activities. Although it is not necessary to make use of this information, it will help to further develop the learners' knowledge of the subject.



# **This is YOUR North Luangwa**

## **Lesson Plans**



## LESSON 1 – Introduction to Living Things

### OVERVIEW

**Subject:** Introduction to Living Things

**Lesson aim:**

The purpose of this lesson is to understand the major groups of living things on Earth (plants, animals, invertebrates and vertebrates)

**Learning Outcomes**

By the end of this lesson, the learners will be able to:

1. Define the terms: 'plant', 'animal', 'invertebrate' and 'vertebrate'
2. Define the words 'wild' and 'domesticated'
3. Draw a basic tree of life diagram

**Links to other skills/curriculum areas:**

**Activities:**

1. Life discussion
2. Grouping activity (L01)
3. Domestic and wild animals activity (L02)
4. Tree of life activity (L03)

**Resources needed**

Activity Books, pens or pencils, chalkboard, chalk, colouring pens or pencils

## LESSON 1 – Introduction to Living Things

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Handing out Activity Books and Introducing the Course	<p>Invite learners in, and in agreement with the learners, divide the class into groups, as per the 'Classroom Management' section in the guidance notes, and assign each group with a Learning Mentor from one of the older learners</p> <p>Ask the learners to sit in their groups and give the Activity Books to Learning Mentors to hand out one each. Explain that they will have to hand the book in at the end of every lesson, but they will be able to keep it at the end of the year, once they have completed all the activities in it</p> <p>Explain that over this academic year they will be using the Activity Books to learn about nature and our place within it. You may choose to summarise the information given in the 'Course Structure' section of the guidance notes</p> <p>Explain that today we will be talking about living things</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 1</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	<p>Life discussion (5 mins)</p> <p>Grouping activity (20 mins)</p> <p>Domestic and wild animals activity (5 mins)</p> <p>Tree of life activity (20 mins)</p>	Lead all activities according to Activities Guidance notes	Assist groups in thinking of and developing ideas during group discussions
<b>Conclusion 5mins</b>	Recap and conclusion	<p>Ask learners to bring in 2 or 3 leaves from different food plants for next week's lesson</p> <p>Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class</p>	Collect Activity Books for CT

## LESSON 1 – Introduction to Living Things

### NOTES Activities Guidance

**Note:** before starting the lesson, draw 5 vertical lines on the chalkboard, dividing it into 5 equal sections.

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**Life discussion:** Write the title **'Life'** at the top of the **first** (left hand) section of the chalkboard. Ask and discuss with the whole class the question "what is life?" Can they come up with any characteristics that define living things? They might come up with suggestions such as: living things grow, reproduce (have babies, lay eggs or produce seeds), eat, move. Write these contributions on the 'Life' section of the chalkboard. **Time: 5 minutes**

LIFE				
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**Grouping activity:**

1. Write the title **'Living Things'** at the top of the **second** section of the chalkboard. Ask the learners to name some of the living things that can be found in the local area. Write correct answers on the 'Living Things' section of the chalkboard. If answers are incorrect, guide them by using the answers they gave that you wrote under the 'Life' section.

LIFE	LIVING THINGS			
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2. Ask the learners to discuss, in their groups, whether they can put any of the living things that they named into groups. Ask the Learning Mentors to help them. Allow them a few minutes, and then take one answer from each group. Give them feedback on their answers.
3. Write the title **'Plant'** at the top of the **third** section and **'Animal'** at the top of the **fourth** (widest) section of the chalkboard. Explain that these are the two major groups into which the majority of living things can be divided. Had anybody already suggested either of these groups? Ask the learners to help you organise the living things from the 'Living Things' section into either the 'Plant' or 'Animal' sections. Ask the learners to discuss in their groups what is a plant or an animal. Allow them to come up with some characteristics of each (e.g., plants grow in soil, they have roots, stems and leaves, their leaves are usually green, they may have flowers, they produce seeds, etc; animals can move around freely, need shelter, have to find food, etc), and then ask them to share their ideas with the rest of the class. Once they have all shared some suggestions, write the definition, as stated in the Content Guidance section of the lesson plan, on the chalkboard, and ask them to copy it in the appropriate place in their Activity Books.

LIFE	LIVING THINGS	PLANT	ANIMAL	
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4. Explain that animals can be further divided into two groups. The first group is made up of all the animals that have skeletons inside their bodies; these are called 'vertebrates'. The second group is made of the animals that do not have skeletons; these are called 'invertebrates'. Vertebrates are all of the fish, reptiles, amphibians, birds and mammals; invertebrates make up the rest of the animals, including insects, spiders, snails and earthworms. Divide the 'Animals' section of the chalkboard into two halves vertically: one for vertebrates and the other for invertebrates, and group all of the animals previously given into their relevant sections, with help from the learners. Write the definition for vertebrate and invertebrate inside their respective spaces on the chalkboard and ask the learners to copy down the definitions into the appropriate space in their Activity Books. **Time: 20 minutes**

LIFE	LIVING THINGS	PLANT	ANIMAL		
			Vertebrates	Invertebrates	

**Domestic and wild animals activity:** Ask the learners to name some of the animals that people keep in their homes or farms. Explain that animals that are bred and kept by people are called 'domesticated animals'. Ask them if they know what we call animals that do not live with people. The answer is 'wild animals'. Write the definition of both, as stated in the Content Guidance section of this lesson plan, on the chalkboard and ask the learners to copy them in the designated space in their Activity Books. **Time: 5 minutes**

**Tree of life activity:** Write the word 'Life' at the bottom of the **last** section on the chalkboard. Draw a line rising up from it, with two branches coming off in opposite directions at the top. Ask the learners to remind you of the two groups that living things can be placed in. They should reply 'plants' and 'animals' – write each word at the end of one of the two branches. Next, draw two more branches coming off of the word 'animals'. Ask them what the names of these groups should be. They should reply 'vertebrates' and 'invertebrates'. Write each word at the end of one of the branches. Finally, you could ask them to name some different types of plant, invertebrate or vertebrate, and add more branches coming off the group where each of these living things belong. Point out how this diagram looks like a tree growing out of the word 'Life' – we call this a 'Tree of Life'. Ask the learners to draw a tree of life in the space provided in their Activity Books, but to make it look like a real tree, with a trunk, branches and leaves. Ask them to draw illustrations at the end of the branches to represent each of the groups that we have named. **Time: 20 minutes**

LIFE	LIVING THINGS	PLANT	ANIMAL		Life
			Vertebrates	Invertebrates	

### Content Guidance

#### Definitions

**Plant:** Living things that grow in soil. They have roots, stems and green leaves.

**Animal:** Living things that are able to move around freely. They feed on other living things.

**Invertebrate:** An animal without a skeleton. These animals are also sometimes known as 'bugs' or 'creepy-crawlies'.

**Vertebrate:** An animal with a skeleton inside its body. This group includes all fish, reptiles, amphibians, birds and mammals.

**Wild animals:** Animals that do not normally live with people.

**Domesticated animals:** Animals that are kept, cared for, and bred by people.



## LESSON 2 - Plants

### OVERVIEW

<b>Subject:</b> Plants		
<b>Lesson aim</b> The purpose of this lesson is to understand the principal features of a plant and some of their common uses for people living in the local area		
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Create 3 groups of plants found in the local area, defined by observable physical similarities.</li><li>2. Define the word 'crop'.</li><li>3. Explain how plants can be useful for humans.</li></ol>		
<b>Links to other skills/curriculum areas:</b>		
<b>Grade 5</b> <b>SDS</b> <b>5.4.1</b> Identify subsistence and commercial crops in the province <b>5.4.2</b> State the growing conditions of selected crops	<b>Grade 6</b> <b>Integrated science</b> <b>6.4.1</b> Identify plants in the local environment <b>6.4.2</b> Classify plants into flowering and non-flowering plants	<b>Grade 7</b> <b>Integrated Science</b> <b>7.3.1</b> Identify crops that are grown in different regions of Zambia
<b>Activities</b> <ol style="list-style-type: none"><li>1. Plant-grouping activity (L01)</li><li>2. Crop discussion (L02)</li><li>3. Leaf-rubbing activity (L03)</li></ol>		
<b>Resources needed:</b> Every learner should have brought with them one leaf from each of two or three different plants that they use at home (uses may include as food, for medicine, in construction, for weaving baskets or fishing traps, etc.)  Activity Books and pen/pencil; colouring pencils; chalkboard; chalk; access to the outdoors		

## LESSON 2 - Plants

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week's notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about plants</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 2</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Plant grouping activity (15 mins)	Lead and supervise plant grouping activity; ensure learner health and safety whilst outside the classroom	Assist in supervising learners and ensuring health and safety when outside the classroom
	Crop discussion (10 mins)	Lead crop discussion activity. Write down learners' ideas and correct definition on the chalkboard	
	Leaf-rubbing activity (25 mins)	Lead learners in the leaf-rubbing activity; direct presentations of finished rubbings	Supervise and assist learners in leaf rubbing activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 2 - Plants

### NOTES

#### Activities guidance

**Plant grouping activity:** Explain that scientists look for shared features amongst different living things to decide how to group them together. Today we are going to try to do that with plants. Take the learners outside to look at the different types of plant around the school yard and instruct them to look for different types of plants that share some of the same physical features. For example: is the stem hard and woody, or is it soft and green? Does the plant have waxy or soft leaves? Does it have thorns? What other features can you see that allow you to group different types of plant together? For example, these could be “spiky plants” “plants with flowers” etc. These need to be categories that the learners can easily understand and should not be using official scientific groupings. Back in the classroom, ask the learners to write down three of these features in the table in their Activity Books and list the names of some of the types of plant that have these features in the space provided. **Time: 15 minutes**

**Crop discussion:** Ask the learners if they know of a word that we use to describe all the plants that we can eat. If they can't think of anything, tell them that all plants that we grow to eat are known as 'crops'. Write down the name and definition (as written in the Content Guidance) on the chalkboard, and ask them to copy it into the space provided in their Activity Books. **Time: 10 minutes**

**Leaf-rubbing activity:** Ask the learners to get together in their groups and to share amongst themselves the leaves of the plants that they brought from home. Tell them to place the leaves under the indicated page in the Activity Books, and to colour over them with a coloured pencil or crayon, gently applying pressure so that the shape of the leaf shows up in the colouring. They can try different colours to see which works best, or even a combination of colours. Under each leaf, ask them to write the name of the leaf and the use of the plant, e.g., white maize is used to make mealie meal for cooking. Ask one representative from each group to stand up in front of the rest of the class to present their rubbings and explain the uses of the plants that they have included. **Time: 25 minutes**

#### Content Guidance

##### Definitions

**Roots** hold the plant in the soil to keep it from falling over. They take water and nutrients from the soil and send them up through the stem to the leaves.

**Stems or Trunks** are the main part of the plant above the ground that supports the rest of the plant. The stem supports the plant, and carries food and water up to the leaves. A tree's stem can also be called a trunk.

**Fruits and Flowers** carry seeds. They are often sweet so that animals will carry them away to eat, allowing the seeds to spread and grow in new areas.

**Crop** is a plant that we grow to eat

#### Additional Information

##### What do plants need to survive?

**Sun** gives plants the energy they need to make food for themselves.

**Soil** gives plants the water, nutrients and minerals they need to grow. Many nutrients come from dead plants and animals that have rotted and decayed into the soil.

**Water** is taken from the soil through plant roots. The water moves up through stems and branches to the highest point for the whole plant or tree to get water. Plants release water back into the environment through their leaves. Some plants do not need as much water as others so can live in drier places, such as deserts, but they all need some water to survive.

**Air** is breathed in and out through small holes in plant leaves. Trees and plants breathe in carbon dioxide and breathe out oxygen. This is the opposite of what people do. People breathe in oxygen and breathe out carbon dioxide.



## LESSON 3 – Invertebrates

### OVERVIEW

<b>Subject:</b> Invertebrates
<b>Lesson aim</b> The purpose of this lesson is to understand the principal features of an invertebrate and to consider their relationship with humans
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Define the words 'invertebrate', 'parasite' and 'pest'</li><li>2. Describe two defining features of an insect</li><li>3. Name three invertebrates that are beneficial to humans and give one reason why for each</li><li>4. Describe a parasitic infection</li></ol>
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>Integrated science</b> <b>5.4.5</b> Identify common insect pests in the local environment <b>5.4.6</b> Discuss the harm caused by pests on plants and animals <b>5.4.7</b> Discuss how pests can be controlled using local plant materials
<b>Activities</b> <ol style="list-style-type: none"><li>1. Word-defining discussion (L01)</li><li>2. Insect identification quiz. (L02)</li><li>3. Beneficial invertebrate quiz (L03)</li><li>4. Parasite story (L04)</li></ol>
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk, colouring pencils

### LESSON 3 – Invertebrates

#### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week's notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about invertebrates</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 3</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Word-defining discussion (15 mins)	<p>Lead word-defining discussion</p> <p>Write contributions from learners and correct definitions for all terms on chalkboard</p>	Assist with answers if Grade 5s are having difficulty
	Insect identification quiz (15 mins)	<p>Read through first two questions in insect identification quiz in the Activity Book and ensure that the learners have the correct answer before writing it down in their books</p> <p>Divide into groups and instruct on the third question, give learners time to work through, and then check answers</p> <p>The learners can colour in the pictures if there is time</p>	Supervise and help learners with group part of activity
	Beneficial invertebrate quiz (10 mins)	<p>With the learners, read through the questions in the beneficial invertebrate quiz in the Activity Book and ensure that they have the correct answers before writing them down in their books</p>	Supervise and help learners with group part of activity
	Parasite story (10 mins)	<p>Direct the learners in the activity. Assist if learners are having difficulties with spelling words</p>	Help learners if they are having difficulty spelling
<b>Conclusion 5 mins</b>	Recap and conclusion	<p>Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class</p>	Collect Activity Books for CT

## LESSON 3 – Invertebrates

### NOTES Activities Guidance

**Word-defining discussion:** Ask the learners if they can remember the word ‘invertebrate’ from Lesson 1. If nobody can, instruct them to refer to that lesson in the Activity Books and ask someone to read out the correct definition. Ask them if they have ever heard of pests or parasites. Instruct them to discuss within their groups a definition for each of these words. Ask each group to read out their definition in turn, and write these down on the chalkboard, then write down the definition included in the lesson plan’s Content Guidance notes. Which groups’ definitions were closest? Get the learners to write the definitions in the space provided in the Activity Books. **Time: 20 minutes.**

**Insect identification quiz:** Work through the next quiz question in the Activity Books with the whole class, using the information in the Content Guidance section of the lesson plan to help you. Instruct the learners, in their groups, to work through the picture identification quiz and to fill in the gaps, and to identify which of the creatures are insects, and which are not (make sure that the learners are aware that they are looking for animals with six legs and three body parts). Once they have completed the activity, go through the correct answers with whole class. **Time: 15 minutes.**

**Beneficial invertebrate quiz:** Using their Activity Books, ask the learners to read out and complete this activity in their groups. Once they have worked through it, ask for groups to read out the answers out loud and see if they are correct. **Total time: 10 minutes.**

**Parasite story:** Ask the learners if any of them have had experience of a parasite, or if someone in their family had a problem with one, or maybe their family owned livestock that became infected. What effect did it have? Ask them to write their stories down in the space provided in the Activity Books. If there is time, they can read some of them out loud to the rest of the class. **Total time: 10 minutes**

### Content Guidance

#### Word-defining discussion

**Invertebrate:** An animal without a skeleton. These animals are also sometimes known as ‘bugs’ or ‘creepy-crawlies’.

**Parasite:** An animal or plant that feeds on another animal or plant, causing it harm, but without having to kill it.

**Pest:** An animal that harms humans or human property.

#### Insect identification quiz

Insects have **six** legs and their bodies are divided into **three** parts. There are 4 insects pictured in the identification quiz: the beetle, the bee, the dragonfly and the ant. The spider and scorpion are **arachnids** – they have eight legs. Millipedes, along with their relatives the centipedes, have many legs and belong to a group called the **myriapods**. Earthworms do not have any legs and belong to a group called **annelids**.

#### Beneficial invertebrate quiz

The beneficial invertebrates are a spider, a bee and an earthworm.

### Additional Information

Insects are the biggest group of living things on earth: there are more than one million known kinds of insects and many more yet to be discovered – some people think there could be as many as 10 million.

**Parasites** such as tsetse flies and mosquitoes can spread diseases like sleeping sickness and malaria when they suck our blood. Other parasites, such as intestinal worms, can live inside our digestive system. Many insects do not harm us and are actually helpful: bees make the honey that we love to eat. They also collect pollen from flowers; when they land on another flower, they deposit the pollen, which the flowers need in order to reproduce – they cannot make seeds without this. Many insects help us because they eat

the insects that trouble us, such as the praying mantis that likes to eat mosquitoes; so it's always good to have one around in the evenings.

Some common invertebrates that are not insects include spiders, scorpions, earthworms, slugs and snails.



## LESSON 4 – Fish

### OVERVIEW

<b>Subject:</b> Fish
<b>Lesson aim:</b> The purpose of this lesson is to understand the principal features of a fish and to consider their relationship with humans
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. List four defining features of a fish</li><li>2. Name three different methods of catching fish</li><li>3. Describe one harmful effect of fishing with poison</li><li>4. Describe one harmful effect of fishing with mosquito net</li></ol>
<b>Links to other skills/curriculum areas:</b> <b>Grade 6</b> <b>Integrated Science</b> <b>6.4.14</b> Draw and label the external parts of a fish (fins, scales) <b>6.4.20</b> State ways of conserving fish <b>6.4.21</b> State the effects of water pollution on fish <b>6.4.22</b> State the importance of fish in a diet
<b>Activities</b> <ol style="list-style-type: none"><li>1. Fish identification activity (LO1)</li><li>2. Fishing methods crossword (LO2)</li><li>3. Harmful fishing methods discussion and written activity (LO3,4)</li></ol>
<b>Resources needed</b> Activity Books, pens, pencils and colouring pencils, chalkboard, chalk  Materials for making fishing traps (optional)

**LESSON 4 – Fish**

**LESSON PLAN**

<b>Stage/Time</b>	<b>Activity</b>	<b>Conservation Teacher Activity</b>	<b>Learning Mentor Activity</b>
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about fish</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 4</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Fish identification activity (15 mins)	<p>Direct learners through group discussions and illustration activity</p> <p>Help each group during discussion, provide suggestions where possible</p> <p>Be present to assist learners with spelling or other requirements during diagram activity</p>	Assist learners with discussion, spelling and drawing
	Fishing methods crossword (15 mins)	Lead discussion and direct learners on crossword in Activity Books	Assist learners with clues and spelling. Read out clues during discussion of answers and contribute to discussion
	Harmful fishing methods discussion and written activity (20 mins)	<p>Direct discussion on harmful fishing activities and ask learners to complete written activity, as directed in Activity Books</p> <p>Ask learners to read out instructions for written activity to class</p>	Provide assistance with spelling during written activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 4 – Fish

### NOTES Activities Guidance

**Fish identification activity:** Ask the learners to discuss in their groups some of the features that define a fish. What characteristics do all fish share that set them apart from other animals? Ask each group to suggest one characteristic that they have come up with, and to name one type of fish. Write their contributions on the board. Next, write down the defining characteristics of a fish, as detailed in the Content Guidance. Did the learners get all of them? Did they come up with any additional features? Ask the group to draw one of the named fish swimming in water, and to label the drawing with the four features mentioned in the Content Guidance. They should write the name of the type of fish underneath.  
**Time: 15 minutes**

**Fishing methods discussion:** Discuss fishing with the whole class. You could ask the learners if they like to eat fish. How many of them are good at fishing? Direct them to complete the crossword individually, and then go through the answers with the group as a whole. **Time: 15 minutes**

**Harmful fishing methods discussion and written activity:** Ask them which of these fishing methods they know about? Which ones do they like to use most, and why? How many of the fishing methods that they know how to use would have been used by their parents, or even their grandparents, when they were young? These are traditional fishing methods. Ask them if they have ever seen anyone using poison or mosquito nets when fishing. Do they know of any reasons why using these methods may be bad? Ask them why they think it is important to get fishing permits in certain areas. If they do not know any reasons, then read out the information provided in the Additional Information. Ask them to write, in their own words, about fishing with poison and mosquito nets as directed in the Activity Books. **Time: 20 minutes**

**Additional activity option:** If you have time spare, you may want to ask the learners to build their own fishing traps, or, if they do not know how to do so, you or the Learning Mentors could provide a practical demonstration of this skill.

### Content Guidance

#### Fish identification activity

**Defining characteristics of a fish:** Slimy skin, scaly skin, lives underwater, has fins to help with swimming.

#### Fishing methods cross word: answers

1. FISH TRAP
2. POISON
3. MOSQUITO NET
4. FISHING NET
5. PERMITS
6. SPEAR

Grey boxes word: FISHING

### Additional Information

Fish provide food for people as well as food for crocodiles, other fish, tortoises, birds and other animals. Fish is a good food to eat because it tastes nice and provides us with protein that helps us to grow strong. If we fish carefully, there will always be enough fish to feed us, but if we are not careful we will run out of fish. Fishing carefully means only taking some of the big adult fish and always leaving all of the small fish that are still growing. Some big fish must always remain to breed. Small fish must remain so they can grow big for us to catch and eat later. Some people have fish farms. They build fish ponds and stock them with small fish. Because they take good care of the pond, the fish grow and reproduce. They only harvest the big fish, but leave enough big fish to breed, so they make sure that they will also have fish in the

future. Fish farming provides a lot of fish: enough to eat and to sell and it doesn't take the fish from the rivers or hurt the environment.

A group of fish is called a school.

**Fishing nets and mosquito nets** Most people fish with nets. This is a good way to catch a lot of fish at one time. If we fish with nets that have big enough holes in them for small fish to escape, then we make sure that the younger fish will go on to breed, and there will always be fish in our rivers to feed us. Mosquito nets have very small holes that catch small fish, so nothing is left to breed and produce more fish and eventually it will be harder and harder to find fish to catch, as there are fewer young fish growing into adults. We should always leave some big fish and all the small fish to make sure that we always have fish in our rivers.

**Fish Poisons** Some people use poisons to catch fish. Fish poisons enable us to kill a lot of fish in a very short amount of time but they are very bad for the river. They kill all the fish in the area and it takes a long time for fish to come back, so a few fishermen spoil a fishing area for everyone. The poisons used to kill fish often kill birds, frogs and other life in and around our rivers, as well as polluting our water sources. They hurt the food chain and all the animals suffer, including humans.

**Traditional Fish Traps** Many people fish using traditional fish traps that look almost like baskets made from reeds and plant fibre. If fishermen make their traps with big enough holes for the small fish to swim through, it is a better way of fishing.

**Spearing** There are some people who fish with a spear. It takes a lot of skill and a lot of time but it is a very good method for people who only need enough fish to feed their family. They can select large fish to spear and stop fishing when they have enough. Since spear fishing takes only a limited number of fish and selects only large fish, it is very good for the environment, the fish and the river.

**Permits** Fishing permits are needed to fish legally in certain areas along the Luangwa River. Fishing without a permit is illegal. The permits are a regulation to stop too many people taking too many fish from the river. If fishing is not regulated, there will not be enough fish left to eat. Fishing illegally is also known as poaching.

## LESSON 5 – Reptiles and Amphibians

### OVERVIEW

<b>Subject:</b> Reptiles and amphibians	
<b>Lesson aim</b> The purpose of this lesson is to understand the principal features of reptiles and amphibians, and to consider their relationship with humans	
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Define the terms 'reptile' and 'amphibian'</li><li>2. Name the four main groups of reptile found in the local area</li><li>3. Define the term 'cold-blooded'</li><li>4. Describe four ways of minimising the risk of getting bitten by a snake</li></ol>	
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>Integrated science</b> <b>5.2.6</b> Discuss ways of preventing accidents in the home school and community	<b>Grade 6</b> <b>Integrated Science</b> <b>6.4.23</b> Name animals classified as amphibians and reptiles <b>6.4.24</b> Describe adaptations shown by reptiles and amphibians <b>6.4.25</b> Name common varieties of poisonous snakes <b>6.4.26</b> Explain how snakes bites should be treated
<b>Activities</b> <ol style="list-style-type: none"><li>1. Reptile and amphibian riddles (L02)</li><li>2. Reptile and amphibian identification quiz (L01,3)</li><li>3. Snake risk assessment and poster (L04)</li></ol>	
<b>Resources needed</b> Activity Books, pens or pencils, colouring pens, chalkboard, chalk	

## LESSON 5 – Reptiles and Amphibians

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about reptiles and amphibians</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 5</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Reptile and amphibian riddles (10 mins)	Ask the Learning Mentors to read out the riddles to the class and direct answering from learners	Read out riddles. Assist with answers if Grade 5s are struggling
	Reptile and amphibian identification quiz (10 mins)	Lead and direct discussion and answering of questions	Assist with answers if Grade 5s are struggling
	Snake risk assessment and poster (30 mins)	Lead and direct discussion, then supervise group activity	Participate in discussion and help Grade 5s with spelling, if needed
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 5 – Reptiles and Amphibians

### NOTES Activities Guidance

**Reptile and amphibian riddles:** Arrange the learners in their groups and tell them that they are going to solve some riddles from the Activity Book. Ask them not to shout out the answers, but to discuss them in their groups to decide what the answer to each one should be. Ask the Learning Mentors to read out all of the riddles in turn, allowing a little time between each one for the groups to consider the answer. Once you have read all of them, ask around the classroom to see which groups have the right answers. Ask them to write the correct answers down in the Activity Books. **Time: 10 minutes**

**Reptile and amphibian identification quiz:** Work through the next set of questions in the Activity Books with the learners, assisting them with prompts if necessary. Refer to the Content Guidance and Additional Information for more information. **Time: 10 minutes**

**Snake risk assessment and poster:** Ask the learners if they have ever known anyone who has been bitten by a venomous snake. Allow them to share their experiences with the group. How many learners are afraid of snakes, and what do they do when they see them? Explain to the group that they will now think about some of the things that can be done to minimise the risk of getting bitten by a snake. Start off with a whole group discussion, getting the learners to suggest some of the things that attract snakes: Where do they like to hide? What do they like to eat? Under what circumstances do people get bitten? Write down their contributions on the board, then, in their groups, ask them to think about four steps that can be taken to minimise the risk of people getting bitten by snakes (see the Content Guidance for more information) and then ask each learner to design an information poster to make people aware of these steps. While they are creating their posters, ask each group to share one of the steps that they have identified. **Total time: 30 minutes**

### Content Guidance

**Answers to Reptile Riddles:** Tortoise, lizard, snake, crocodile, frog or toad.

**Answers to Reptile and Amphibian Identification Quiz:** (answers in **bold type**)

What is one thing that four of these five animals have in common? **Dry, scaly skin.**

All animals that share this feature are called **REPTILES.**

In what way was the other animal different? **It has slimy skin that can be smooth or warty.**

And in what way are its babies different from the adults? **Its babies look a little bit like fish, and cannot come out of the water at all until they become adults.**

All animals that share these features are called **AMPHIBIANS.**

All reptiles, amphibians and fish are **cold-blooded.** A **cold-blooded** animal is one that must **move** between **warm** and cold places to keep its **body temperature** comfortable.

**Information for snake risk assessment:** Some of the things that attract snakes include piles of wood, building materials, harvested crops, or anything else that they may feel safe hiding under. If we leave food lying around the house, this will attract mice and rats, which also attracts snakes, as they like to eat them. Some of the things that will minimise the risk of snakebite include making sure that the area around the house is kept tidy, clean and cleared of any piles of wood, crops and building materials that snakes like to hide in. Never leave waste food lying around. If you are ever moving piles of objects, e.g. crops or logs, always lift them cautiously and check underneath – never put your hands into holes or under things without looking first, and never go barefoot into fields or the bush. Not every snake has venom; in fact southern Africa has 130 different types of snakes and only 34 of these have venom. Because they eat rodents, (which can eat crops and spread diseases) snakes are very useful animals to have around. Some harmless snakes, such as brown house snakes, eat venomous snakes, so these are very helpful to humans.

### Additional Information

**Cold-blooded** Being cold-blooded does not mean that an animal's blood is cold. In fact their blood is no colder or hotter than ours. What it means is that they cannot control their body temperature. Ask the

learners to imagine that they have just come in from break, and they have been running around, maybe playing netball or football. What happens to their skin? They should answer that it is wet with sweat (also known as perspiration). Explain that this is one way in which our body controls our temperature: the sweat helps to cool us down. Because other animals cannot sweat, they have to use other ways of cooling down. Reptiles and amphibians cannot sweat, so they have to move between hot and cool places to keep their body temperature comfortable. That is why you can often see lizards and snakes resting in sunny places. If they do not warm up, they are too cold to move around quickly, so they cannot find food, but if they stay in the sun too long they will overheat and die. So a cold-blooded animal is one that is always moving between warm and cool places to keep its body temperature comfortable.



## LESSON 6 – Birds

### OVERVIEW

<b>Subject:</b> Birds	
<b>Lesson aim:</b> The purpose of this lesson is to understand the principal features of a bird and to consider their relationship with humans	
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. List four defining features of a bird</li><li>2. Name four types of bird that are kept by humans</li><li>3. Name two uses for domesticated birds</li><li>4. Describe the daily care routine for a domesticated bird</li></ol>	
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>SDS</b> <b>5.1.21</b> Identify livestock in the province <b>5.1.22</b> Discuss the conditions necessary for rearing livestock	<b>Grade 6</b> <b>Integrated Science</b> <b>6.4.10</b> Explain the basic needs of livestock <b>6.4.11</b> Discuss the importance of cleanliness in the care of livestock
<b>Activities</b> <ol style="list-style-type: none"><li>1. Identification discussion and picture (L01)</li><li>2. Birds and their uses: quiz and descriptive writing activity (L02,3,4)</li></ol>	
<b>Resources needed</b> Activity Books, pens or pencils, colouring pens, chalkboard, chalk	

## LESSON 6 – Birds

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about birds</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 6</p> <p>Respond to questions if Grade 5s are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Identification discussion and picture (20 mins)	Provide direction for activity, ask Learning Mentors to assist their groups with discussion and written parts of the activity	Help learners with suggestions during discussion and spelling of labels in the picture
	Birds and their uses: quiz and descriptive writing activity (30 mins)	Direct activities and instruct Learning Mentors to assist with written part. Supervise whole class during written activity	Help with spelling during written part of the activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 6 – Birds

### NOTES Activity Guidance

**Identification discussion and picture:** Explain that today we will be talking about birds. Ask the learners, in their groups, to think of one type of bird that is found in the local area and to discuss what features make birds different from other animals. If you have time, you could take them outside to try and spot some birds. Allow the groups time to think about the answers amongst themselves before asking each group to name at least one type of bird and one defining feature that all birds share. Write these on the board. Check that they have all of the answers, as detailed in the Content Guidance. Did they come up with any additional ones? Ask the learners to draw a picture of one of the birds that was named, and to label it with the defining features that have been identified. **Time: 20 minutes**

**Birds and their uses: quiz and descriptive writing activity:** Ask the whole group if any of them keep birds at home. How many different types of bird can they think of that have been domesticated? Tell them to write down the names of four domesticated birds in the spaces provided, and to write down two reasons why we keep birds. Next, ask the learners to imagine that they have to go away to visit a relative in another village for a few days. They have to ask a neighbour to look after their chickens, but they have never kept chickens before. In the space provided in the Activity Books, ask them to write down detailed instructions on how to care for the chickens, giving reasons for each instruction. **Time: 30 minutes**

### Content Guidance

**Diagnostic features for a bird:** They have feathers, wings, a beak and their young are born from eggs.  
Note: **not all birds can fly – do not accept this as a defining feature!**

**Domesticated birds include:** Hens (hens, chickens and cockerels are all the same type of bird, so you can accept any one of these answers, but do not accept more than one of them as separate answers because they are all the same thing), geese, turkeys, ducks and guinea fowl, amongst others.

**Reasons for keeping birds:** The most common reasons are for meat and eggs, but some people also use the feathers for stuffing pillows (and coats in cold countries) and the dung can be used as fertiliser for plants. Some people keep birds as pets as well. Wild birds are not used to being in captivity, unlike domesticated ones, so they find it very stressful and are not likely to live very long. Because of this, it is best only to keep the types of birds mentioned above at home.

### Additional Information

**Flight** Birds have hollow bones that are very light in weight to make it easier for them to fly. Most birds fly but there are some that do not. The ostrich is flightless, but has grown to be very large, fast and has an extremely powerful kick with which it can defend itself against predators.

**Bird Feathers** Feathers are strong and stiff so that they can resist the air pushing on them when they fly. They help to keep birds warm when they live in cold areas. Male birds usually have brighter feathers to help them attract female birds, whereas the females often have duller feathers so they do not attract the attention of predators when they are on the nest looking after their eggs. Most birds **moult** their feathers once a year. This means to lose the old feathers and replace them with new ones.

**Bird Nests and Eggs** Birds build nests in which to lay their eggs. These are often built on the branches of trees, but some birds build a nest inside a hole in a tree trunk, on the ground or high up on cliffs. Birds sit on their eggs to keep them warm. If the eggs are not kept warm the baby bird inside the egg will die. The eggs hatch into young birds or **nestlings**. After they have hatched the parents carry food to the young birds until they are old enough to **fledge** and find their own food.



## LESSON 7 – Mammals

### OVERVIEW

<b>Subject:</b> Mammals
<b>Lesson aim</b> The purpose of this lesson is to understand the principal features of a mammal and to consider their relationship with humans
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Define the term 'warm-blooded'</li><li>2. List four defining features of a mammal</li><li>3. Name four domesticated mammals</li><li>4. Name four wild mammals</li></ol>
<b>Links to other skills/curriculum areas:</b>
<b>Activities</b> <ol style="list-style-type: none"><li>1. Warm-blooded quiz (L01)</li><li>2. Mammal crossword (L02)</li><li>3. Domestic/wild labelling activity (L03,4)</li></ol>
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk

**LESSON 7 – Mammals**

**LESSON PLAN**

<b>Stage/Time</b>	<b>Activity</b>	<b>Conservation Teacher Activity</b>	<b>Learning Mentor Activity</b>
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about mammals</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 7</p> <p>Respond to questions if Grade 5s are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Warm-blooded quiz (15 mins)	Direct learners in activity	
	Mammal crossword (15 mins)	Direct learners in activity, ask Learning Mentors to help read out questions to groups and assist with spelling	<p>Read out questions to learners during group part of the activity.</p> <p>Assist learners in correct spelling on crossword, if needed</p>
	Domestic/wild labelling activity (20 mins)	Direct learners in activity; ask Learning Mentors to confirm if animals are correctly classified as domestic or wild	Confirm classification as domestic or wild, and correct this if necessary
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 7 – Mammals

### NOTES

#### Activities Guidance

**Warm-blooded quiz:** Explain to the learners that they will be learning about mammals today, but first they need to remember something that they talked about when they learned about reptiles. Ask the learners if anyone can remember what the term cold-blooded means. Give them clues, and if that doesn't work, allow them to look back through their Activity Books until they can find the definitions. Explain that the animals they will be talking about today are 'warm-blooded', which is the opposite. Ask them to work through the first of today's activities in their Activity Books. Ask if any of the learners can think of any ways in which humans are able to regulate their body temperature? What about other animals? (see the Additional Information section). Explain that animals that can regulate their own body temperature are called 'warm-blooded'. Write the definition from the Content Guidance on the board, and ask the learners to copy it in the space provided in the Activity Books. **Time: 15 minutes**

**Crossword Puzzle:** Ask the learners, in their groups, to attempt to answer questions in the crossword quiz in the Activity Books, but not to write the answers down yet. Allow them to spend ten minutes thinking about the answers, before asking the class, as a whole, each question in turn, to see if they have answered correctly. Write the correct answers on the board (see Content Guidance), then ask them to write these in the correct spaces on the crossword. Ask them what secret word has been revealed? **Mammal** – that is because these are all the features that define a mammal. What animals can they think of that meet that description? Ask them to write the word 'mammal' in the space provided. **Time: 15 minutes**

**Domestic/wild animal quiz:** Ask the learners if they can remember what the words 'domesticated' and 'wild' mean. If they can't remember, allow them to look back to lesson one in the Activity Books to find the definition. Ask them, individually, to think of and list in the space in the Activity Books, four domesticated and four wild animals. Divide the board into two halves, with one half titled 'wild' and the other titled 'domesticated'. Ask one person from every group to name one of their animals and to say if it is wild or domesticated; write the name of the animal down on the appropriate side of the board. Keep on going round until you have at least four animals on each side of the board (if you have fewer than eight groups, then ask for more than one answer from each); allow any who do not have four of each in their Activity Books to copy some animals down from the board. **Time: 20 minutes**

**Additional activity option:** If you have spare time, allow the learners to colour in the picture at the bottom of the page.

#### Contents Guidance

**Warm-blooded quiz:** (answers in **bold** type) All mammals and birds are **warm-blooded**. A **warm-blooded** animal is one that can **control** its **body temperature**.

**Crossword puzzle** (the answers to the puzzle are the four defining features of a mammal):

1. MILK
  2. WARM-BLOODED
  3. HAIR
  4. LIVE YOUNG
- Secret word: MAMMAL

**Domestic/wild animal:** Domestic animals include dogs, cats, pigs, goats, cattle and sheep. Wild mammals are any one of the mammals that do not live with people, from elephants right down to mice and rats.

## Additional Information

### Defining features of a mammal

**Milk** All mammals feed their young with milk – they are the only animals that do this. Milk is only produced by a mammal when it has very young offspring, who need all of the nutrients that it provides to help to grow.

**Warm-blooded** All mammals are warm-blooded. Birds are also warm-blooded. This means that they can regulate their own body temperature. As humans, we sweat when we are hot. As the sweat evaporates, it cools our bodies down. When we are cold we shiver, which warms our muscles up, and the hairs on our arms stand up to trap warm air close to the skin, which helps to raise our body temperature. These are just two ways in which we are able to control our body temperature. Other mammals have many other methods. Dogs cannot sweat, so they pant to lower their body temperature – when air cools moisture on the tongue, this brings down the temperature of the blood inside the tongue, so that when the blood circulates back through the body it helps to bring the whole body temperature down. Elephants do a similar thing, but through their ears. If you ever see an elephant flapping its ears on a hot afternoon, it is actually waving them about to cool down its blood.

**Hair** Mammals are the only animals that have hair or fur. Some mammals are hairier than others – pigs, elephants and rhinos hardly have any at all. Most animals use their hair to keep them warm, but in the case of a few mammals, like porcupines, for example, the hairs have become sharp spines that they can use to defend themselves against predators.

**Live young** Mammals give birth to live young, which means that they don't lay eggs but the baby develops *inside* its mother's body until it is ready to be born. The babies of birds, reptiles, amphibians and fish, on the other hand, spend time developing *outside* of their mother's body inside an egg before they hatch.



## LESSON 8 – Food Chains

### OVERVIEW

<b>Subject:</b> Food chains
<b>Lesson aim</b> The purpose of this lesson is to understand feeding relationships within the local ecosystem
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Define the terms 'producer', 'consumer', 'decomposer', 'herbivore', 'predator' and 'scavenger'</li><li>2. Name one herbivore, one predator and one scavenger found in the local area</li><li>3. Describe a basic food chain</li></ol>
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>SDS</b> 5.1.21 Identify livestock in the province
<b>Activities</b> <ol style="list-style-type: none"><li>1. Definition matching game (L01)</li><li>2. Food pyramid game (L02)</li><li>3. Illustration of a food chain (L02,3)</li></ol>
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk, access to outdoors

## LESSON 8 – Food Chains

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about food chains</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 8</p> <p>Respond to questions if Grade 5s are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Definitions and matching game (10 mins)	<p>Explain to learners about a simple food chain (see Content Guidance)</p> <p>Direct learners to activity</p> <p>Ask Learning Mentors to help reading through the words and definitions with the learners</p>	Read through definitions with group and help them try to find the correct answer
	Food pyramid game (25 mins)	Take the learners outside and organise groups into animal identities, and provide instructions as per the Activities Guidance	Act as scavengers in game
	Illustration of a food chain (15 mins)	Take group back inside classroom and provide guidance for food chain illustration activity	Assist learners if needed
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 8 – Food Chains

### NOTES Activities Guidance

**Definition matching game:** Direct the learners to the first of today’s activities in the Activity Books. Ask the Learning Mentors to work through it with their groups. Allow them five minutes, and then run through the activity with the whole class, checking that everyone has the correct answers. **Time: 10 minutes**

#### **Food pyramid game:**

Explain that the relationship of predators eating herbivores and herbivores eating plants is called a food chain, but really it should be seen as a pyramid, because more plants are needed than herbivores and more herbivores than predators to ensure that there is enough food to go round. Ask the learners what would happen if there were no plants? They should reach the conclusion that there will be no food for the herbivores, so they will not be able to survive. And what if the herbivores couldn’t survive? There would be no food for the predators, so they would not be able to survive. The end result is that there would be no food for the scavengers either.

1. Assign each group to be a different species of predator (such as lions or leopards) or herbivore (such as impala or zebra). You need to make sure there are more herbivores than predators at the start of the game. It doesn’t matter if more than one group ends up being the same thing. Tell the Learning Mentors that they are scavengers (such as jackals or vultures).
2. Take the learners outside into the school yard. Put all of the predators on one side of the yard, and all of the herbivores in another group on the other side of yard. Explain to the learners that they will be playing a chasing game! The predators have to try to chase and tag (touch on the shoulder) one herbivore each to ‘eat’. As a predator catches his prey each pair should stand still. When all the predators have caught a herbivore there should still be some spare herbivores! Blow a whistle to start the game and when all the predators have paired up with a herbivore blow a whistle again to stop everyone running around to listen and understand the next part of the game.
3. Explain that now the caught herbivores, just as in the food chain, will decay into the soil to become food for plants. Tell all the caught herbivores that they will, for the next part of the game, turn into plants
4. Explain that in the next part of the game the remaining herbivores each have to tag a plant. Explain that when the plants get eaten, they give the herbivores energy to reproduce, and a new generation of herbivores has been born. Just as in a food chain, these plants will now become herbivores. There should now be more herbivores than there are predators, so the predators can feed again. Use a whistle to stop and start each stage of the game.
5. To add an extra element, when all the herbivores turn into plants and only a few herbivores remain, when the game resumes there will not be enough food for all of the predators, which means some of them will not survive and when they die the scavengers will get to eat their remains. Tell the scavengers to tag one predator each, and to continue doing so until the number of predators is smaller than the number of herbivores. All of the predators that get tagged will also become plants.

**Time: 25 minutes**

**Illustrating a food chain:** Take the group back inside the classroom, and ask them to draw, in the space provided in their Activity Books, a simple food chain, showing one plant, one herbivore, one predator and one scavenger that live in the local area. **Time: 15 minutes**

### Content Guidance

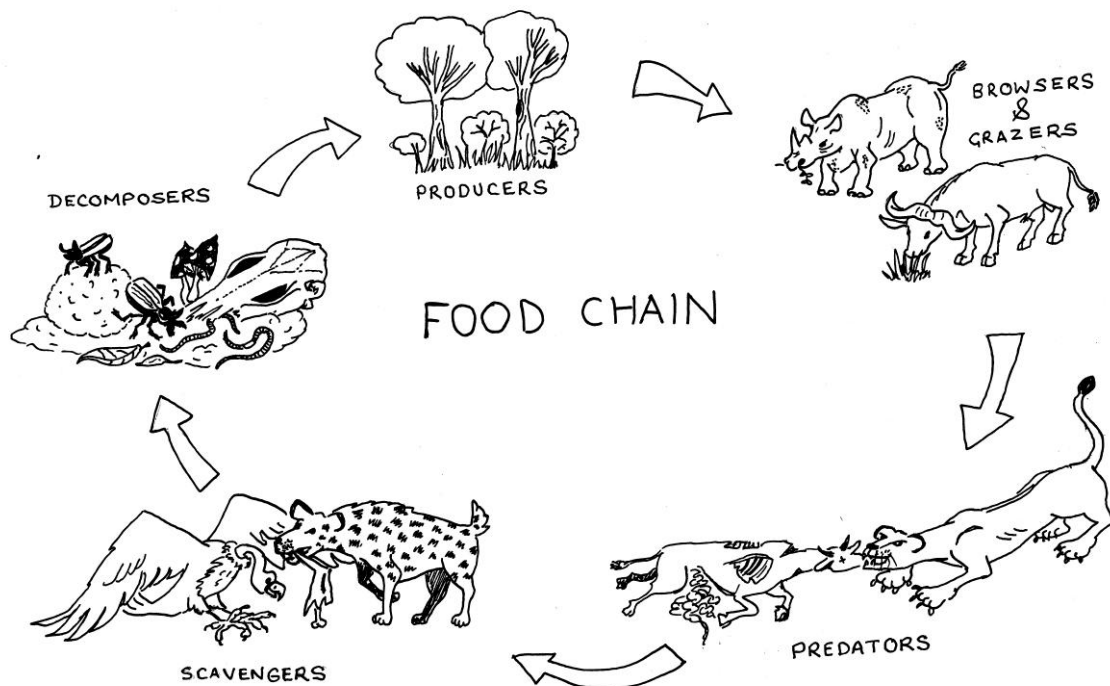
#### **Food chains**

- Every living thing needs energy in order to live. Every time animals do something (run, jump) they use energy to do so. Animals get energy from the food they eat, and all living things get energy from food. Plants use sunlight, water and nutrients to get energy (we will learn about this in lesson 11). Energy is necessary for living things to grow.
- A food chain shows how each living thing gets food, and how nutrients and energy are passed from creature to creature. Food chains begin with producers (all plants and trees), and end with animal-life. Some animals eat plants, some animals eat other animals.

- Plants take energy from the sun, along with water, nutrients in the soil and carbon dioxide from the air and turn them into food.
- Herbivores (browsers, grazers and mixed feeders - see below for more information) eat plants.
- Predators, such as lions, snakes, eagles and crocodiles eat herbivores.
- A simple food chain could start with grass, which is eaten by zebras. Then the zebras are eaten by lions.

But you can add to the chain:

- Scavengers, like jackals, hyenas and vultures, for example, eat the leftover meat from predator kills
- Decomposers break down all of the last scraps leftover (food waste, dung, etc), and return all of the nutrients back to the soil so that plants can benefit from them. After an animal or plant dies, fungi (like mushrooms) and other decomposers like beetles break down the dead parts, and turn them into nutrients, which are released into the soil. The nutrients (plus sun and water) then cause plants and trees to grow. It's a full circle of life and energy!



### Definition matching game

An animal that eats other animals – **predator** (e.g., lion, leopard, mongoose)

A living thing that does not feed on plants or animals, but gets its nutrition from other elements in the environment such as soil – **producer** (plants are producers)

An animal that eats dead animals, but does not hunt them – **scavenger** (e.g. hyena, jackal, vulture)

A living thing that breaks down dead animals and plants so that their nutrients may be returned to the soil – **decomposer** (e.g., beetle, maggot, fungi)

An animal that eats plants – **herbivore** (e.g., elephant, hippo, zebra, puku)

A living thing that feeds on the producers – **consumer** (all animals are consumers)

One of the words above is used to group all of the herbivores, predators, scavengers and decomposers together. Can you guess which one it is? **Consumer**

### Additional information

#### Browsers, grazers and mixed feeders

Herbivores can be divided into two groups: browsers and grazers. Browsers are animals that eat branches and leaves of bushes and trees, whereas grazers feed on grass. Mixed feeders eat grass, trees and bushes.

**Zebras** are typical grazers. Their strong mobile upper lips help them to push the grass to their strong teeth that have a wide cutting surface. Zebras' lips and teeth enable them to eat tough, long grasses as well as short, new grasses. Zebras often eat the top part of the grass and leave the lower part of the grass. This makes the wildebeest happy because the wildebeest likes to eat the bottom part of the grass.

**Black rhinos** like to eat thorny shrubs and small trees. Because of this, they have a pointed upper lip that can hook around small twigs and branches. Their dung is quite dry and woody, and you can see the small twigs that they like to eat. Black rhino are noisy eaters; you can hear them chewing up to 400 metres away.

**Elephants** are mixed feeders, which means they are both browsers and grazers. They eat grass, trees, shrubs and fruit and will live in many different habitats as long as they have a good water supply and shade for the hottest part of the day. Elephants eat most of the day and night; they need to eat a lot to feed their big bodies. The average elephant needs to eat about 170kgs of food a day and drink about 160 litres of water a day; that is more than the weight of three 50 kg bags of maize and 640 glasses of water a day. Elephants often pull trees up by their roots, break branches and push trees over when feeding. When their habitat is large enough, elephants' destructive eating habits can often help the environment: by removing trees they open up grassland areas for other animals to graze and provide an area that gets enough sunlight for young trees to grow. Elephant dung also provides many nutrients for the soil and is ideal ball of fertiliser for seeds to grow.



## LESSON 9 – The Ground We Walk On

### OVERVIEW

<b>Subject:</b> The Ground We Walk On	
<b>Lesson aim</b> The purpose of this lesson is to understand the processes that create soil, its use for humans and role in the ecosystem	
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Define the term 'topsoil' and explain why it is good for growing plants</li><li>2. List five processes that create soil</li><li>3. Describe one way in which humans can maintain soil</li><li>4. Explain the importance of soil maintenance</li></ol>	
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>Integrated science</b> <b>5.3.1</b> Discuss how soil is formed by the agents of weathering (wind, water, temperature, trees) <b>5.3.2</b> Compare the soil samples collected from different locations <b>5.3.3</b> Show the presence of water in a sample of soil (by carrying out an experiment) <b>5.3.4</b> Explain the importance of water in the soil <b>5.3.5</b> List ways in which water can be retained in the soil <b>5.3.6</b> Demonstrate that clay, loamy and sandy soils have different rates of drainage <b>5.3.7</b> Explain what organic and inorganic fertilisers are <b>5.3.8</b> Discuss various ways of preparing compost manure <b>5.3.9</b> Discuss the importance of maintaining a supply of composted materials <b>5.3.10</b> Discuss the advantages and disadvantages of chemical fertilisers to plant growth and agriculture	<b>Grade 6</b> <b>SDS</b> <b>6.4.5</b> Explain the impact of weather on the buildings and environment
<b>Activities</b> Soil jar activity (L01) Soil scientists activity (L02) Fertiliser discussion (L03,4)	
<b>Resources needed:</b> Jar with lid, soil, water, Activity Books, pens or pencils	

## LESSON 9 – The Ground We Walk On

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance)</p> <p>If Grade 5s cannot remember, allow them to look in last week's notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about soil</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 9</p> <p>Respond to questions if Grade 5s are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Soil scientists activity (20 mins)	Direct discussion, ask Learning Mentors to help guide group work	Guide discussion in groups, help suggest ideas and theories
	Soil jar activity (10 mins)	Lead demonstration and discussion; ask assistance from Learning Mentors, if necessary	Assist passing round jar of soil so everyone can see
	Fertiliser discussion (20 mins)	Lead discussion and instruct how to complete activity in Activity Book	Assist with spelling in written exercise
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT



## LESSON 9 – The Ground We Walk On

### NOTES Activities Guidance

**Preparation:** The day before the lesson, fill a jar or bottle half full with soil then fill it almost to the top with water. Put a lid on the jar and shake it thoroughly until the soil and water are mixed up. You may want to get the learners to do this, if possible, and if you have a large class, it is advisable to prepare several jars, but make sure it is done at least one day before the lesson.

**Soil scientist activity:** Tell the class that they will need to work through the next point in their groups. They are going to imagine that they are soil scientists, and they must come up with theories that might explain how soil is made. How do big, solid rocks become broken up into tiny soil particles? Allow them 5-10 minutes to discuss the point, then ask each group to name one theory that they have come up with. Write each theory down on the board, and then read out the information provided in the Content Guidance. How does this compare with their ideas? Ask the learners to write the title of each answer down into the spaces provided in their Activity Books, and to complete the word search activity. **Time: 20 minutes**

**Soil jar activity:** Allow all of the learners to have a close look at the jar. They should notice that it has separated into different layers as it has settled back down; ask them if they can see and describe the layers. The top layer should be dark, and parts of it should be floating on, or near the water's surface. Ask them if they can guess what it is made of. You can give them a clue by telling them to think back to the food chain lesson. What happens to the dead animals and plants after the decomposers have finished with them? They end up turning into soil, where they provide nutrition for plants. This is what we call topsoil (also known as humus). Now ask them if they can think of what the lower layers are made of. See 'What else is in the jar?' in the Additional Information for more information. Direct them to complete the activity for this in their books. **Time: 10 minutes**

**Fertiliser discussion:** Ask the class how many of them have parents who grow crops. Explain that crops get nutrition from the soil, but unless that nutrition is replaced, the soil eventually becomes unsuitable for growing crops. Do their parents use anything to maintain the soil, so that they can carry on growing crops there? Ask them if they have heard the word 'fertiliser' before. Write the definition of fertiliser on the board, as it appears in the Content Guidance, and ask the learners to copy it in their books. Ask the learners to complete the written activity in their books. Finally, as an open discussion, ask the group if anybody knows of any other methods of maintaining soil – allow the learners to come up with answers based on their own knowledge. **Time: 20 minutes**

### Content Guidance

**Soil scientist activity:** It takes thousands of years for soil to be made. Soil begins with large rocks. They are broken into smaller and smaller rocks until they finally turn into soil. Factors that create soil are:  
**Water** Running water from rain and from rivers moves rocks. As rocks are moved they hit one another and small pieces break off.

**Temperature** When rocks go from hot to cold they get weaker and eventually start to crack and break. Rocks get hot during the day when they are in the sun and cold at night.

**Wind** Strong winds can cause stones to move and hit other stones. As the stones hit one another they begin to break up. Winds can also wear down the surface of a rock taking very small pieces with it.

**Plants** When plants grow in rocky areas their roots often grow into cracks in the rocks. As the roots grow they weaken the crack in the rock until it eventually breaks.

**Animals** When animals walk over rocks they break off small pieces. People also help to break rocks into soil with their hoes and ploughs when they are cultivating fields.

**Soil jar activity:** (answers in **bold**) **Topsoil** is the **layer** on top of the **soil** that is made up of **decaying** plants and **animals**. It is very high in the nutrients and **minerals** that **plants** need to grow.

**Fertiliser discussion:** Fertiliser is the word that describes anything we put in soil to increase its nutrient value and to help plants grow. Fertilisers can be natural, like compost or manure, or they can be artificial.

### **Additional Information**

**Topsoil** When we talk about soil, we are usually talking about topsoil. Topsoil is the part of the soil that farmers depend on most. It is very high in the nutrients and minerals that plants need to grow strong. When it rains, the water passes through the soil and picks up these nutrients and minerals. The plants then take the water, with the nutrients and minerals, up through their roots to provide them with the energy they need to live and grow. It takes a very long time for topsoil to form.

**What else is in the jar?** Just beneath the floating organic matter, you will probably see a layer of dirty water. The colour of the water is caused by rotting plant matter that has dissolved into it. Below that, there will probably be a layer of clay, and at the bottom there will be sand and small stones that are in the process of becoming soil. These are the heaviest components of the soil, which is why they sink to the bottom. You could ask the learners to consider how long it takes for those small stones to get broken down enough to become sand, and eventually soil.

**Other ways of maintaining soil** Animal manure and compost made from kitchen waste can both be used as fertilisers. Some plants can also help to put nutrients back into the soil through their roots. Burrowing animals, such as earthworms and rodents help to keep the soil healthy by breaking it up and allowing air and water to move through it, while the decomposers that we learned about in lesson 8 help to break down dead plants and animals so that the nutrients they contain can go back into the soil.

## LESSON 10 – The Water Cycle

### OVERVIEW

<b>Subject:</b> The Water Cycle	
<b>Lesson aim</b> The purpose of this lesson is to understand how water circulates within the environment	
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. List five different ways in which people use water</li><li>2. Define the terms 'evaporation', 'condensation' and 'vapour'</li><li>3. Explain how water circulates around the environment</li></ol>	
<b>Links to other skills/curriculum areas:</b>	
<b>Grade 5</b> <b>Integrated science</b> <b>5.1.4</b> Discuss the importance of water in the body <b>5.1.5</b> Explain the effects of dehydration <b>5.1.6</b> Discuss how to prevent and treat dehydration	<b>Grade 6</b> <b>Integrated Science</b> <b>6.3.1</b> Describe the rain cycle <b>6.3.2</b> Discuss water vapour <b>6.3.3</b> Describe evaporation <b>6.3.5</b> State how the effect of evaporation is affected by weather changes <b>6.3.6</b> Discuss the condensation of water <b>SDS</b> <b>6.4.1</b> Outline the element of weather and climate <b>6.4.2</b> Observe, measure and record prevailing weather conditions in the local area <b>6.4.3</b> Discuss the influence of weather and climate on human activities
<b>Activities</b> <ol style="list-style-type: none"><li>1. Water use at home discussion (L01)</li><li>2. Evaporation activity (L02)</li><li>3. Water cycle story (L03)</li></ol>	
<b>Resources needed</b> Glass, water, plastic bag, elastic band, Activity Books, pens or pencils, colouring pens, chalk and chalkboard	

## LESSON 10 – The Water Cycle

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about the water cycle</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 10</p> <p>Respond to questions if Grade 5s are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Water use at home discussion (10 mins)	Lead discussion, ask Learning Mentors to help with ideas if learners struggle and assign one Learning Mentor to write contributions on chalkboard	Contribute to discussion when asked and write contributions on board
	Evaporation activity (20 mins)	Ask Learning Mentors to assist passing glass round, instruct learners in taught part of activity and write definitions of key words on chalkboard	Assist by passing round the glass
	Water cycle story (20 mins)	Lead discussion, ask Learning Mentors to contribute if necessary, provide instructions for written activity and ask Learning Mentors to help learners when needed	Contribute to discussion when asked and help learners with spelling if needed
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 10 – The Water Cycle

### NOTES Activity Guidance

**Preparation:** Before the lesson, fill a glass or jar half-full with water, stretch a plastic bag tightly over the top, and fix it in place with an elastic band. Leave this in a hot, sunny place so that some of the water evaporates and condenses to form water droplets on the inside of the plastic bag. You may want to get the learners to do this, if possible, and if you have a large class, it is advisable to prepare several glasses, but make sure it is done at least two hours before the lesson, or even the day before if the weather is cool.

**Water use at home discussion:** Explain that today you are going to talk about water. To start off, ask the whole class, in an open discussion, to give examples of some of the ways in which they use water. They should come up with suggestions such as for cooking, for washing dishes, for cleaning the house, for washing ourselves, for drinking, etc. Guide them with clues if they have difficulty coming up with answers, or ask the Learning Mentors to come up with suggestions. Ask one of the Learning Mentors to write down their contributions on the board and ask the learners to write down five of these in the space provided in the Activity Books. Explain that there are many uses for water, but the most important is for drinking. All living things, including humans, depend on water to survive – without it we would all die. **Time: 10 minutes**

**Evaporation activity:** Ask the Learning Mentors to pass round the glass of water and allow the learners to see that drops of water are clinging to the plastic bag. Once the whole class has had a chance to see, ask them if they know how the water got there. Do they know what happens to water if it is left in the sun? It evaporates – write down the definition for evaporation and vapour, as stated in the Content Guidance sheet. Explain that the vapour was trapped by the plastic bag, and then the cool surface of the plastic made it turn back into water. Explain that this is called condensation, and write down the definition from the Content Guidance sheet on the board. Ask them to draw the jar in the space provided in the Activity Books, showing and labelling evaporation, vapour and condensation, with an explanation for each one. **Time: 20 minutes**

**Water cycle activity:** Ask the learners if they can think of where they can see water vapour in nature. If they cannot come up with the right answer, tell them that clouds are made of water vapour, and when it rains, what they are seeing is vapour turning back into water, or condensation. Ask them to think about the glass with the plastic bag and imagine what else that water could be? They might suggest a lake or the sea. And what would trap the clouds in the way that the plastic bag traps vapour? Try to guide them towards saying hills or mountains. If they can't think of any answers, ask the Learning Mentors to help, or give them clues to help them along. Copy the picture in the Contents Guidance onto the board to help them visualise the water cycle at work in the environment. Then ask them to imagine they are a single drop of water in the Luangwa River. Ask them to describe their journey around the water cycle in the space provided in the Activity Books. Remind them to think about what they would see, how they would feel and the things that would happen to them at the different stages of the journey and try to describe at least some, preferably all of these experiences. They could include things such as the landscapes or animals that they encountered along the way, or how they felt as they were being evaporated or condensed, or include any other detail that they would like to include to make the story interesting. **Time: 20 minutes**

### Content Guidance

#### Evaporation activity

**Evaporation:** The process of heating a liquid until it becomes a gas

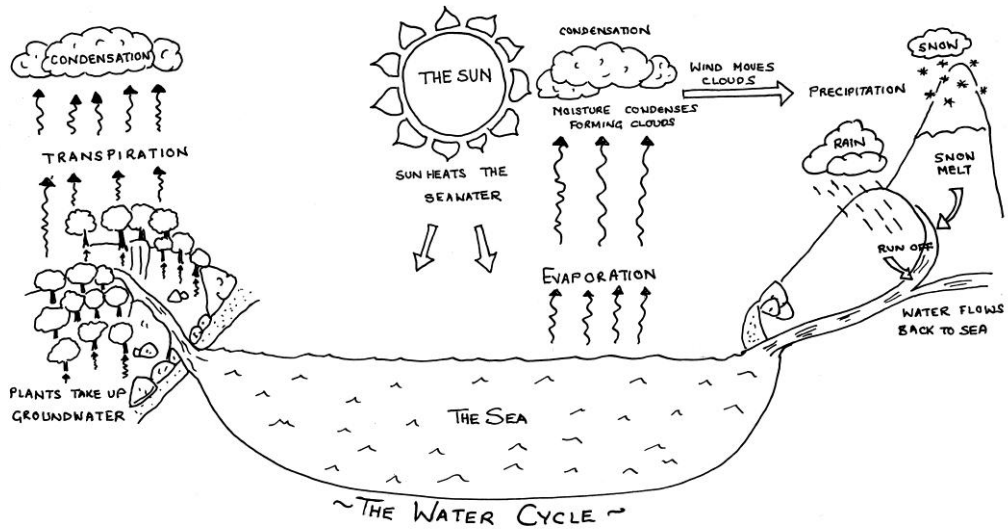
**Vapour:** A liquid that has turned into the form of gas

**Condensation:** The process of cooling when water turns from gas back into a liquid

**A simple water cycle** – you can copy the image below onto the chalkboard to help the learners imagine the journey in the water cycle story

### Additional information

**People need water** About 75 percent of the human body is made up of water. We need at least two litres of water everyday just to stay alive. We don't only get water from drinking. Many of the foods that we eat have water in them. Fruits and vegetables are a good source of water. A person can survive for about a month without food but only about three days without water.



## LESSON 11 – The Amazing Power of Plants

### OVERVIEW

<b>Subject:</b> The Amazing Power of Plants
<b>Lesson aim</b> The purpose of this lesson is to understand how plants play an important role in maintaining a healthy environment
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Describe the process through which plants obtain food</li><li>2. Explain how plants contribute to the water cycle</li><li>3. List five ways in which plants protect the environment</li><li>4. Describe three ways in which plants improve soil</li></ol>
<b>Links to other skills/curriculum areas:</b> <b>Grade 6</b> <b>Integrated Science</b> <b>6.4.9</b> Describe the process by which plants make food (photosynthesis)
<b>Activities</b> <ol style="list-style-type: none"><li>1. Plant feeding discussion and drawing (LO1,2)</li><li>2. Tree benefits discussion (LO2,3)</li><li>3. True or false quiz (LO4)</li></ol>
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk, colouring pens

## LESSON 11 – The Amazing Power of Plants

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activity
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week's notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about plants</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 11</p> <p>Respond to questions if Grade 5s are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Plant feeding discussion and drawing (20 mins)	Guide discussion and talk through taught elements. Ask Learning Mentors to contribute to discussion if learners are having difficulty. Direct learners on drawing activity; ask Learning Mentors to help with diagrams if needed	Assist with discussion when asked by CT and help learners with drawings, if necessary
	Plant benefits discussion (15 mins)	Direct discussion and ask Learning Mentors to help with suggestions if learners have difficulty	Assist with group discussions and writing contributions on the board
	True or false quiz (15 mins)	Direct discussion and work through true or false quiz with class	Assist with group discussions and writing contributions on the board
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT



## LESSON 11 – The Amazing Power of Plants

### NOTES Activities Guidance

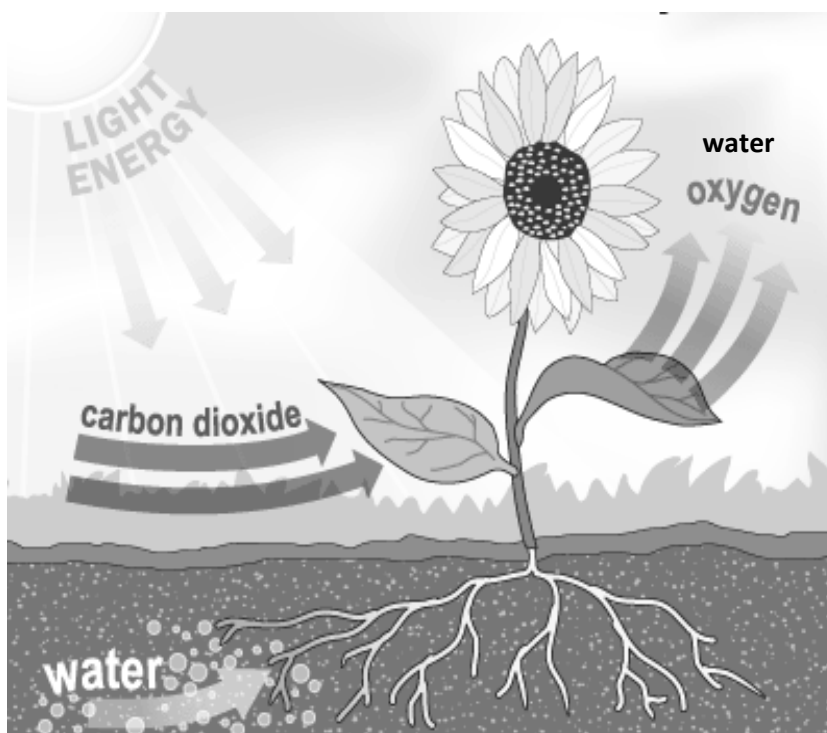
**Plant feeding discussion and drawing:** Ask the whole class if any of the learners can remember where plants get nutrition from (allow them to look back to the pages in their Activity Books on food chains and soil if they need help remembering). Tell them that in addition to the nutrients in soil, plants obtain food from another source. Explain how plants produce food, as detailed in the Content Guidance. Tell the learners that the water that plants take in through their roots is also released back into the air through the leaves as vapour, so plants also contribute to the water cycle. Ask the learners to produce a diagram in the space provided in the Activity Books, showing how plants produce food and how water moves into, through and out of the plant, and back into the water cycle. The can use labels with words and arrows to explain what is happening in the diagram. **Time: 20 minutes**

**Plant benefits discussion:** Remind the learners that they have just learned about two big benefits of having plants around: they give us oxygen and they contribute to the water cycle as well, but there are many others, too. Ask them, in their groups, to see if they can think of any other useful roles that plants play in the environment. Allow them five minutes to come up with some ideas, and then ask each group to make one contribution. Write their suggestions down on the board, and then write down the information on the Content Guidance sheet. How do the learners answers compare? Ask the learners to copy down the answers you have provided. **Time: 15 minutes**

**True or false quiz:** Ask the learners to think about the last point: plants help to improve soil. Ask the whole class if anyone can suggest any ways in which this might happen. Allow them to come up with some suggestions. After discussing this with them, ask them to do the True or False quiz in their Activity Books. Allow them ten minutes for the quiz, and then go through it with them, finding out who has answered correctly. **Time: 15 minutes**

### Content Guidance

**Plant feeding discussion and drawing:** Plants get food from carbon dioxide from the air. They breathe this in through the leaves, where it mixes with the water taken up through the roots from the soil. Energy from sunshine turns this mixture into sugar and oxygen. The sugar is used by the plant to grow, while the oxygen is released back into the air. This means that when plants make their food, they are also providing us with clean air to breathe. When animals, including humans breathe in oxygen, we breathe out carbon dioxide, allowing the plants to continue producing food, so plants and animals depend on each other for the air that they breathe. As well as giving off oxygen, trees also release excess water through their leaves. This water evaporates back into the air, contributing to the water cycle. In some heavily-forested areas where there are thick jungles, scientists believe that as much as half of all of the rain that falls is made up of water that has come out of the trees,



instead of having evaporated from rivers, lakes or the sea.

### **Plant benefits discussion**

1. Create oxygen
2. Contribute to the water cycle
3. Improve the soil
4. Prevent soil erosion
5. Protect our water sources

The first two points we have already discussed.

Here is some more information on the others:

**Improve the soil** When plants die they decompose which means that means they rot and decay. In the process of rotting and decaying, plants put nutrients into the soil that help other plants to grow. The leaves of trees also fall off and rot, putting important nutrients into the soil. The roots of trees and other plants make spaces in the soil that help air and water flow through. This helps the soil stay moist so that plants can grow well. The shade from trees also protects the soil from the hot sun. It's always a good idea to leave some trees when clearing a field for planting.

**Prevent soil erosion** Plants provide protection to soil and prevent soil erosion. Soil erosion is usually when soil is washed away by rain or blown away by wind. Plants prevent soil erosion by slowing down rainwater that runs over the land. The roots of plants and trees hold soil in place so that it is not washed or blown away. This is important everywhere but especially near rivers because plants and trees slow down the river water and their roots hold the soil in place so it is not carried off by the river. The same is true for hillsides because rainwater runs down the hills so fast that it often carries a lot of soil with it. The roots of plants and trees help keep the soil in place and plants and trees also help slow down the water as it runs down our hills.

**Protect our water sources** By preventing soil erosion, plants and trees are also protecting our water sources. Without trees, heavy rains would not be slowed down and rivers would flood. The floods would carry large amounts of soil into the rivers and streams too quickly and make them very muddy, eventually blocking them completely. Then, when the dry season comes our rivers would dry up completely. And when the rains return, because the rivers are blocked, the water would have nowhere to flow and would cause more floods.

### **True or False Quiz – Plants improve soil**

The shade from trees protects the soil from becoming too hot in the sun, so that it doesn't dry up. - **True**

Plants go to the toilet, which returns nutrients to the soil. - **False**

Their roots create spaces in the soil for air and water to move through. - **True**

Plant roots create furrows that farmers use for planting. - **False**

Plants release water from their roots into the soil. - **False**

When leaves and branches fall, or if a plant dies, it decomposes, which returns the nutrients within it to the soil. - **True**

## LESSON 12 – Disappearing Forests

### OVERVIEW

<b>Subject:</b> Disappearing forests	
<b>Lesson aim</b> The purpose of this lesson is to understand the negative consequences of deforestation	
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Define the terms 'deforestation' and 'erosion'</li><li>2. List five negative effects of deforestation</li><li>3. List three ways in which deforestation would negatively affect humans</li></ol>	
<b>Links to other skills/curriculum areas:</b>	
<b>Grade 5</b> <b>Integrated science</b> <b>5.3.1</b> Discuss how soil is formed by the agents of weathering (wind, water, temperature, trees) <b>5.3.5</b> List ways in which water can be retained in the soil <b>5.3.6</b> Demonstrate that clay, loamy and sandy soils have different rates of drainage <b>SDS</b> <b>5.5.2</b> Discuss the effects of human settlements on the environment <b>5.5.5</b> Participate in environmental protection activities	<b>Grade 6</b> <b>SDS</b> <b>6.4.6</b> Discuss possible solutions to environmental problems
<b>Activities</b> Defining deforestation (L01) Effects of deforestation, true or false quiz (L02) Effects of deforestation, letter writing activity (L01,3)	
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk	

## LESSON 12 – Disappearing Forests

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week's notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about deforestation and its effects</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 12</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Defining deforestation (10 mins)	Lead discussion; ask Learning Mentors to contribute to the discussion if learners are struggling.	Contribute to discussion when requested to do so by CT
	Effects of deforestation, true or false quiz (15 mins)	Instruct whole class on activity, and provide specific instructions to Learning Mentors	Read through statements in activity with groups and read these out loud to whole class upon completion of activity
	Effects of deforestation, letter-writing activity (25 mins)	Lead discussion on the definition of erosion and ask a Learning Mentor to copy the definition on the chalkboard. Provide instructions for letter writing activity and ask Learning Mentors to help learners with spelling if necessary	Write definition of erosion on chalkboard; assist learners with letter writing activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 12 – Disappearing Forests

### NOTES Activities Guidance

**Defining deforestation:** Ask the learners who can remember what they learned about last week. Ask them to list the five ways in which plants protect the environment, and remind them that because of this, plants are very important to us, especially trees, and because of that we must protect them. Can they think of any uses that we have for trees? They should be able to suggest quite a few. Explain that if we cut down too many trees, we will not have enough wood to meet our needs. There is a word that we use to describe when we cut down too many trees in an area; does anybody know what this is? Allow them a few attempts to see if they can guess the right word. If not, write 'deforestation' on the board, with the definition from the Contents Guidance notes, and ask them to copy the word in the space provided in their Activity Books. **Time: 10 minutes**

**Effects of deforestation, true or false quiz:** There are many other negative consequences of deforestation. Ask the Learning Mentors to read through the True or False activity with their respective groups and to discuss with them what they think the answers to be and to write these in the Activity Books. Allow them five to ten minutes to complete the activity, then work through it with them, asking the Learning Mentors to read out each statement, and asking the whole class to put their hand up to indicate if they have answered true or false for each one. Make a note of what the majority thinks, and then tell them whether or not they are correct. **Time: 15 minutes**

**Effects of deforestation, letter writing activity:** Write the word erosion on the board, and ask if any of the learners has heard of it before. Ask one of the Learning Mentors to copy the definition provided in the Contents Guidance notes on the chalkboard and read out the additional information provided. Ask the learners to copy the definition down in their Activity Books. Ask the learners to imagine that they are writing a letter to a farmer in their community. They are concerned because the farmer is cutting down too many trees to make space for planting crops. Ask them to explain to the farmer why this worries them, giving three reasons (out of the negative effects listed previously) why cutting down so many trees will have direct negative consequences on the farmer himself. **Time: 25 minutes**

### Content Guidance

**Defining deforestation:** What is the word that we use to describe when people cut too many trees down? **Deforestation**

#### **Effects of Deforestation, true or false quiz**

Soil is protected and held in place by the roots of plants and trees. When all the plants and trees are cut down the soil loses its protection it will be washed away during the rainy season. - **True**

If the trees are cut down, they will stop contributing to soil fertility, so the soil will become no good for growing crops. - **True**

Soil that gets washed away by the rains will run into the rivers where it can block them up and turn the water dirty and unsafe to drink. This is called siltation. - **True**

If the rivers become filled with soil, they will not be able to carry as much water during the rainy season, which means that there is more danger of floods. - **True**

If all the trees and bushes get cut down, there will be nowhere for the animals to live. Without trees there will be less food for wild animals, so there is more danger of elephants raiding our farms for crops. - **True**

Without trees, we will not have enough wood to meet our needs, so we will not be able to build houses, to make furniture, to have a fire, or any of the other things that we use wood for. - **True**

**Definition of erosion:** The process of wearing down the surface of rocks, or the top layer of soil by water or wind.



## LESSON 13 – Looking After the Land

### OVERVIEW

<b>Subject:</b> Looking After the Land		
<b>Lesson aim</b> The purpose of this lesson is to identify how to use trees without cutting them down, and to consider ways of protecting trees		
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. List four ways in which we can prevent deforestation</li><li>2. List three ways in which we can prevent erosion</li><li>3. Define the term 'conservation farming'.</li><li>4. Identify three conservation farming methods</li><li>5. Request assistance for a reforestation project or conservation farming training for their community</li></ol>		
<b>Links to other skills/curriculum areas:</b>		
<b>Grade 5</b> <b>SDS</b> 5.5.5 Participate in environmental protection activities	<b>Grade 6</b> <b>SDS</b> 6.4.6 Discuss possible solutions to environmental problems 6.4.7 Participate in environmental protection activities	<b>Grade 7</b> <b>SDS</b> 7.4.7 Participate in environmental protection activities
<b>Activities</b> <ol style="list-style-type: none"><li>1. Preventing deforestation (LO1)</li><li>2. Preventing erosion (LO2)</li><li>3. Conservation farming quiz (LO3,4)</li><li>4. Seeking support (LO5)</li></ol>		
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk, spare paper for writing out neat versions of letters		

## LESSON 13 – Looking After the Land

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about solutions to deforestation and the problems that it causes</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 13</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Preventing deforestation (15 mins)	Provide instructions for the discussion, and request assistance from Learning Mentors when needed	Supervise group discussion; provide suggestions, and assist with written activity as needed
	Preventing erosion (10 mins)	Provide factual information and directions for activity; request assistance from Learning Mentors when needed	Assist with discussion suggestions; write titles of each method on the chalkboard while the CT is reading them out
	Conservation farming quiz (10 mins)	Lead group in reading through activity and discuss answers with the class. Read out information in Content Guidance	Assist with answers to the quiz if the learners are struggling
	Seeking support (15 mins)	Lead discussion and provide instructions for letter-writing activity. Request help from Learning Mentors, when needed	Help learners with letter writing activity, if necessary
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT.



## LESSON 13 – Looking After the Land

### NOTES Activity Guidance

**Preventing deforestation:** Ask the learners to remind you what the word deforestation means. If they cannot remember, ask them to look at the pages from the previous lesson in their Activity Books. Recap on the effects of deforestation. Ask the learners, in their groups, to discuss things that they can do to prevent deforestation in their area. Give them five minutes to talk it over, and then ask each group to suggest one thing, and write these answers down on the chalkboard. Read out the information provided in the Content Guidance notes and see how this compares with the learners' ideas. Ask them to pick their four favourite ideas and to write them down in the space provided in their Activity Books. **Time: 15 minutes**

**Preventing erosion** Remind the learners that one of the effects of deforestation is erosion. Ask them if they can remember what this means and why it is a bad thing for farmers – refer them to the previous week's activities if necessary. Read out the information provided in the Content Guidance notes, and write the title of each suggestion on the chalkboard. Ask the learners to copy these in their Activity Books. **Time: 10 minutes**

**Conservation farming quiz:** Ask the learners if they have ever heard of Conservation Farming. If not, explain that it is a method of farming that protects the soil against erosion, does not require burning, and may even allow farmers to grow crops when there is a drought. Write this definition on the chalkboard and ask the learners to copy it into their activity books. Read through the series of paired statements in the Activity Books, and ask the learners to identify the methods that are conservation farming, and to mark these with a tick, and to identify the methods that are not, with a cross. **Time: 10 minutes**

**Seeking support:** Discuss with the learners who they might seek assistance from for setting up a tree nursery or getting training for their community in Conservation Farming: perhaps the local office of the Forestry Department, or the Ministry of Agriculture. Maybe there are other organisations that provide assistance in these areas locally that you can identify. Ask each learner to write a letter requesting assistance **either** with setting up a tree nursery **or** for training in conservation farming techniques. Once the learners have completed the exercise, agree with the whole class whose letters will be sent, and ask the learners to copy out neat versions of these for delivery. **Time: 15 minutes**

### Content Guidance

#### Preventing deforestation

**Educate our communities** Educating our communities about deforestation and the problems it causes is one way to help protect our forests. We can make posters to hang in our schools, clinics and grinding mills. We can also act out a drama (short play) about the problem of deforestation.

**Plant trees** Planting trees around your school and home is always a good idea. You can plant fruit trees, shade trees, trees for firewood and trees for poles. As long as we all keep planting trees as we are using them, we will never run out.

**Collect honey and caterpillars without cutting down trees** Sometimes, to collect honey or caterpillars, we cut down an entire tree, but this is not necessary. Cutting down the tree destroys the tree and animal habitats. The tree took a long time to grow and has many benefits to us. A better way to collect honey would be to climb the tree or use a ladder and smoke to chase the bees away; this does not harm the tree or kill it. We can also build our own beehives so that we can harvest our honey over and over again in the same place. We can just shake caterpillars out of a tree. We don't need to cut the whole tree down.

**Prevent wildfires** Big forest fires kill trees and all other plants. They chase animals from their homes and often kill them. We must be careful never to start bush fires in the forest, especially during the dry season.

#### Preventing erosion

**Do not cultivate on steep hills** Plants and trees grow roots that hold onto soil and keep it in place. They also help to slow down rainwater that is moving fast. A hill covered with plants is less likely to have damage from **soil erosion** than a hill that is only made of soil. When we must cultivate on a hill, it is

better to make **contour ridges**, ridges that go across the hill from side to side rather than ridges that go up and down the hill. It will also help to leave rows of trees and bushes that will act as a **windbreaks** and water breaks for the field.

**Do not cultivate on riverbanks** When we cultivate our fields right on the riverbank, we take away the plants and trees that were protecting the soil. Plants and trees are especially important on riverbanks because there is always water flowing and taking soil with it. Without the plant roots to hold onto the soil and the plants and trees to help slow down the water, we would completely lose the soil on our riverbanks. With so much soil running into the river, the river would become so shallow that it couldn't hold all the water it needs to, and the area would be prone to flooding. To keep the soil fertile for our crops we should cultivate our fields away from the riverbanks. Furthermore, if we plant right up to the riverbanks and use fertilizers and pesticides on our fields, these will run straight into the river, polluting the water supply.

**Protect footpaths and roads from erosion** When we notice holes forming on our footpaths and roads, we should repair them. If we repair these holes when they are small we can prevent them from getting larger and causing even more soil erosion. To repair holes in our footpaths we can place some large stones or some logs where they are forming. We can also dig drainage ditches on the sides of the road. These ditches will help move water from our roads so that they won't become flooded and the rain won't carry the soil away.

### **Conservation farming**

Conservation farming methods help to keep the soil healthy, so that enough crops can be grown without having to harm the environment. Many traditional methods of farming that we currently use are bad for the soil. Because they damage the soil, we then need to use artificial fertilisers, which are bad for the environment, in order to be able to continue growing food. Conservation farming methods reduce this damage, so we do not need to rely so much on fertilizers. Some techniques include:

#### **Reduce soil disturbance**

Instead of ploughing the entire field, create individual planting holes for the seed with a hoe. When we plough the entire field, we break up the topsoil, which allows it to dry out, while the soil beneath becomes compacted, making it difficult for roots to grow and for water to soak in. If we only place a hole in the places where we want to plant seed, we will help to keep the soil softer, making it easier for the crops to grow.

#### **Leave crop residue and dead leaves, grass and other plant matter on the field, instead of burning it**

This will protect the soil, preventing it from drying out, so that even if there is a drought, crops may still be able to grow. As the dead leaves decompose, they will release nutrients back into the soil. By not burning your fields, you will reduce the risk of wildfires.

#### **Grow a wide variety of crops, and move these around the fields from year to year**

Different crops use different nutrients from the soil. By growing different things and rotating them (swapping the field where you grow each one every year), you will be able to keep the soil fertile for longer. Some crops, such as beans, soya and ground nuts even put nutrients back into the soil, so when you grow these, you are making the soil better for the next crop that you will plant in that field the following year. If you have a variety of crops and one of them fails, the others may survive, so not all of your hard work has gone to waste. Different crops also suffer from different pests and diseases, so you will not need to use as much pesticide.

## LESSON 14 – What’s Wrong With Our Water?

### OVERVIEW

**Subject:** What’s wrong with our water?

**Lesson aim:**

The purpose of this lesson is to understand problems that water may cause to humans and their environment and to consider how human activities lead to these occurring.

**Learning Outcomes**

By the end of this lesson, the learners will be able to:

1. To define the terms ‘natural disaster’, ‘waterborne’ and ‘pollution’
2. To list two natural disasters that can be caused by water and to consider the consequences of these
3. Identify six human activities that may pollute water sources
4. To list four waterborne diseases and to identify cases of these occurring in their community

**Links to other skills/curriculum areas:**

**Grade 5**

**SDS**

**5.5.2** Discuss the effects of human settlements on the environment

**Grade 6**

**Integrated Science**

**6.3.9** Describe the effects of rain on the environment

**6.4.21** State the effects of water pollution on fish

**Grade 7**

**Integrated science**

**7.2.7** Discuss the effects of cholera, tuberculosis, malaria, HIV and AIDS on individuals and families

**7.2.9** Discuss the effects of diseases on the population (cholera, tuberculosis, malaria, HIV/AIDS)

**7.3.1** Discuss water supply system in the village

**7.3.5** Discuss the effects of water pollution on the quality of life

**7.3.6** Name common water-home diseases

**7.3.7** Discuss the effects of water-borne diseases on the population

**Activities**

1. Natural disasters discussion and drawing (LO1, 2)
2. How humans damage water discussion (LO1,3)
3. Diseases discussion and written activity (LO1,4)

**Resources needed**

Activity Books, pens or pencils, colouring pens, chalkboard, chalk

## LESSON 14 – What’s Wrong With Our Water?

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about problems that can happen with water.</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 14</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Natural disasters discussion and drawing (20 mins)	Lead discussion, ask Learning Mentors to help writing definition of ‘natural disaster’ on chalkboard, provide instruction for drawing activity and supervise learners	Assist with writing definition for ‘natural disaster’ on chalkboard
	How humans damage water discussion (10 mins)	Provide instructions for group discussion activity and ask Learning Mentors to supervise their respective groups. Lead feedback from discussion and compare with information in Content Guidance. Define ‘pollution’ and ask one of the Learning Mentors to write definition on board	Assist with writing on chalkboard, supervise and assist group discussion
	Diseases discussion and written activity (20 mins)	Define ‘waterborne’ and ask one of the Learning Mentors to write the definition on the chalkboard. Direct group discussion, asking Learning Mentors to supervise and help their groups, then lead feedback from discussion, with Learning Mentors writing contributions on the chalkboard. Provide instruction in written activity and ask Learning Mentors to help learners with spelling, if needed.	Assist with writing on chalkboard; supervise group discussion and assist with spelling, if needed, during written activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT.

## LESSON 14 – What’s Wrong With Our Water?

### NOTES Activity Guidance

**Natural disasters discussion and drawing:** Ask the whole class why they think water is important. What do they use water for? Ask them what would be the consequences if there was no water. Allow them to come up with their own ideas and generate their own responses to this part of the discussion. Explain to them that there are different ways in which problems with water can come about. Some are natural; others are man-made. When natural problems occur with water we call them ‘natural disasters’. Ask one of the Learning Mentors to write the definition for ‘natural disaster’ on the chalkboard, and ask the learners to copy it in the space provided in their Activity Books. Tell them that there are two principal kinds of natural disaster caused by water; the first is when there is not enough water. Who knows what this is called? (drought). Then ask them what we call it if there is too much water? (flood). Explain the meanings of the words ‘drought’ and ‘flood’ and ask them to write both words in the Activity Books, in the space asking for two natural disasters caused by water; then ask them to carry out the picture activity.  
**Time: 20 minutes**

**How humans damage water discussion:** Write the word ‘pollution’ on the board. Does anybody know what that means? Ask one of the Learning Mentors to write the definition from the Content Guidance notes onto the chalkboard and ask the learners to write it down in the space provided in their Activity Books. Ask the learners, in their groups, to think about the types of pollution that can cause problems with water. Give them five minutes to discuss this amongst themselves, and then ask each group to suggest one type of pollution. Ask one of the Learning Mentors to write all of these on the board, and then write next to them the list of types of pollution listed in the Content Guidance. Did they come up with the same answers? Were there any they suggested that weren’t in the list? **Time: 10 minutes**

**Diseases discussion:** Ask the whole group what can happen if we drink polluted water. Explain that diseases that are carried in water are called ‘waterborne’. Ask one of the Learning Mentors to write the definition on the board, and ask the learners to copy this down in their Activity Books. Do they know of any diseases that are spread by water? Can they name them? Ask one of the Learning Mentors to write the contributions down on the board, and then add to these any of the diseases in the Content Guidance notes that they haven’t mentioned. Ask them to write down four of the diseases in their books and read out the information provided in the Additional Information section. Ask the learners if they know of anyone in their family or community who caught one of these diseases. Ask them to write a short story about it, explaining what happened to them when they got ill, how long they were ill for and how they were cured.  
**Time: 20 minutes**

### Content Guidance

#### Natural disasters discussion and drawing

**Natural disaster:** any natural event that has widespread negative consequences.

A **drought** is when it does not rain for a long time. Droughts cause us many problems. We depend on water for many things, so when it does not rain we suffer. Our crops die without enough water and we often need to walk long distances before we can find water for drinking, cooking and washing. This can reduce the amount of time we have for studying, so it can affect our futures. During droughts many people get sick and go hungry. Bushfires during droughts can be very dangerous as grass, trees and other plants are all very dry and can catch fire easily. Once a fire starts it is hard to put it out and it can burn very large areas of land.

A **flood** is when there is so much rain that water comes out of the rivers and covers the land. It is unable to soak away into the soil, which is already saturated, and it bursts the banks of the river. A flood causes a lot of damage. Because the water mixes with soil it becomes very dirty and is not good for drinking. Water covers the fields and washes the crops away. Large floods can even wash homes, people and animals away. Trees help the ground to store water, so there is more chance of flooding in areas where all the trees have been chopped down. To avoid flooding we should not cut down trees on the river’s edge.

## **How humans damage water discussion**

**Pollution:** when something that is harmful or poisonous is put into the environment (water).

### **Types of water pollution caused by humans:**

**Human Waste** When people build toilets near a water source or use the bush near a water source for a toilet, the human waste enters the water and dirties it. This can cause many diseases.

**Soil Erosion** Soil erosion is when soil is washed into the rivers by heavy rains. Too much soil in the water dirties it, as well as washing away valuable nutrients in the soil that can help our crops to grow.

**Soap** We put soap into our rivers when we wash our clothes or ourselves in them. The soap kills the tiny creatures that keep our rivers clean and healthy. Without these creatures, our rivers become dirty and can spread disease.

**Rubbish** Throwing rubbish in our rivers dirties them. Even rubbish that we throw on the ground may end up in our rivers because the wind or the rain carries it there.

**Fish Poisons** Fish poisons kill other animals in our rivers along with the fish. The fish poison also gets into our drinking water.

**Fertilisers and Pesticides** The fertilisers and pesticides that we use on our fields flow into our streams and our rivers and dirty them.

### **Diseases discussion and written activity**

**Waterborne disease:** any disease that is carried in water

#### **Diseases from dirty water**

There are many serious diseases caused by dirty water. Many of these diseases are so serious that they can cause death.

**Diarrhoea** Drinking dirty water can cause diarrhoea. Diarrhoea is having loose, watery faeces. A person with diarrhoea loses a lot of water, so they need to make sure that they drink plenty of clean water to get healthy again. To make sure that drinking water is clean, it is best to boil it.

**Hepatitis** A virus found in food or water that is dirtied by human faeces causes hepatitis. Hepatitis causes people to vomit at the sight or smell of food. Their eyes turn yellow, their urine turns brown and their faeces become whitish. They may have pain on the lower right side of their stomach. A person with hepatitis is usually sick for two weeks but will stay very weak for up to three months.

**Typhoid** is a disease that includes a high fever, headache, sore throat, weakness and sometimes vomiting, diarrhoea and pink spots on the body. Typhoid is also caused by food or water that is dirty with human faeces. Typhoid usually comes as an epidemic. An epidemic is when many people get sick at the same time from the same illness.

**Cholera** is another disease that comes from dirty water and usually comes in epidemics. People who get cholera have very watery diarrhoea. Their faeces look like cloudy water. People with cholera lose a lot of water in a very short period of time. They are in danger of dehydrating very quickly. Dehydrate means a person loses more water than they can take in.

To prevent these diseases and to keep our rivers clean and healthy we need to keep our water sources clean. To prevent human faeces from entering our water systems we need to build toilets at least 20 metres away from water sources, make sure that we always wash our hands after using the toilet and before going to draw water, and we need to cover our wells. We need to wash ourselves and our clothes at least 20 metres from the river.

## LESSON 15 – Water for Life

### OVERVIEW

<b>Subject:</b> Water for life		
<b>Lesson aim</b> The purpose of this lesson is to identify ways in which we can protect water sources for safe human consumption and to protect the environment		
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Discuss specific instances of human activities polluting water sources in the local area</li><li>2. Identify seven practical steps through which water sources may be protected</li><li>3. Identify one opportunity for protecting a water source in the local area</li></ol>		
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>SDS</b> 5.5.5 Participate in environmental protection activities	<b>Grade 6</b> <b>SDS</b> 6.4.6 Discuss possible solutions to environmental problems 6.4.7 Participate in environmental protection activities	<b>Grade 7</b> <b>Integrated Science</b> 7.3.1 Discuss water supply system in the village 7.3.4 Describe how to make water clean and safe to drink 7.3.8 Explain how to prevent waterborne diseases <b>SDS</b> 7.4.5 Mention possible solutions to pollution 7.4.7 Participate in environmental protection activities
<b>Activities</b> <ol style="list-style-type: none"><li>1. Identifying problems with water in our own area (L01,2)</li><li>2. Making a plan to protect our water (L03)</li></ol>		
<b>Resources needed</b> Activity Books, pens, pencils, chalkboard, chalk		

## LESSON 15 – Water for Life

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about protecting water sources</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 15</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Identifying problems with water in our own area (30 mins)	Lead discussion; ask for assistance writing information on chalkboard from Learning Mentors	Assist writing information on chalkboard
	Making a plan to protect our water (20 mins)	Provide instructions for activity and ask Learning Mentors to help lead group discussions and assist learner with spelling if necessary	Lead group discussions and help learners with spelling during written activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT.



## LESSON 15 – Water for Life

### NOTES Activities Guidance

**Identifying problems with water in our own area:** Ask the learners to remember things that people do that pollute water sources. Do they know of any cases in which water sources nearby have been polluted? Allow some of the learners to share their stories with the rest of the class. What could they do to solve pollution problems? Ask the whole class if they can think of any ideas and ask one of the Learning Mentors to write their suggestions down on the board. Next, read out the list of solutions that appears in the Content Guidance notes, and write these on the board. Explain each one to the learners. Ask them if they think any of these are possible in the local area? How would they need to go about achieving these actions – are they things they could do themselves, or would they need to ask someone else? Ask them to complete the first two activities, as directed in the Activity Book. **Time: 30 minutes**

**Making a plan to protect our water:** Ask the learners, in their groups, to discuss one of the instances of water pollution that they had mentioned earlier, and to come up with a plan to resolve the problem. Ask them, in the space provided in their Activity Books, to describe the problem and to write down their plan of action. **Time: 20 minutes**

### Content Guidance

#### **Things we can do to protect our water sources:**

**Dispose of rubbish properly** Disposing of our rubbish in deep rubbish pits that we can cover with soil when they become full will help keep rubbish out of our rivers.

**Clean water sources** Cleaning any rubbish we see out of our rivers, streams and water sources will help keep our water clean.

**Cover wells** Keeping the covers on our wells keeps rubbish and animals from getting inside and dirtying our water.

**Keep toilets away from water sources** Building long drop toilets at least 20 metres away from all water sources will keep our waste from dirtying the water and making us sick. Toilets should also be built at least 20 metres away from houses to help prevent disease.

**Wash our hands** Washing our hands before drawing water and after using the toilet helps keep our water clean and free from human faeces.

**Wash away from the river** Carrying water for washing away from the river or water source will keep the soap from polluting our water. If we wash away from the rivers, the soil and plants have a chance to filter and clean the water before it finds its way back into the rivers.

**Keep plants and trees between fields and rivers** Leaving a stretch of land free of crops alongside the river banks, while allowing natural vegetation to grow, helps keep fertilisers and pesticides out of our water. Plants (not crops) and trees help clean the water of fertilisers and pesticides before they reach the river.

**Do not use fish poisons** Using fish poisons kills everything in the river, not only the fish. The river becomes a dead place with none of the insects and micro-organisms that used to keep it clean. To keep our water clean and safe we should not use fish poisons.

**Leave trees on hills above the river** Cutting trees on hills above our rivers creates bare hills that will carry a lot of soil into the river when it rains. Keeping the plants and trees on the hills above our rivers helps to stop soil erosion by slowing down rainwater.

**Keep domesticated animals away from water sources** Keeping domestic animals away from our water sources will prevent them from dirtying our water with their faeces.



## LESSON 16 – Wildlife in Peril

### OVERVIEW

<b>Subject:</b> Wildlife in Peril
<b>Lesson aim</b> The purpose of this lesson is to learn about human activities that are harmful to wild animal populations
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Describe three human activities that are harmful to wild animals</li><li>2. Explain one way in which human behaviour may lead to conflict with animals</li><li>3. Describe three measures through which people may minimise the risk of elephant crop raiding</li></ol>
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>SDS</b> 5.5.2 Discuss the effects of human settlements on the environment
<b>Activities</b> <ol style="list-style-type: none"><li>1. Threats to wild animals discussion and crossword (L01)</li><li>2. Human/animal conflict story (L02)</li><li>3. Elephant crop raiding poster (L03)</li></ol>
<b>Resources needed</b> Activity Books, pens, pencils, colouring pens, chalkboard, chalk

## LESSON 16 – Wildlife in Peril

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about threats to wildlife</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 16</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Threats to wild animals discussion	Lead discussion; ask Learning Mentors to contribute to the discussion if learners are struggling	Contribute to discussion when requested
	Human/animal conflict story	Provide instructions for activity and ask Learning Mentors to help learners in their respective groups	Assist with suggestions and ideas and help with spelling during written part of the activity, if necessary
	Elephant crop raiding poster	<p>Direct discussion and ask Learning Mentors to help their groups and help with writing ideas on the chalkboard.</p> <p>Provide instruction and supervision for poster activity</p>	Suggest ideas, assist CT with writing information on the chalkboard and assist with poster activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 16 – Wildlife in Peril

### NOTES Activities Guidance

**Threats to wild animals discussion:** Ask the class, as a whole, if they know of some of the things that people do that are harmful to wild animals. Write their suggestions on the board, and then write the terms ‘pollution’ and ‘deforestation’. We have already spoken about these things, so the learners should be able to define them – ask them to do so. Ask the learners if they can remember why these activities are bad for people, and explain that they are also bad for animals. Tell them that there is one other threat to wild animals; ask the learners if any of them know what it is. Write the word poaching, and explain that this is illegal hunting. Ask the learners if they can think of any reasons why people poach. Allow them to discuss this and come up with suggestions. Ask the learners to think of ways in which pollution and deforestation harm wild animals. Have any of them heard the word ‘poaching’ before? The CEP Officer may have already covered this topic with them. If they are not yet familiar with the word, refer to the Content Guidance notes, and then ask them to complete the first activity in their Activity Books.

**Human/wildlife conflict story:** Explain that sometimes people kill wild animals because they are a nuisance. Can they think of any situations that have caused people in their family or community to become angry with wild animals? Ask them to describe these in the space provided in the Activity Books, explaining what the animal was doing, why people didn’t like it doing that and what they did about it, along with anything else that they consider interesting about the story. Read out the information in the Content Guidance and Additional Information notes about human/wildlife conflicts.

**Elephant crop raiding poster:** Ask the learners, in their groups, to think of possible solutions to elephants raiding crops. How can we keep elephants off our land without harming ourselves or them? Give them five minutes to come up with some ideas, then take one idea from each group and write it on the board. Then read out the information from the Content Guidance notes. Ask the learners to design and draw, in the space provided in the Activity Books, an information poster for farmers, showing how they can keep elephants off their land.

### Content Guidance

**Poaching:** Illegal hunting or fishing on private or protected land. This may be carried out for the purpose of selling bush meat or for other illegally-traded products from wild animals, such as rhino horn or ivory from elephants.

#### Human/Wildlife Conflict

**Eat our crops** Sometimes animals, like elephants, hippos, monkeys and bush pigs, come and eat the food growing in our fields and gardens. This causes us a lot of trouble because we work very hard on our fields and gardens and we need the crops to feed our families and to sell for money. Many times we are so angry at the wild animals stealing our food that we kill them. This solves the problem for a little while but then other wild animals come and do the same thing.

**Kill our domestic animals** Sometimes civets, mongooses and snakes steal eggs or kill our chickens and this makes us very angry because we depend on our chickens for eggs and meat. There are also times when hyenas and lions kill the goats and pigs that we depend on for meat and for selling.

**Scare us** Many people kill wild animals because they are afraid of them. It is true that it can be scary to find a snake on your path or an elephant in your garden. Crocodiles by the river scare us all!

#### Crop Raiding

##### What can we do to keep elephants from eating our crops?

**Use chilli peppers and bees to keep elephants away** Elephants don’t like chilli peppers. It will help keep away elephants without harming them, if we plant chilli peppers around our gardens and fields. If an elephant does come to our field, we can mix chilli pepper into their dung and burn it around our fields to prevent the elephant from coming back. Elephants also don’t like bees. If we keep bees near our fields it will help keep elephants away.

**Put fences around our vegetable gardens** Building fences around our vegetable gardens will help keep them safe from bush pigs, elephants and monkeys. It will also help protect our vegetables from our own chickens.

**Plant our fields together with our neighbours' fields** Planting our fields and all our neighbours' fields together in one place can protect them from wild animals. If we do this, there are always people around looking after the fields. Wild animals don't like to be where there are a lot of people so they won't come to the fields as often and when they do come there will always be people to chase them away. We just need to be sure that we choose the place for our fields carefully and that we do not pick a place where we know a lot of wild animals like to pass through.

### **Additional Information**

#### **What can we do to keep wild animals from killing our domestic animals?**

We often fail to realise that very often these problems are our fault – we plant crops and fruit trees that animals like to eat, we leave food waste lying around where the bush pigs can find it, or we do not build secure housing for our chickens. We must remember that the animals lived here a long time before people did, and they are only following their instincts to survive. If we take adequate precautions, we can prevent these problems from arising.

**Build secure homes for our domestic animals** Building secure chicken houses and putting our chickens in these houses every night will protect them when the wild cats, civets and mongooses are hunting.

Building secure fences and homes for our goats and pigs will help keep them safe from hyenas and lions.

**Keep domestic dogs in our villages** Domestic dogs will chase smaller wild animals from our area, like wild cats, civets and mongooses. They will also bark to let us know if bigger wild animals are bothering our domestic animals.

#### **What can we do so that we won't be so afraid of wild animals?**

**Learn about wild animals in our area** When we learn about wild animals we find out that they are not as scary as we think:

- If you study snakes you will find that they are more afraid of you than you are of them. We don't see snakes often because they hear us coming and hide. There are some snakes that are poisonous and dangerous but most are not and if you leave them alone they will not bother you.
- Elephants are dangerous when they are frightened and especially if they have young elephants with them, but if they are not disturbed they will not bother you. If you find an elephant near your village, always keep your distance.
- Crocodiles by the river are scary and dangerous. We should make sure we always look for them before drawing water or playing near the river.

## LESSON 17 – Watching Out for Wildlife

### OVERVIEW

<b>Subject:</b> Watching out for Wildlife		
<b>Lesson aim</b> To learn about what conservation is and why it is important, where conservation is taking place in the local area, benefits it can bring to local people and ways in which they may contribute to it		
<b>Learning objectives</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Define the word 'conservation'</li><li>2. Name two organisations that work in conservation locally</li><li>3. Describe three ways in which local people may contribute to conservation</li></ol>		
<b>Links to other skills/curriculum areas:</b> <b>Grade 5</b> <b>SDS</b> 5.5.5 Participate in environmental protection activities	<b>Grade 6</b> <b>SDS</b> 6.4.6 Discuss possible solutions to environmental problems 6.4.7 Participate in environmental protection activities	<b>Grade 7</b> <b>SDS</b> 7.4.7 Participate in environmental protection activities
<b>Activities</b> <ol style="list-style-type: none"><li>1. Defining conservation (L01)</li><li>2. Who works in conservation locally quiz (L02)</li><li>3. Conservation awareness poster (L03)</li></ol>		
<b>Resources needed</b> Activity Books, pens, pencils, colouring pens, chalkboard, chalk		

## LESSON 17 – Watching Out for Wildlife

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week's notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about conservation</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 17</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Defining conservation (10 mins)	Lead discussion, ask Learning Mentors to help writing 'conservation' and its definition on the chalkboard and to contribute to the discussion if learners are struggling	Contribute to discussion and write definition of conservation on chalkboard when requested to do so by CT
	Who works in conservation locally quiz (10 mins)	Direct quiz, ask Learning Mentors to help read out the descriptions of the organizations	Read out descriptions when asked to do so by CT
	Conservation awareness poster (30 mins)	Provide information on conservation activities and directions for poster activities. Ask Learning Mentors to assist learners when needed.	Assist learners if necessary.
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT



## LESSON 17 – Watching Out for Wildlife

### NOTES Activity Guidance

**Defining conservation:** Remind the learners about what they discussed last week. Can they recall the three activities that are harmful to wildlife? Remind them that over the previous weeks they have also been talking about lots of other things that people do that harm the natural world, and eventually harm us as well. This is why we need to protect nature, because we depend on it to survive; we need clean air, clean water to drink, and healthy soil to grow crops. To ensure that we have these things, we need a healthy ecosystem around us, including all of the plants and animals that belong there and we need to help to maintain it. There is a word that describes the act of protecting wild animals, plants, and the ecosystem that they live in. Does anybody know what this is? Allow them to come up with some suggestions, and then tell them the correct answer: 'conservation'. Ask one of the Learning Mentors to help you write the word and its definition (see Content Guidance) on the board. Ask the learners to copy this down in their Activity Books. **Time: 10 minutes**

**Who works in conservation locally quiz:** Ask the learners if they know of any people who work in conservation locally. What do they do? And who do they work for? Can they name two organisations in the local area that work to protect wildlife? Ask one of the Learning Mentors to read out the descriptions of the organisations from the book, and ask the learners if anyone knows which organisations they are talking about. Ask the learners to write the correct answers in their Activity Books. Explain what the role of each organisation is. **Time: 10 minutes**

**Conservation awareness poster:** Next, ask the learners if they can help wildlife. Ask them to discuss this point in their groups. Give them five minutes to think of what they can do, and then take one suggestion from each group, then read out the suggestions given in the Content Guidance notes. Ask the learners to write down the ideas that they have come up with in the space provided in the Activity Books. Next ask them, individually, in their Activity Books to create an information poster showing three of the things that local people can do to help protect wildlife. **Time: 30 minutes**

### Content Guidance

**Defining conservation:** Conservation is the act of protecting natural resources, including animals, plants and ecosystems.

**Who works in conservation locally quiz:**

This organisation is in charge of all of the national parks and GMAs in Zambia. Its officers go out on patrol to protect animals from poachers, and also travel with tourists who visit the national parks to make sure that they are safe. This organization is called - **Zambia Wildlife Authority (ZAWA)**

This organisation works to protect the North Luangwa National Park. It provides equipment, as well as patrol rations and vehicles; it improves the roads in the national park, and it has been working with ZAWA to bring black rhinos back to Zambia. This organisation is called - **North Luangwa Conservation Programme (NLCP)**

**Conservation awareness poster:**

Things that people can do to help wildlife:

- Keep our wells and rivers clean
- Plant trees
- Collect honey without cutting down trees
- Restore nutrients in the soil by composting
- Keep some trees when we are cultivating our fields
- Report poachers
- Be careful not to over-fish
- Fish responsibly i.e. stop using fish poison
- Take care not to set bush fires
- Throw our rubbish in deep pits

## Additional Information

### **Organisations that work in conservation in Zambia**

**Wildlife and Environmental Conservation Society of Zambia (WECSZ)** The Wildlife and Environmental Conservation Society of Zambia (WECSZ) works to teach learners about wildlife and conservation. It started the Chongololo Clubs in Zambia and continues to support them with a weekly radio programme and the Chipembele and Chongololo magazines.

**Community Resource Boards (CRBs)** The Community Resource Board (CRB) is one way that communities are involved with conservation. There is one CRB in each Game Management Area (GMA) made up of members from the local Village Action Groups (VAGs). The CRBs work with ZAWA to manage natural resources. ZAWA makes money from hunting licences issued in the GMAs and from hunting areas granted in the GMAs. A portion of this money is given to the CRBs for community development. CRBs then decide how best to use this money to benefit the community. To set up a CRB, the local chief and community representatives make an application to ZAWA. This is one way that local communities benefit from wildlife and from conservation. CRBs also employ village game scouts who help to protect the wildlife in the area.

**Village Action Groups (VAGs)** Village Action Groups (VAGs) are made up of local community members who are concerned about the environment. When the chief and community representatives make an application for a CRB to ZAWA, an extension officer from ZAWA will first come to help set up elections for the local VAGs and then help to create the Community Resource Board. Members of the Village Action Group are elected by their community and once elected they are part of the group for three years. VAGs work to solve issues dealing with natural resources. When there is a problem that they are unable to solve, they bring it to the attention of the Community Resource Board for help.

**All of Us** We are the most important part of conservation. It is only us who can decide that we are going to take care of our natural resources. We are the ones who will suffer if the natural resources are destroyed. We are learning how to conserve our natural resources so that we can keep our communities healthy.

There are many different types of plant and animal life. This is important because each one adds something important to our environment. If we lose just one plant or animal from our environment it will hurt another group and eventually we may all be affected.

## LESSON 18 – Family Life

### OVERVIEW

<b>Subject:</b> Family Life		
<b>Lesson aim</b> The purpose of this lesson is to consider the benefit and costs of living in large and small families and to understand how human population pressure is affecting the environment.		
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Compare the advantages and disadvantages of living in large and small families</li><li>2. Identify patterns of population change over the last century in Zambia</li><li>3. List three ways in which human population pressure affects the environment</li></ol>		
<b>Links to other skills/curriculum areas:</b>		
<b>Grade 5</b> <b>SDS</b> <b>5.1.16</b> Discuss population distribution in the province in terms of size, age and sex composition <b>5.1.17</b> Explain how the size and composition of the family affect its economic needs <b>5.1.18</b> Discuss factors that determine family size in their society <b>5.1.20</b> Discuss the advantages and disadvantages of a given family size in traditional and modern societies	<b>Grade 6</b> <b>SDS</b> <b>6.4.6</b> Discuss possible solutions to environmental problems <b>6.4.7</b> Participate in environmental protection activities	<b>Grade 7</b> <b>SDS</b> <b>7.1.10</b> Identify the factors influencing world population distribution <b>7.1.11</b> Discuss the causes and effects of world population growth <b>7.1.12</b> Discuss possible solutions to world population growth <b>7.2.1</b> Describe the importance of family life in Zambian society <b>7.2.7</b> Describe the relationship between parents and children in a Zambian family
<b>Activities</b> <ol style="list-style-type: none"><li>1. Calculating family statistics activity (L01)</li><li>2. Population graph activity (L02)</li><li>3. Population growth discussion (L03)</li></ol>		
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk, calculator		

## LESSON 18 – Family Life

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be talking about the growing number of people on Earth</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 18</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Calculating family statistics activity (30 mins)	Lead discussion, ask Learning Mentors to help writing down figures on board and assist with calculations if possible	Write figures on chalkboard and help with calculations, if possible
	Population growth discussion (20 mins)	Lead discussion, ask Learning Mentors to supervise group work and help with writing contributions on chalkboard	Supervise group activities and help writing contributions on chalkboard. Assist learners writing in Activity Books, if possible.
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT.

## LESSON 18 – Family Life

### NOTES Activities Guidance

**Calculating family statistics:** Write down the numbers 0-15 on the board. Ask the learners to put their hands up when you read out each number if they have that number of brothers and sisters in their family (you can go higher than 15 if anyone has more brothers and sisters than this). For each number record how many learners put their hand up on the board. Ask them to count how many families there are in the entire class, and how many brothers and sisters there are in the smallest and largest families. Show them how to calculate the average family size (if the Learning Mentors know how to do this, ask them to demonstrate). Explain that this number represents a typical family size in the class. Find out who comes from the largest family, and who comes from the smallest and discuss with the learners if they think there is a lot of difference in family size, or if they are very similar. Ask them what they think is best – to live in a big family or a small family? Tell them to discuss this in their groups and to come up with a list of advantages and disadvantages of living in big families and small families, and to write these down in the space provided in their Activity Books. Once they have completed this part of the activity, ask them to write down whether they would prefer to live in a big family or a small one and to explain why. **Time 30 minutes**

**Population growth discussion:** Ask the learners to think about the effect that lots of people living on Earth will have on the environment. Will this be good or bad? Ask them to discuss this in their groups and to try and come up with some answers. Give them ten minutes, and then take one answer from each group and write it on the board. Read out the information provided in the Content Guidance notes. Did they come up with the same ideas? Ask them to write down three consequences of an increasing global population in the space provided in the Activity book. **Time 20 minutes**

### Content Guidance

#### Calculating family statistics:

##### Big families

###### Advantages

**Share work** Large families have many people to share the work. There are plenty of people to work in the fields, collect fruits and mushrooms, pound maize, collect water and firewood, clean the house and prepare food.

**Take care of each other** Members of large families always have someone to take care of them when they need it. Older children look after younger children. When someone in the family is sick, there are others to look after them. When the parents of a large family grow old, they have plenty of sons and daughters to care for them.

###### Disadvantages

**Not enough money** Children are expensive and large families often do not have enough money to pay for everything that all the children need. Some of the things that children need are school uniforms, school fees and clinic fees. Perhaps large families cannot afford to send all the children to school, or if a child gets sick they struggle to find the money to send the child to the clinic.

**Not enough food** A large family has many mouths to feed. Most of the food they eat comes from their own fields. When they do not produce enough food because there is not enough rain or the soil is not fertile the family is hungry and some members of the family may become weak or sick.

##### Small families

###### Advantages

**More money** Small families can usually make enough money to send their children to school and to buy them school uniforms. When family members get sick there is usually money to pay clinic fees. This is because it is less expensive to send two or three children to school than it is to send eight or nine children to school. Small families are less expensive than large families.

**Healthy mothers** Giving birth is physically demanding and makes women tired. Women who give birth every year often become tired and weak. Doctors recommend that women wait at least two years between births so that they have time to recover and to be strong for their next child. This is called child spacing.

**Less use of natural resources** Small families are better for the environment. They need smaller houses, less firewood and smaller fields so they cut down fewer trees and use fewer natural resources than large families.

**Less work** There is less work to do in a small family so even though they have fewer people to work they can still get everything done. Their houses are smaller so there is less to clean. There are fewer people to feed, so they cultivate smaller fields or can sell off surplus crops.

#### Disadvantages

**Not as many people to share the work** In a small family there are not as many people to share the work. Everyone must help.

**Not as many people to help the elderly** In a small family, parents may worry about their old age. If they don't have many children they may worry about who will support them when they are too old to work. When a member of the family gets sick there are fewer people to care for them and fewer people to do the work that they are unable to do.

#### **Population growth:**

**Effects of population growth on the environment** Our current lifestyle requires a lot of natural resources. We cut down many trees to clear land to grow our crops and for wood to make cooking fires. We also cut a lot of trees to burn charcoal and to build homes. Because there is not enough land for everyone to cultivate a new field each year, we use the same fields year after year to grow our crops and the soil loses nutrients. Each year we produce a little less than the year before. We need to buy fertilisers to add to the soil to grow enough food. With many people using the same water source, our river becomes polluted and can make us sick. As the number of people in our area grows, we need to clear more land to make more homes and farms. We cut down more trees and destroy more of the environment. The faster our population grows the faster we use our natural resources. We find ourselves having to walk a long way to find the wood and other natural resources we need.

#### **Effects in towns and cities**

In towns and cities people have even less space to live than in the rural areas. Many times they do not have enough land to grow crops, so they need to buy all of their food and it is expensive to feed many people. A growing population causes many problems. It destroys and pollutes our environment so it is not able to keep us all healthy.

#### **Effects around the World**

Using too many natural resources for the environment to stay healthy is not only a problem in Zambia. It is a problem all over the world. Every country is having problems supplying its people with the natural resources they need. In order to have enough natural resources for everyone we need to use natural resources carefully and keep the number of people in our country at a level the environment can support.

## LESSON 19 – Steps to Conservation

### OVERVIEW

<b>Subject:</b> Steps to Conservation		
<b>Lesson aim</b> The purpose of this lesson is to consider practical steps towards environmental protection and to understand how protecting the environment is beneficial to people		
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. List five benefits that conservation brings to local people</li><li>2. List five ways in which they can protect their environment</li><li>3. Write a reflective statement expressing their views on what they have learned to date</li></ol>		
<b>Links to other skills/curriculum areas:</b> <table><tr><td><b>Grade 5</b> <b>SDS</b> 5.5.2 Discuss the effects of human settlements on the environment</td><td><b>Grade 6</b> <b>SDS</b> 6.4.6 Discuss possible solutions to environmental problems 6.4.7 Participate in environmental protection activities</td></tr></table>	<b>Grade 5</b> <b>SDS</b> 5.5.2 Discuss the effects of human settlements on the environment	<b>Grade 6</b> <b>SDS</b> 6.4.6 Discuss possible solutions to environmental problems 6.4.7 Participate in environmental protection activities
<b>Grade 5</b> <b>SDS</b> 5.5.2 Discuss the effects of human settlements on the environment	<b>Grade 6</b> <b>SDS</b> 6.4.6 Discuss possible solutions to environmental problems 6.4.7 Participate in environmental protection activities	
<b>Activities</b> <ol style="list-style-type: none"><li>1. Reasons for conservation (L01)</li><li>2. Making a plan for conservation (L02)</li><li>3. Expressing thoughts and feelings about conservation (L03)</li></ol>		
<b>Resources needed</b> Activity Books, pens or pencils, chalkboard, chalk		

## LESSON 19 – Steps to Conservation

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week’s notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be discussing why conservation is important to us, and what we can do to contribute to it.</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 19</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Reasons for conservation (15 mins)	Lead class discussion and provide instructions for group discussions, ask for assistance writing information on chalkboard from Learning Mentors	Assist with writing information on chalkboard and helping learners with written elements of activity, if necessary
	Making a plan for conservation (15 mins)	Provide instructions for group discussion, ask Learning Mentors to help supervise group discussion and assist learners with spelling, if necessary	Lead group discussions and help learners with spelling during written activity
	Expressing thoughts and feelings about conservation. (20 mins)	Provide instructions for activity and ask Learning Mentors to assist learners with spelling if necessary	Help learners with spelling, if necessary
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT



## LESSON 19 – Steps to Conservation

### NOTES Activity Guidance

**Reasons for conservation:** Remind the learners of the word conservation. Who can remember what it means? If nobody can remember the definition, ask them to look back to the lesson from two weeks ago. Ask them why do they think conservation is important to people? Allow them to discuss this in their groups for ten minutes and to come up with as many reasons as they can. Take one reason from each group and write it on the board, then read out the reasons that are given in the Content Guidance notes. Did they come up with the same reasons, or different ones? Ask all of the learners to list down the five reasons that they think are most important in the space provided in their Activity Books. **Time: 15 minutes**

**Making a plan for conservation:** Ask the learners to think back through all the things that they have learned over the course. In their groups, ask them to make a list of all the things that they think they can do to help the environment. Explain that their answers to this need to be their own ideas, so no information is provided in the Content Guidance. Give them fifteen minutes to complete the task, and then take feedback from all groups. Ask each learner individually to write down the five ideas that they think are most important in the space provided in their Activity Books. **Time: 15 minutes**

**Expressing thoughts and feelings about conservation:** Read through the instruction on the second page of this week’s activity with the group. Explain that there is no right or wrong answer to this question, but it is a chance for them to express their opinions on what they have been learning so far. Ask them to try to think beyond the facts that they have learned, and to consider how this makes them feel about nature and conservation. **Time: 20 minutes**

### Content Guidance

#### Why is conservation important to us?

**To protect the natural resources that we use everyday** We depend on natural resources to live. What would we do if there were no wood for a cooking fire, no clean water to drink or no grass to thatch our homes? We need to protect our natural resources so that there will always be enough to take care of our needs.

**To protect the medicines in our environment** Traditional medicine is made mostly from plants and trees. We treat a headache with the roots of one tree, stomach pain and diarrhoea with the roots or the bark of another tree and many more.

**To keep our environment healthy** Many things in nature are interdependent; they depend on one another to survive. Something that affects one part of our environment can have an effect on another part. What if fertilisers from our fields dirty the water in our river? Some plants and insects that live in the river will die. The fish in the river that eat these plants and insects will go hungry. Many may die. This will affect us because there will be less fish in our rivers for us to eat. What if we cut down all the trees in our area? We will destroy homes for birds and bees. Birds and bees pollinate our crops. They move the male part of a plant to the female part of a plant so that their seeds can grow into new plants. Without birds and bees to pollinate, our crops will not grow.

**To provide jobs for local people** The national parks create jobs for local people. The Zambian Wildlife Authority (ZAWA), North Luangwa Conservation Project (NLCP) and safari camps for tourists hire local people to work. These jobs bring money to the area.

**To raise money for Zambia** We live in a beautiful country with very interesting wildlife, which people from all over the world come to see. Tourists bring money into Zambia. They need to pay for food and a place to sleep in each part of the country that they pass through. Some communities have made community campsites where tourists can stay. Tourists pay for a place to put their tents and they usually buy food at the places they visit. Many tourists are interested in Zambia and will pay to go on a community visit to meet local people. Most tourists will go to a national park during their visit to Zambia. They need to pay park fees before entering the national park. People also come to Zambia to hunt wild animals. They pay a large amount of money for their licence and part of this money is used for community development. People coming to Zambia spend a lot of money in our country.

**To keep our cultural heritage strong** Many of our traditional stories are about wild animals and plants. We also have many beliefs about certain animals and plants. These stories and beliefs are an important part of our cultural heritage that we learn from our elders. Cultural heritage is made up of the language, beliefs and traditions that belong to us because we were born into a specific tribe and a specific culture. We need to keep our environment safe so that even many years from now our community will still be telling our traditional stories and keeping our cultural heritage strong.

**To help us learn** In school, we learn about animals, trees and other plants. Isn't it nice that we can see these things in our environment? It would be hard to learn about plants and animals if we could only read about them in our schoolbooks. Let's protect them so that even our children will know what they look like, sound like, smell like and feel like.

**To protect animal rights** Every animal has a right to live and to be healthy. Just as we have the right to live in a strong house, eat healthy food and drink clean water, animals also have the right to live in a safe place that meets their needs, eat the foods that keep them healthy and drink clean water. We all have the same needs.

## LESSON 20 – Our Commitment to Conservation

### OVERVIEW

<b>Subject:</b> Our Commitment to Conservation	
<b>Lesson aim</b> The purpose of this lesson is to make a declaration of commitment to conservation	
<b>Learning Outcomes</b> By the end of this lesson, the learners will be able to: <ol style="list-style-type: none"><li>1. Give five reasons for making a commitment to conservation</li><li>2. List five ways in which they intend to keep a commitment to conservation</li></ol>	
<b>Links to other skills/curriculum areas:</b>	
<b>Grade 5</b> <b>SDS</b> 5.5.5 Participate in environmental protection activities	<b>Grade 6</b> <b>SDS</b> 6.4.6 Discuss possible solutions to environmental problems 6.4.7 Participate in environmental protection activities
<b>Activities</b> Conservation Declaration (L01,2)	
<b>Resources needed</b> Activity Books, pens, pencils, colouring pencils.	

## LESSON 20 – Our Commitment to Conservation

### LESSON PLAN

Stage/Time	Activity	Conservation Teacher Activity	Learning Mentor Activities
<b>Introduction 5 mins</b>	Recap of previous lesson and introduction to this lesson	<p>Invite learners in, ask them to sit in their groups and pass out Activity Books to Learning Mentors</p> <p>Direct Learning Mentors to their groups</p> <p>Ask recap questions about previous lesson (use Learning Outcomes for guidance). If Grade 5s cannot remember, allow them to look in last week's notes from Activity Books, or allow Learning Mentors to respond</p> <p>Explain that today we will be doing an activity based on the previous week's work</p>	<p>Hand out Activity Books and sit in groups</p> <p>Open Activity Books at Lesson 20</p> <p>Respond to questions if Grade 5 learners are unable to do so</p> <p>Assist CT as requested</p>
<b>Content 50 mins</b>	Conservation Declaration (50 mins)	Provide instructions for learners on activity; ask Learning Mentors to help supervise groups, and assist with spelling if necessary	Supervise groups; assist learners with spelling during written part of the activity
<b>Conclusion 5 mins</b>	Recap and conclusion	Recap key points of the lesson (use the Learning Outcomes for guidance); ask Learning Mentors to collect Activity Books and dismiss class	Collect Activity Books for CT

## LESSON 20 – Our Commitment to Conservation

### NOTES Activity Guidance

**Conservation Declaration** Explain that today you will be continuing from the previous week’s work and that the best item to be produced will be displayed at the Conservation Celebration Day, where it will compete against the other schools’ entries, so they will need to work hard. Ask all of the groups to use the work they did last week to decide on one final list of five reasons why conservation is important, and five things that they plan to do to help the environment, choosing the best five from those that were written down by all of the members of their group. They need to turn this into a declaration that expresses their commitment to conservation, using the five reasons that they have picked as an explanation of why they are making that commitment, and the five things that they can do as a promise of how they will make a commitment. The declaration should be written as statement, so that it can be read aloud as if it were an announcement. They may choose to decorate their declarations with illustrations. **Time: 50 minutes**

The purpose of this lesson is for the learners to create a statement based on what they have already learned. As such, no content guidance is provided.

## Mathematics for Conservation: Answers

### Page 22

People who work in conservation need to know a whole lot more than how to protect wildlife. In order to understand how animal populations are changing, and to be able to protect them, conservationists also need to be good at mathematics. Test your mathematical skills, to see if you have what it takes to protect rhinos.

In the year 1970 there were 70,000 black rhinos in Africa. 12,000 of these lived in Zambia. How many black rhinos were there in the rest of Africa?  **$70,000 - 12,000 = 58,000$**

Of the 12,000 black rhinos in Zambia in 1970, one third of these lived in the Luangwa Valley. How many rhinos is that?  **$12,000 \div 3 = 4,000$**

Half of the black rhinos in the Luangwa Valley in 1970 lived in North Luangwa National Park. How many rhinos is that?  **$4,000 \div 2 = 2,000$**

Between 1970 (*use information taken from first question*) and 1980, the number of black rhinos in Africa had dropped by 55,000. How many black rhinos were left?  **$70,000 - 55,000 = 15,000$**

Between 1985 and 1995, the number of black rhinos in Africa dropped by 1,600. By 1995 there were only 2,400 black rhinos left in Africa. How many black rhinos were there in 1985?  **$2,400 + 1,600 = 4,000$**

ZAWA scouts patrol North Luangwa National Park to protect rhinos from poachers. It costs ZMK20 to provide rations for one scout for one day. A patrol of four scouts goes on patrol for 10 days, how much does it cost to provide rations for all of them?  **$ZMK20 \times 4 \text{ men} \times 10 \text{ days} = ZMK800$**

North Luangwa Conservation Project's aircraft can hold four hundred litres of fuel. If it starts with full tanks and uses fifty litres of fuel per hour, how many hours can it fly for, before it runs out of fuel?  **$400 \div 50 = 8$**

### Page 32

As rhino conservation projects become more successful, conservationists need to use their mathematical skills to keep track of increasing populations, and to make sure that every rhino in their care is healthy. Are your mathematical skills good enough to be a conservationist?

In the year 2055, a ZAWA scout is preparing a report on the success of the black rhino reintroduction programme in North Luangwa. Unfortunately, he cannot find the records for rhino numbers in 2030, 2040 or 2045. Can you help him by finding the pattern in the rhino's population growth and filling in the missing numbers?

**Every five years the amount by which the population growth rate increases by one. So if the population increases by three between 2005 and 2010, then it will increase by 4 between 2010 and 2015, by 5 between 2015 and 2020, and so on.**

2005 - 23 rhinos

2010 - 26 rhinos ( **$23+3=26$** )

2015 - 30 rhinos ( **$26+4=30$** )

2020 - 35 rhinos ( **$30+5=35$** )

2025 - 41 rhinos ( **$35+6=41$** )

2030 - 48 rhinos ( **$41+7=48$** )

2035 - 56 rhinos ( **$48+8=56$** )

2040 - 65 rhinos ( **$56+9=65$** )

2045 - 75 rhinos ( **$65+10=75$** )

2050 - 86 rhinos ( **$75+11=86$** )

How many black rhinos will there be in 2060? **98 rhinos ( $86+12=98$ )**

A year-old black rhino calf weighs half as much as its mother. A younger calf, that was born this year, weighs one tenth of its mother's weight. What fraction of the older calf's weight does the younger one weigh? **One fifth  $\frac{1}{5}$  e.g. the mother weighs 1000kg, the older calf weighs half of that i.e. 500kg, the younger calf weighs a tenth of its mother weight i.e. 100kg. Therefore the younger calf weighs  $\frac{100}{500} = \frac{1}{5}$  of the older calf's weight.**

If the mother rhino weighs 1,000 kilograms, how much does her oldest calf weigh?  **$1,000\text{kgs} \div 2 = 500\text{kgs}$**

How much does her youngest calf weigh?  **$1,000\text{kgs} \div 10 = 100\text{kgs}$  OR  $500\text{kgs} \times \frac{1}{5} = 100\text{kgs}$**

The amount of food that the mother black rhino needs to eat every day weighs half of the younger calf's weight. ( $100\text{kgs} \times \frac{1}{2} = 50\text{kgs}$ ) What fraction of her weight is this?  **$50\text{kgs} \div 1000\text{kgs} = \frac{1}{20}$**

How much food does she eat in five days?  **$50\text{kgs} \times 5 = 250\text{kgs}$**

### **Page 52**

Imagine that one day you decide to create a reserve for rhinos. You will need to use mathematics to find out how much land you have, and how many rhinos you have space for. Put your skills to the test to see if you can manage this!

You have decided to create a special reserve for rhinos. The reserve is sixty kilometres long. It is three quarters as wide as it is long. How many kilometres wide is your reserve?  **$60\text{km} \times \frac{3}{4} = 45\text{km}$**

You need to build a fence to help your rhinos settle in when they arrive. How many kilometres of fence materials will you need to enclose the reserve's perimeter?  **$(60\text{km} \times 2) + (45\text{km} \times 2) = 210\text{km}$**

What is the area of the reserve in square kilometres?  **$60\text{km} \times 45\text{km} = 2,700\text{km}^2$**

You are told that your reserve can support one black rhino for every fifty square kilometres. How many black rhinos do you have room for?  **$2,700\text{km}^2 \div 50\text{km}^2 = 54$  rhinos**