

# TESSA

Teacher Education in Sub-Saharan Africa

## Teaching Pack No.11

### Middle Primary

<b>Section 1</b>	<b>Literacy:</b>	<b>Working together to improve writing</b>
<b>Section 2</b>	<b>Numeracy:</b>	<b>Practical work with fractions</b>
<b>Section 3</b>	<b>Science:</b>	<b>Investigating electricity</b>
<b>Section 4</b>	<b>Arts:</b>	<b>The art of storytelling</b>
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- Additional Resources:**
- **Group work in your classroom**
  - **Working with large/multigrade classes**

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## Literacy: Ways together to improve writing

1. Repetition and language teaching
2. Meaning of language
3. Self and peer editing to improve writing

**Key question for the teacher:**

How can you help students gain confidence in using specific language structures?

**Keywords:** verbs; adverbs; drills; poems; songs; edits

**Learning Outcomes for Teachers:**

By the end of this section, you will have:

- guided your students towards control of the structures of the additional language;
- used drills, songs, poems and stories to teach language structures;
- helped your students to monitor their own work as they look for meaning and correct use of verbs.

## Overview

As a teacher of the additional language, you need to be always looking for new ways to give your students experience of that language. If they are given opportunities to practise it, their use of the language will become more fluent and accurate.

This section introduces you to useful exercises that focus on particular tenses or structures.

Remember that the activities you choose need to have meaning for the students, either within the activity, or within their lives (preferably both).

# 1 Repetition and language teaching

Providing your students with opportunities to use specific language structures over and over again, in order that they absorb them, needs to be enjoyable.

There is a theory that people learn language through imitation and repetition. In the past, many language courses made extensive use of drilling (repeating exercises). It is now thought that activities that involve students in 'real' communication are more helpful than meaningless drilling. However, drills can still be very useful if students can attach real meaning to the sentences. It also helps if they are set to music.

Try the ideas in **Teaching Example 1** and **Activity 1** to test these theories.

## Teaching Example 1

Mr Gasana teaches English to Grade 4 in Butare, Rwanda. A murder had taken place in their city, at 8 o'clock, two nights before. He showed his students a newspaper report of the murder. He talked with his students (in the home language) about how detectives question people when they are trying to find a criminal. Then he put up a question and answer pattern on the board, in English:

Q: What were you doing at eight o'clock on Tuesday night, Kigeri?

A: I was watching television.

He asked a few students the question, making sure they gave their own answer in the right form. Then he put students into groups of six. Each student was to ask the question to the other five group members, who would provide their own answers. Mr Gasana encouraged the students to correct one another, and walked around, listening to and monitoring the groups.

He asked each student to write a 'detective's report' about their group. Each of the six sentences was to be in the following form:

Muteteli was playing with her brother at 8 p.m.

Erisa was dishing out food at 8 p.m.

## Activity 1

Find or make a sale advertisement or a price list of local vegetables, showing price reductions. Before the lesson, make a big copy of the advertisement or price list on the board, or prepare one advertisement or price list per group in your class.

Write the following question and answer sequences on the board.

Q: How much is that .... ?

A: It was .... before, but now it's only ....

Q: How much are those .... ?



A: They were .... before, but now they're only ....

During the lesson, point to a few of the items, asking the appropriate question, and ask a few students to answer. Then put them in groups, to question and answer one another in the same format.

Let each group make up and perform a song, with verses in the form:

That .... was .... before, but now it's only ....

**What did your students learn from these activities? How do you know?**

**Will you use this kind of exercise again? Why, or why not?**

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## 2 Meaning of language

It is important in language teaching to focus on the meaning of the language, stressing the importance of communication, but at the same time working to develop students' competence in grammar. **Activity 2** gives an example of how to use a praise poem written in English to do some work with students on verbs and adverbs. This kind of work can be done with a wide range of texts, focusing on a wide range of structures. Make sure that you also focus on the meaning of the piece of writing, and don't simply use it as a device for teaching grammar. With younger children, the focus will be on the meaning and enjoyment.

Stories usually use the past tense, while descriptions are usually in the present tense. These are good contexts in which to give your students practice in tenses.

If you do not teach English, think about what students find difficult about the grammar of the language that you do teach, and adapt **Activity 2** to suit this language.

### Teaching Example 2

At a workshop in Kampala, teachers had a lively discussion about grammar. Henry Woneka said he had read that grammar is the bones or skeleton of a language and other words are the flesh. Both bones and flesh contribute to meaning. The teachers agreed that students need to develop understanding of how the structures of a language work, but they also complained about students' lack of interest in grammar lessons.

Ruth Kagaba teaches in a rural area and lessons for her students had been in the local language for their first four years of school but they are now in English. She tries to include activities that focus on language structures when her Primary 6 students are reading interesting stories or poems. For example, after reviewing the main verb tenses in English, she asked students to suggest why the writer of the story or poem had used past, present or future tense. Then she asked them to decide which verb tense or tenses they needed to use to write their own story or poem to make it more interesting for their readers.



To help with their English grammar, Ruth makes big charts on the backs of old calendars. These give students information about the present, past and future tenses of different verbs. (See below). She encourages students to consult these charts when they are writing.

Present	Past	Future
I walk	I walked	I will walk
I bite	I bit	I will bite
I choose	I chose	I will choose
I dig	I dug	I will dig
I draw	I drew	I will draw
I eat	I ate	I will eat
I forget	I forgot	I will forget
I know	I knew	I will know
I see	I saw	I will see
I sleep	I slept	I will sleep

## Activity 2

- Make copies of 'My Drum'. Where photocopiers are not available, copy it on the chalkboard or the back of an old calendar.
- Once students have read the poem and understood it, let them work in groups to find all the verbs in the poem. Remind them that most verbs are 'doing' words. Let each group report back on the verbs in one verse. (If you need any help with the vocabulary in the poem you can refer to the verbs and adverbs box below the poem.)
- Ask them which tense the verbs are in. In verses 1 and 2, verbs are in the present tense; some in verse 3 are in the future and some in verse 4 in the past tense. With more advanced students, discuss why these tenses were used. Ask them what difference does the use of different tenses make to the meaning and effect of the poem?

You can use other poems and stories in similar ways.

### ***My Drum* by Francis Faller**

It beats  
patiently  
like water  
dripping  
on  
a gutter  
pipe  
or proudly  
as the pounding of the sea.



My drum. My drum.  
It summons love.  
It hammers anger out.  
It calls for freedom.  
It never stops  
even when nobody  
hears my drum  
but me.

My drum greets  
everything  
that passes by:  
the rising sun  
the rain battering  
the wind that blows  
a family of cranes  
home across the sky.

It greets the cricket  
chirping out its glee.  
It greets the workers  
whose drills and picks  
are digging holes  
monotonously

I follow it  
into laughter  
I lead it through  
throbbing pain.  
It's a sparrow pecking seed  
it's a stick along the fence  
it's a rapid fire gun.

My drum. My drum.  
Nervously it beats  
a welcome  
just for you.  
Will you hear it  
with delight?  
Will you run away in fright?  
A drum is only  
skin and wood  
so will you come?  
You should.  
You should.

My little drum  
was yesterday so weak.  
Today it's beating  
Strong.  
Surely it wasn't stretched  
across this world  
to play for nothing.



Though it never  
gets reply  
I think  
I could not live  
if the song  
of my drum  
should die.

*Original source: My Drum – Meyerowitz, B., Copans, J. & Welch, T. (compilers)*

<p>It <u>beats</u> <b>patiently</b> like water <b>dripping</b> on a gutter pipe or <b>proudly</b> as the pounding of the sea My drum. My drum. It <u>summons</u> love. It <u>hammers</u> anger out. It <u>calls</u> for freedom. It <b>never stops</b> even when nobody <u>hears</u> my drum but me.</p> <p>My drum <u>greet</u>s everything that <u>passes</u> by: the rising sun the rain <u>battering</u> the wind that <u>blows</u> a family of cranes home across the sky. It <u>greet</u>s the cricket chirping out its glee.</p>	<p>Note 1: <b>patiently</b> is an adverb of manner, which describes how the drum beats: calmly, over and over again without getting upset or angry.</p> <p>Note 2: <b>dripping</b> is part of the full verb 'is dripping': like water [that is] dripping – the poet decided to leave out 'that is'.</p> <p>Note 3: <b>proudly</b> is also an adverb that describes how the drum beats: with pride, as though it is very pleased with itself.</p> <p>Note 4: <b>never</b> is an adverb of time that adds information to the verb 'stops': the drum does not ever stop.</p> <p>Note 5: <b>battering</b> is part of the full verb 'is battering': the rain [that is] battering.</p>
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It greets the workers  
whose drills and picks  
are digging holes

**monotonously.**

I follow it

into laughter

I lead it through

throbbing pain.

It's a sparrow pecking seed

it's a stick along the fence

it's a rapid fire gun.

My drum. My drum.

**Nervously** it beats

a welcome

just for you.

Will you hear it

with delight?

Will you run away in fright?

A drum is only

skin and wood

so will you come?

You should.

You should.

My little drum

**was** yesterday so weak.

Today it's beating

**Strong.**

Surely it wasn't stretched

across this world

to play for nothing.

Though it **never**

gets reply

I think

Note 6: **monotonously** is an adverb of manner which describes how the digging goes on and on in a boring, repeated way.

Note 7: **It's** is the short form of **It is** and **'is'** is a verb, though not an action verb.

Note 8: **Nervously** is an adverb of manner that describes how the drum beats: as though the drum is anxious or a little afraid.

Note 9: **'will come'** is in the **future tense** but it is in the question form 'will you come?'

**You should** is a shortened form of **You should come** – also action in the **future**.

Note 10: **was** is the past tense of 'is'.

Note 11: **Strong** would usually be written 'strongly': it is an adverb which describes how the drum is beating.

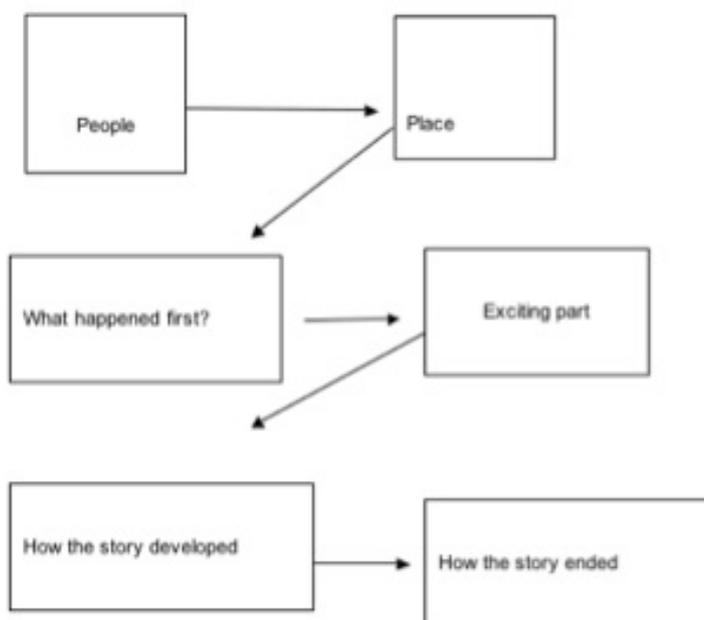
Note 12: **wasn't stretched** is a verb in the **past tense**.

Note 13: **never** is an adverb of time (see Note 4).



<p>I <u>could not live</u> if the song of my drum <u>should die</u>.</p>	<p>Note 14: <b>could not live</b> and <b>should die</b> are verbs that refer to the <b>future</b> because the suggestion is that the poet would not be able to live in the future without the drum.</p> <p>Note 15: Students may be puzzled by words ending in 'ing'. Sometimes these words are part of a verb: I am singing. Sometimes they are nouns: The singing of the choir was excellent. Sometimes they are adjectives that describe nouns: The singing canaries flew to the top of their cage. In this poem <b>dripping, battering, chirping, digging, pecking, beating</b> are parts of verbs. The <b>pounding</b> is a noun. <b>Throbbing</b> is an adjective describing pain. <b>Everything</b> is a pronoun that stands in place of the nouns that follow it in verse 2. <b>For nothing</b> is an expression that means 'without payment' or 'for no reason'.</p>
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Title
Words I might use



### 3 Self and peer editing to improve writing

You will probably have found that it is difficult, at times, to mark students' written work, because there are so many language errors in it. You do not want to discourage your students by making too many corrections. But you also don't want them to get into bad habits. How can we solve this problem?

One way is to connect meaning with language structures. Set a writing task that has meaning for the students. Encourage them to edit their work before they hand it in. You could ask them to write in pairs so that they support each other. They can then receive their work back without having lots of marks on it.

When you do mark their work, focus on meaning and interest. As a secondary focus, concentrate on one aspect of language structure – spelling or perhaps verb tenses or prepositions. In this way, the feedback is limited and focused, and the students are more likely to take notice of it.

#### Teaching Example 3

A group of teachers on an in-service course in Kampala were trying to improve their own writing. Tutors encouraged them to form 'Writers' Circles', where they read one another's writing and gave feedback. They wrote about their own experiences – early childhood memories, memorable characters and places, unforgettable experiences.

Tutors guided them in giving feedback, using different criteria depending on what had been written. Here are examples:

- Does the writer make it clear what they are saying? Are there parts that need to be clarified?
- Which parts are interesting? What makes them interesting? Which parts are dull? How could these be improved?
- Does each paragraph have a main idea? Do some need to be more fully developed? Do paragraphs need to be reordered?
- Are sentences complete? Are they too long or too short? Are they correctly punctuated? Are words spelled correctly?
- In what tense is the piece written? Check that every verb is in the relevant tense or that there is a good reason for using another tense.

A book was compiled of the writing of these teachers that was shared with family and friends. The teachers decided that some of these ideas could be used in class, adapted for the age and ability of their students.

#### Activity 3

Ask your students to write something based on their own experiences. Discuss ideas to stimulate their imaginations. For example, they could describe something they own or an interesting person they know. (As these pieces are descriptive they would probably use the present tense.) They could tell the

story of a frightening or exciting experience, or a community event. (As these pieces are stories or narratives, they would probably use the past tense.) Some students may find it more helpful to work in pairs.

Next, ask them to work in small groups, to read their pieces to one another. Ask them to use one or both of the following sets of questions to provide feedback to each other:

- Which parts are interesting?
- What makes them interesting?
- Which parts are dull?
- How could these be improved?
- In what tense is the piece written?

Check that every verb is in the relevant tense OR make sure there is a good reason for using another tense.

Having received group feedback, each rewrites their piece. Take the pieces in, and use the same criteria to mark them.

**How successful was this approach? Will you repeat it?**

**Did the quality of students' writing improve? How do you know this?**

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# Numeracy: Practical work with fractions

- 1 Exploring fractions
- 2 Fraction strips
- 3 Equivalent fractions

**Key question for the teacher:**

How can you help students to understand fractions?

**Keywords:** fraction strips; fraction discs; simple operations; group work; problem solving; definition; numerator

**Learning Outcomes for the Teacher**

By the end of this section, you will have:

- developed students' understanding of fractions using simple resources;
- used group work and problem solving to increase students' confidence in dealing with fractions.

## Overview

Allowing students to divide things into 'parts of a whole' using real objects helps them move more easily onto abstract ideas, such as fractions, division, ratio and proportion. This section will help you use simple physical objects and practical activities to develop your students' understanding of these concepts.



# 1 Exploring fractions

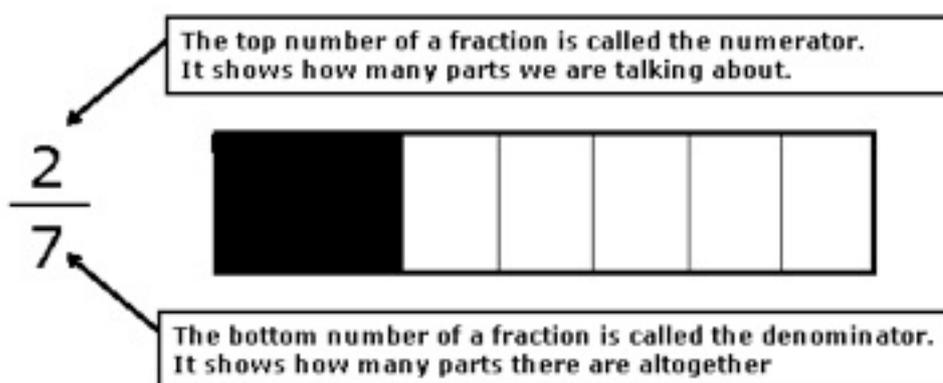
In this section you will introduce the concept of fractions. By trying tasks with groups of different sizes, you will be able to consider what is most suitable for your situation and for each practical task.

**Teaching Example 1** and **Activity 1** use simple resources – a fruit, paper and fraction strips – to help students understand the concept of fractions more easily. Also, by using groups and asking the students to discuss their conclusions, you will be exposing them to different fractions. Understanding fractions provides a foundation for thinking about division ('share by' equal parts is the first grasp of understanding division), ratio, proportion and decimals.

You may first want to refresh your own understanding of fractions:

What is a fraction?

A fraction is a part of a whole. There are two numbers to every fraction:

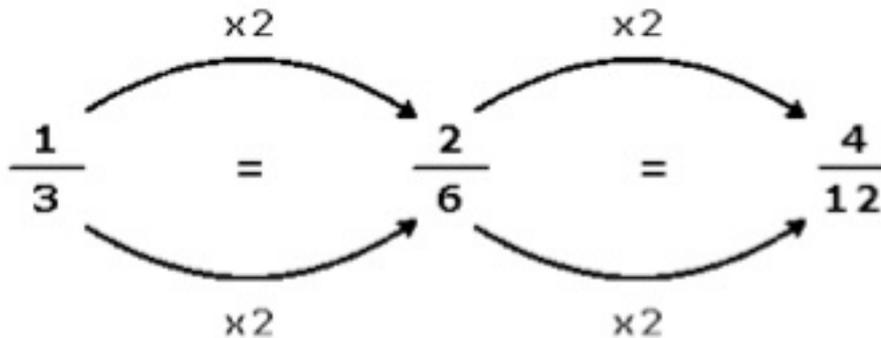


Equivalent fractions

Equivalent fractions are fractions that look different but show exactly the same amount:



You can make equivalent fractions by multiplying or dividing the numerator and denominator by the same number:



### Teaching Example 1

Mr Umaru in Nigeria began his lesson with his Primary 5 class on fractions by cutting an orange into two equal parts and then into four equal parts, asking the students to name the parts – halves and then quarters. He introduced more simple fractions, showing each by folding rectangular pieces of paper. He emphasised that two halves make a whole, etc.

He then discussed with the students how things are shared in real life. As his class was large, he divided it into small groups of three. He drew a circle, a rectangle and a square on the chalkboard and asked each student to choose one shape and to draw it six times. He asked them to shade their drawings to show

- a half
- two halves
- a quarter
- two quarters
- three quarters
- four quarters

Each student in the group showed the others what they had done. He asked them if they could see any patterns in their pictures and some students pointed out that two quarters is the same as one half etc. They shared this with the other members of their group and with the class.

Even though his class was large, Mr Kofi found that his approach of working in groups meant that all the students got an initial understanding of equivalent fractions from their drawings and interaction with each other. He also felt they were well prepared for the next lesson he had planned.

Fractions may be easier to understand when related to everyday objects that students recognise.

Show your students an object (or picture of an object) that can easily be divided into fractions.

Set students a series of questions relating to the object. For example:

- If there are 6 cheese triangles in one packet and Kofi eats half of them, how many are left for his brother Kwame?
- Can you express one cheese triangle as a fraction?
- How many cheese triangles will be left after Abina eats two-thirds of them?

### Activity 1

Arrange students into groups of four. Give each group four strips of paper of equal length (see example below). In each group, ask one student to fold a strip into 2 equal parts; another into 4, and another into 8. One person in the group should not fold their strip.

1															
1/2								1/2							
1/4				1/4				1/4				1/4			
1/8		1/8		1/8		1/8		1/8		1/8		1/8		1/8	
1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
1/10		1/10		1/10		1/10		1/10		1/10		1/10		1/10	
1/5				1/5				1/5				1/5			
1/3						1/3						1/3			
1/6		1/6		1/6		1/6		1/6		1/6		1/6			
1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12	1/12

Using the strips, can the groups agree:

- How many halves ( $1/2$ ) make a whole?
- How many quarters ( $1/4$ ) make a half ( $1/2$ )?
- How many eighths ( $1/8$ ) make a quarter ( $1/4$ )?
- Then you could ask them to try some more difficult equivalent fractions, e.g.
- How many eighths ( $1/8$ ) are there in a half ( $1/2$ )?
- How many eighths ( $1/8$ ) are there in three-quarters ( $3/4$ )?

While the students are working, go around to help them. Share some of their answers with the class to show how fractions work.



## 2 Fraction strips

In this part, we build on the previous work with fraction strips to add and subtract simple fractions.

As you work, ask yourself these questions:

Are you having to help your students a lot? If so, why do you think this is?

Are you and the students enjoying the practical activities?

Do you think the students learn more this way than if you had just told them?  
How do you know this?

### Teaching Example 2

Mr Agbe brought to his lesson a large fraction strip of tenths that he had made to show to the class and asked each student to make a similar one using the resources he provided. After 15 minutes, he helped students use their fraction strips to find answers to these questions:

By how much is  $\frac{8}{10}$  bigger than  $\frac{5}{10}$ ?

What is the difference between  $\frac{8}{10}$  and  $\frac{5}{10}$ ?

What is  $\frac{8}{10} - \frac{5}{10}$ ?

He wrote on the chalkboard the sum  $\frac{8}{10} - \frac{5}{10} = \frac{3}{10}$  and asked the students to copy this in their exercise books.

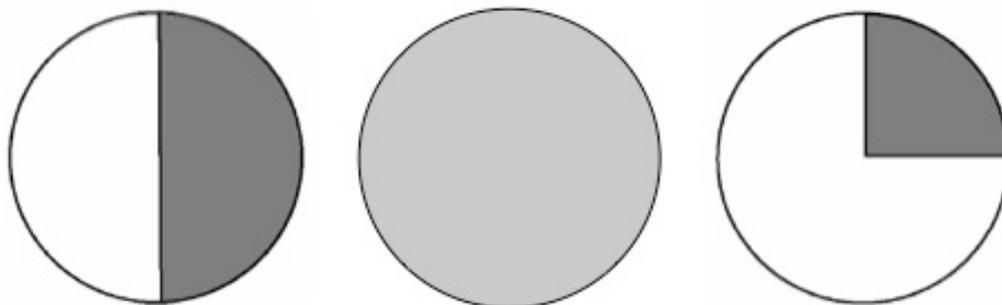
He then asked his students to work in pairs and do some addition sums with tenths using their fraction strips. He made up some sums for them, and then asked those who were working well to make up some sums for each other.

Mr Agbe was amazed at what the students were able to do, but also realised that he needed to give some students more practice and time to talk about their ideas as they worked.

### Activity 2

Before the lesson, prepare three discs – a complete disc, a quarter disc and a half disc, each with all the quarters shown as shown below.

These are made by drawing a circle and dividing it into halves, quarters, etc. by folding.



Hold up the quarter disc and the half disc and ask your students what would be the total if you added these two discs. Give them time to answer, and when you get the right one, write the sum on the board:  $1/4 + 2/4 = 3/4$

Next, hold up all three discs and ask what would be the total if they were all added together.

Again, wait for the right answer and then write the sum on the board:  $1 + 1/4 + 2/4 = 1 \frac{3}{4}$

<b>1</b>	<b><math>\frac{1}{2}</math></b>	<b><math>\frac{1}{4}</math></b>
whole	half	quarter

Now pair your students, and ask them to draw similar discs with thirds. Ask them to make up addition sums to give to their partner and to write down the complete sum and answer in each case.

As they are working, go around the class and help where needed. If necessary, let them try other fractions to see if they really understand the idea.

Display some of the different fractions on the wall.

You may want to do this activity over two lessons to consolidate students' learning.

### 3 Equivalent fractions

How can students compare fractions that have different denominators (e.g.  $3/5 + 1/4$ )?

They could make fraction strips to compare the different fractions, but although this supports comparison, it doesn't help them add or subtract such fractions. To do this, they must understand common denominators.

*To compare fractions, you must first change them so they have the same denominator.*

To compare  $2/3$  and  $3/5$ :

- First look at the denominators (the bottom numbers).
- Decide which number they both go into. They both go into 15.
- Change both numbers into 15ths.



$$\frac{2}{3} \overset{\times 5}{\curvearrowright} = \frac{10}{15} \underset{\times 5}{\curvearrowleft}$$

$$\frac{3}{5} \overset{\times 3}{\curvearrowright} = \frac{9}{15} \underset{\times 3}{\curvearrowleft}$$

$\frac{10}{15}$  is bigger than  $\frac{9}{15}$   
 so  $\frac{2}{3}$  is bigger than  $\frac{3}{5}$

Original source: <http://www.bbc.co.uk/schools>

### Teaching Example 3

Mrs Dokono decided to use the part-whole model to introduce equivalent fractions to her class and to develop her skills of using group work and practical work.

She knew that using everyday objects helps students' understanding, and took to her class some biscuits to help her explain equivalent fractions. First, she divided the class into groups of eight and told them they were going to explain how 20 biscuits could be shared equally among a number of children.

Next, she assigned each group a different number of biscuits. She gave one group 2 biscuits and asked them to share these biscuits among 4 students. They saw that 2 divided by 4 gave each student  $\frac{1}{2}$  a biscuit. She wrote on the board 2 divided by 4 =  $\frac{2}{4}$  =  $\frac{1}{2}$ .

She repeated this problem with other groups and 3 biscuits among 6 of the students.

Then she gave 4 biscuits among 8 students, each getting half a biscuit.

Each time she wrote the fractions on the board  $\frac{2}{4}$ ,  $\frac{3}{6}$ ,  $\frac{4}{8}$  with each equal to  $\frac{1}{2}$ .

She told the students that these are called equivalent fractions.

Mrs Dokono was pleased with the class response to her mathematics lesson using the biscuits to explain equivalent fractions.

### Activity 3

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Using halves, thirds and quarters, write down five additions, e.g.

$$(1/2 + 1/4)$$

$$(2/4 + 1/3),$$

$$(1/3 + 1/2),$$

$$(2/3 + 1/4).$$

$$(3/4 + 2/3),$$

Show how to work out the common denominator of the first sum. Ask pairs of students to calculate the remaining common denominators.

Show students how to convert the numerator for the first two sums; ask students to complete the next three sums.

Show how to find the answer to the first two sums; ask students to complete the last three sums.

Ask each pair of students to make up and solve as many similar problems as they can in ten minutes.

After the lesson, look at 'Questions for self-evaluation' and ask yourself questions on your use of practical activities and resources.

#### Questions for self-evaluation

When answering these questions, it is very important that you answer the questions honestly so that you can reflect on your practice better in order to develop as a more effective teacher

- Do I feel more confident in using group work?
- Did using different group sizes and types improve my lessons and make it easier for students to understand?
- Do I feel practical work helps students' understanding, and am I confident in using it?
- Did my students enjoy doing these practical mathematical activities?
- Did I give my students enough time to do their practical tasks?
- How can I improve my teaching of this topic?
- What would I change next time?

#### Questions about the use of practical activities and simple resources

- Did the activities help me meet my learning objectives?
  - Were the activities appropriate for my class?
  - Did the activities stimulate the students' interest?
  - Did the resources help me meet my learning objectives?
  - Were the resources appropriate for my class?
  - Did the resources stimulate the students' interest?
  - How enjoyable were the lessons?
- 
- .....

# Science: Investigating electricity

## 1 Student-led investigation

## 2 Rotating group work

## 3 Electromagnetism

### Key Question for the teacher:

What sorts of practical activities with electricity can you do in your classroom?

**Keywords:** circuit; electromagnets; models; investigation; group work.

### Learning Outcomes for the Teacher

By the end of this section, you will have:

- gained confidence to do practical activities in your classroom involving electricity and improved your understanding of the dangers associated with electricity;
- used rotating group work;
- supported your students in undertaking investigations in small groups.

## Overview

This section deals with electricity. This topic often frightens teachers – you may think it is complicated, difficult or even dangerous. But there are straightforward, practical activities that help students make sense of an important aspect of modern life.

We suggest you use small group demonstrations and investigations to help students understand two key ideas:

- Energy cannot be created or destroyed, only changed from one form to another. What can we change electrical energy into?
- An electric device will only work when there is a complete circular path for the electric current.



# 1 Student-led investigations

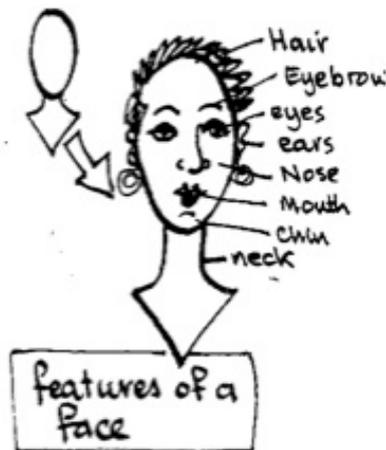
It is very important that students are given opportunities to think and behave scientifically. This can only happen with practical, hands-on activities. Students will be challenged and enjoy working in groups to discuss and discover things for themselves. It often helps their thinking if they use models as well as real items.

**Activity 1** uses cut-out shapes to help students understand the need for a complete circuit in an electrical device. **Teaching Example 1** shows how one teacher extended this activity and supported her students in their own investigations about electric circuits. This type of encouragement and recognition is very important to students.

The information below shows you how you can extend this work and lead students to a clearer understanding that electricity travels in a complete circuit inside a torch bulb.

First make your teaching aid – a model torch bulb, and read this information about a torch bulb.

With younger students, we suggest that you draw in features of a face to explain what we mean by features.



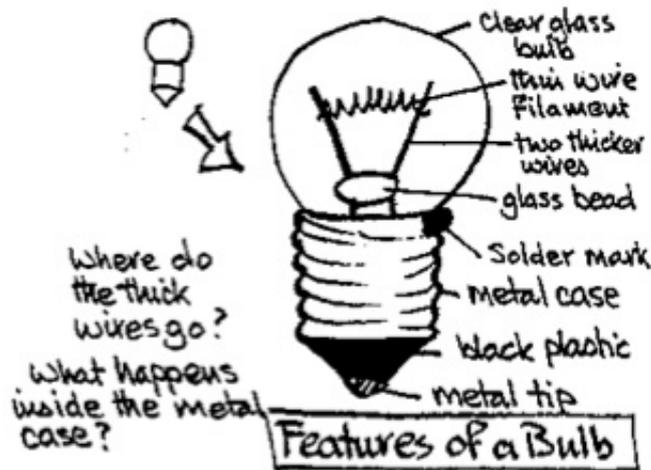
Now tell them that the class will do the same thing with the torch bulb.

Organise your class into groups of three/four:

Give each group of students a torch bulb and ask them to look at it carefully.

- What are the 'features' or parts of a bulb?
- Give them a few minutes to observe carefully.
- While they do this, draw the outline of a torch bulb on the board. (Or you can have a ready prepared drawing, which you put up at this point. You can also have labels, written on cards, ready for when they tell you what they observe.)
- When they seem ready, ask them to tell you what they see. You can be open to any suggestions and fill in the picture in a random way. Or you can decide to be systematic and guide their reporting by pointing to a place on the drawing and asking a specific question. As they answer, draw in and label the part – the notes below show you how to do this.





Recording observations in an ordered way

- Point to the round glass part. What do we see here?

Answer: Glass ball

- What do we see inside the glass ball?

Answer: Two thick wires

- What do we see between the two thick wires?

Answer: a thin wire, like a curly hair, called a filament.

- What do we see between the two thick wires near the base/at the bottom?

Answer: A small glass bead

- What is below the glass bulb?

Answer: A metal drum/case/cylinder

- What can we observe on one side of the metal case, near the top?

Answer: A little lump of metal

- What do we observe right at the bottom of the torch bulb?

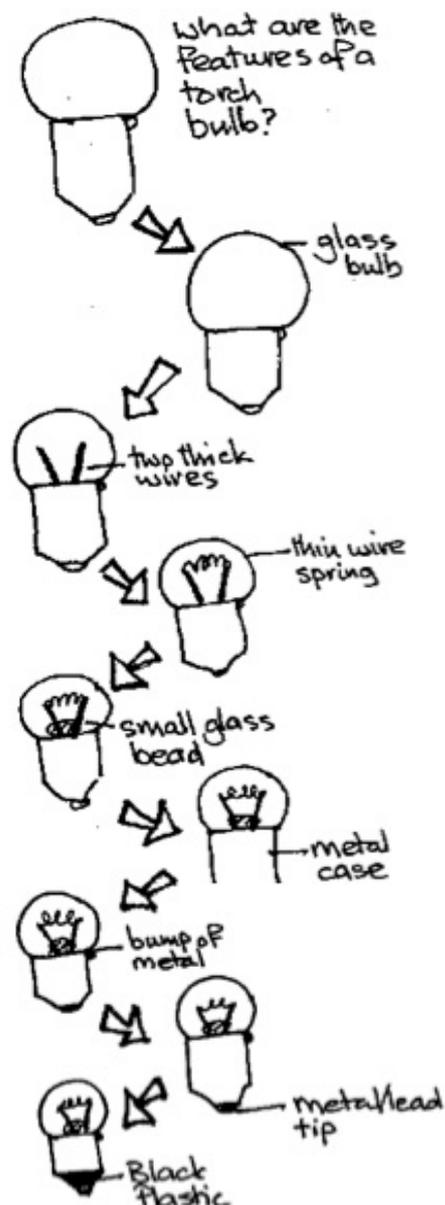
Answer: A metal/lead tip

- What do we observe between the metal case and the metal tip?

Answer: Black plastic

- Is there anything else you have observed?

Answer: Some may notice writing on the metal case.



### Making a teaching aid

You also need to make a large 2-D (flat) model of a torch bulb for the part of the Activity where students observe a bulb carefully. You will use this model again when you conclude the Activity.

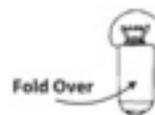
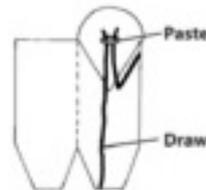
1. Cut out the large bulb shape.
2. Cut out the shape for the metal case of the bulb.
3. Glue the bottom of the bulb to the right side rectangle so that it fits over the shaded triangle.
4. Use a large black crayon or koki-pen to draw the thick wires, as shown.
5. Cut out a small oval bead shape from a coloured picture in a magazine and paste it over the black lines you have drawn (this represents the glass bead that prevents the two thick wires from touching).
6. Make the filament from a coil of thin wire, and fasten it across the ends of the thick black lines. One way is to stick the ends of the coil of wire through the cardboard and to use sticky tape on the wrong side (back) to fasten them down.
7. Fold the left-hand side of the base of the bulb over the right-hand side. Now your model of a torch bulb is nearly complete.
8. Use blobs of Prestic to represent the metal solder mark on the side of the case, and the bottom metal tip of the torch bulb.
9. Finally, shade the trapezium shape between the metal case and the metal tip of the torch cell. This shows the layer of black plastic that separates the metal cylinder from the metal tip.



Bulb



Metal case

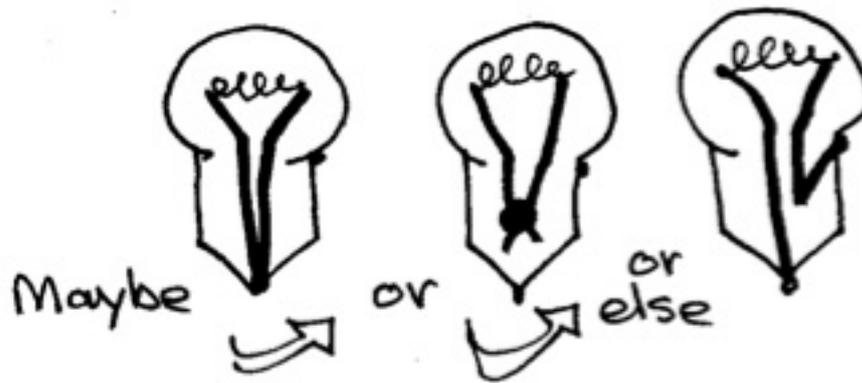


This model is specially designed so that you can demonstrate the arrangement of the inner parts of the bulb. What happens inside a light bulb will always be a strange mystery to students unless they have thought about what might be the case, and then had the chance to find out. It is possible to use a hack-saw blade to carefully cut open the metal case of an old screw-in bulb. Then the arrangement and direction of the wires is clear.

### A model light bulb

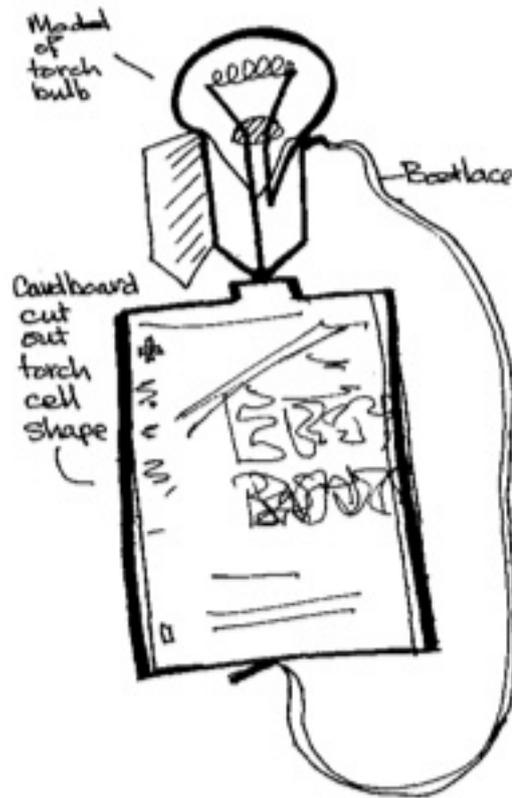
Now show them the model you have made of the torch bulb. Ask: What do they think they would find, if they could open up the metal case? What would be inside? Where do the two wires go? Give them some time to think.

What do they predict will be the arrangement of wires that are hidden by the metal case?



After a while, you can open up your model and show them how one wire is joined by solder to the metal case, and how the other goes to the metal tip at the bottom of the torch bulb.

Now use your model to demonstrate that there is a complete pathway, or circuit, for the electricity when the bulb lights. The electricity is free to travel in a complete pathway. It travels from the cell, through the wire to the metal case, and then to the one thick wire. From there, it goes through the thin wire filament. It causes the filament to light up, and goes back down the other thick wire to the torch cell again.



*All illustrations above adapted from: Umthamo 3, University of Fort Hare Distance Education Project*

Two teachers discuss the dangers and safety of electricity with a science advisor and they explain why they are nervous about dealing with electricity in the classroom.

She assures them that the 1.5V batteries and light bulbs that we find in a simple torch are quite safe.

One teacher asks: 'When is electricity dangerous?' The science adviser explains that the electricity supplied to homes is 220 volts, so it is hundreds of times more powerful than a battery. The high-tension wires that carry electricity across the country are thousands of times more powerful.

So the teachers realised that they could safely conduct electricity experiments in the classroom.

The science advisor advised them to make sure that they warned the children of the true dangers of electricity, and she left them some examples of safety pamphlets that are available locally.

The two teachers decided they would also look in the local newspapers for articles about electricity-related accidents and get their students to discuss both the causes and the consequences of these tragedies.

Here is one example they found:

### Eight feared electrocuted in Imo

from Charles Ogugbuaja, Owerri

About eight persons are feared dead in a massive electrocution that occurred yesterday in Orji, near Owerri, the Imo State capital.

According to an eyewitness, the accident happened when a small truck carrying a metal kiosk suddenly ran into a high-tension wire. When the kiosk touched the high-tension wire, the many men in the vehicle were electrocuted.

One of them, who was thrown out of the vehicle by the electrocution, died instantly. It is believed that the other men died while receiving treatment.

The public affairs manager of the Power Holding Company Nigeria (PHCN), Owerri district, Mr Osita Ugwuafor, confirmed to The Guardian yesterday that though he was unable to visit the hospital to check the story, he had heard about the deaths of two victims.

'We are yet to get full details, but [an] unconfirmed source told us that two died earlier. I don't know the state of others because the authorities were yet to allow people to see them,' he said.

*Adapted from: The Guardian, <http://www.guardiannewsngr.com/news/article171230107> (Accessed 19/06/07)*

### Teaching Example 1

When teacher Florence in Uganda tried Activity 1 with her class, she found that some students took the investigation further. They noticed that the metal tip of a ballpoint pen will also allow the bulb to light when it is placed between the top of the battery and the bottom of the bulb. She watched as they investigated other materials; a wooden pencil did not light the bulb, nor did a piece of cardboard, but the end of a metal spoon worked.

Florence gave them the chance to report on their own investigations and encouraged them to repeat and do further investigations. Later, she took the activity further to explore circuits and switches.

She asked her students to use their bulbs and cells (and other bits of scrap materials) to design a circuit so that when a visitor presses a switch a light comes on. Her students used paperclips, small pieces of wood, card and metal from cans to make really imaginative switches.

Then, some of the older students made model rooms from cardboard boxes and scraps of material and put two or even three lights in the room with a switch. One group even managed to add a warning light, which came on when a thief opened the door of the model room. Florence displayed all these models in her classroom and encouraged other teachers to come and look at them while her students explained how they worked. Her colleagues were very impressed at what the students had achieved and everyone enjoyed the afternoon.

### Activity 1

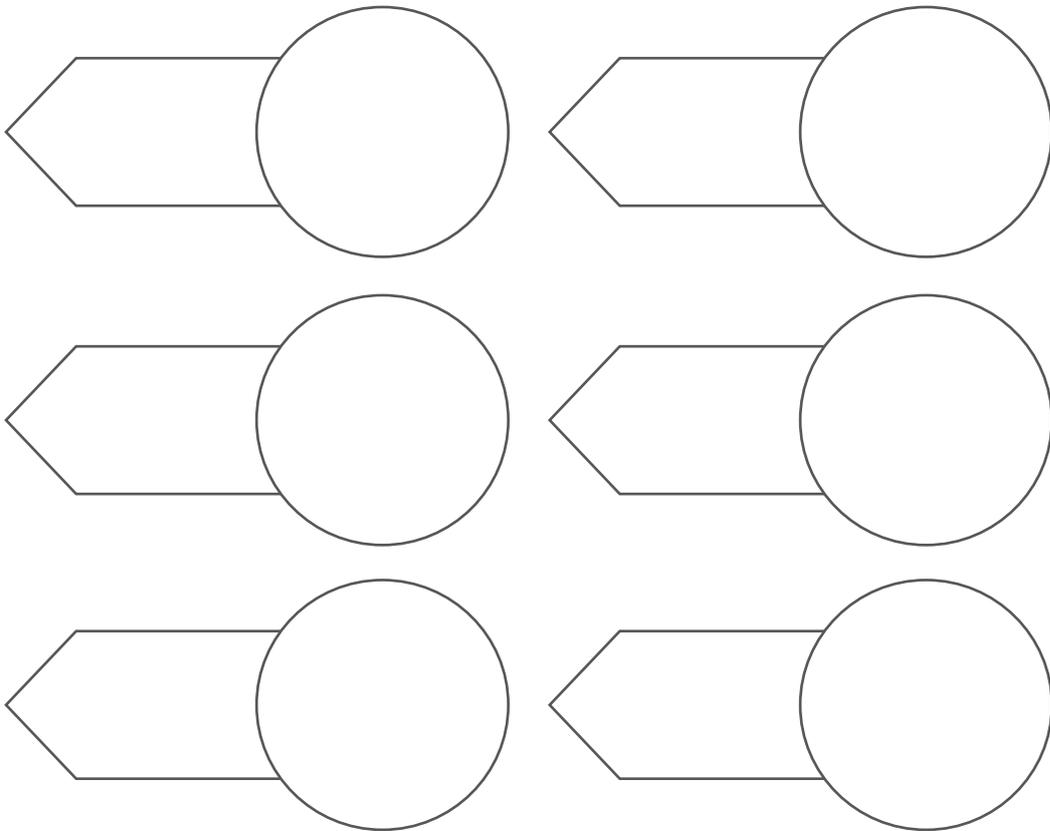
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Each group of students needs one live torch cell, one working torch bulb, two 15-cm lengths of plastic-coated thin copper wire, at least five life-size cut-out shapes of a torch cell and five cut-out shapes of a live bulb. (See the templates below – it is quite time consuming to cut out the shapes; you could ask older students to do this for you before the lesson.) They also need a blank sheet of card or paper and a small amount of glue. (Make sure all cells and bulbs are working before the lesson.)

- Hand out a bulb and a cell to each group. Ask: 'What do we get from these?' Can they show this? What else do they need?
- Hand out the cut-out shapes and the wire. Ask students to investigate different arrangements to see if they can light the bulb. Successful arrangements are recorded by gluing the shapes down and drawing in the position of the wire.
- Tell them: 'There is more than one arrangement that will light the bulb.' Encourage them to find five possible different arrangements.

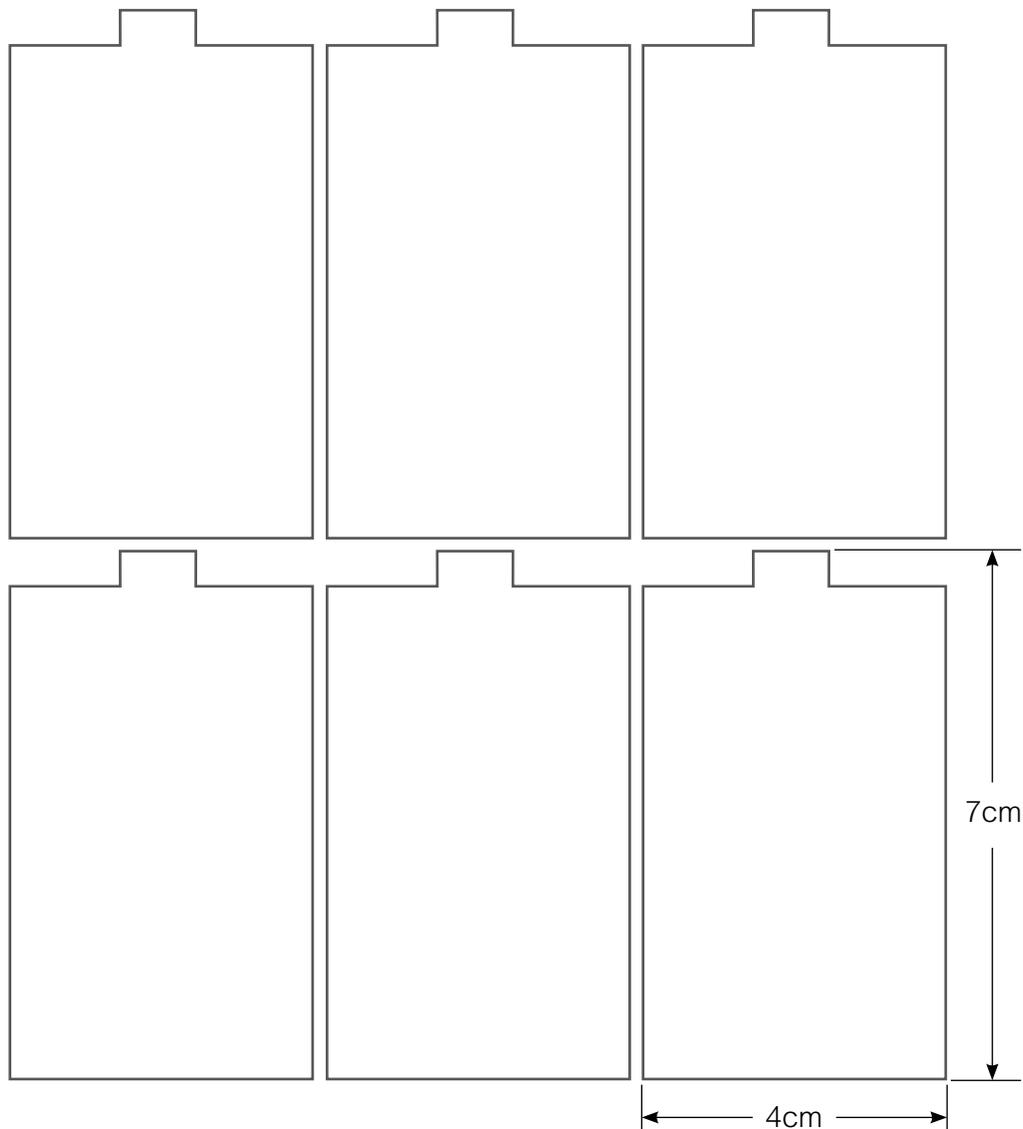
The groups report back at the end.

#### Templates of bulb – for cutting out



## Templates of batteries for cutting out

### Torch cell



### Discussion notes for Activity 1

Be patient. Let your students struggle. Remember that 'easy come' knowledge, becomes 'easy go' knowledge. Don't interfere. They will be determined and persist. They may eventually work it out by trial and error. Then they will try to make sense of this and ask: 'What's going on here?'

You will see that most young children first think it will light if they just touch the bottom of the torch bulb to the top of the torch cell, metal to metal. They look quite puzzled when it doesn't work.

They think, 'No! But it needs some wires! Or a wire!' Then they link a piece of connecting wire from the base of the cell to the top of the cell. It still doesn't work.

Watch to see what strategies your students adopt.

The bottom of the torch bulb must contact the top of the torch cell, and the wire connects the bottom of the cell to the metal side of the bulb.





The five arrangements

They will probably get these on their own, by trial and error. Give them time and keep encouraging them.

One or two groups may realise that it will still work if the bulb is laid on its side.



*Adapted from: Umthamo 3, University of Fort Hare Distance Education Project*

## 2 Rotating group work

Electricity provides more than light. Think of the modern electrical appliances we use. We get heat from electricity (stoves, irons, etc.). We get movement (mower, fan etc.). Radios and TVs give us sound. Some students may even know that magnetism is also involved in some way with electricity.

You need to think about how you can show these electrical effects to students. One way would be to get students to be investigators in their local community; they draw up lists of all the effects and uses of electricity that they see around them. Or they could cut out pictures of appliances from adverts in old magazines and newspapers to make a display. Can you think of other ways to make students aware of different uses for electricity?

In **Activity 2**, your students move round a number of workstations in your classroom to find out about the effects of electricity; this is an example of rotating group work. You will need to think about how you ask the students to record what they have learned in this activity – will they create a poster in each group? Will you ask each group to present their ideas about one workstation? Read **Teaching Example 2** to see how one teacher carried out this activity.

After the activity, ask yourself if your students enjoyed this way of working. How could you improve it next time?

## Teaching Example 2

Mrs Yargawa, an experienced primary science teacher, decided to try rotating group work using a double period and ten groups of five students. She planned ten workstations to show the effects of electricity: two for the 'heat' activity, two for 'movement', two for 'sound', two for 'magnetism' and two for 'light'.

The day before the lesson, she made ten workcards, which can be seen below and packed the apparatus for each workstation in a shoebox. She appointed a group leader for each group and arranged a meeting with the leaders before the lesson so they were well prepared.

Reflecting on the lesson, Mrs Yargawa was very pleased with the way it went. The groups moved from station to station every ten minutes, and the leaders ensured that everyone took part. She had asked the students to write their own notes on what they had learned from the lesson and to comment on their experience of rotating group work. She was impressed with how much the students gained, but she was even more impressed with the mature way they talked about the approach she had used.

## Activity 2

Read the workcards, which give details of workstations, each to demonstrate one effect of electricity. Look at the equipment needed, and decide how many workstations you will have for each card. Prepare the equipment and label it clearly.

- Divide your class into groups to match the total number of workstations. (If you have a large class and only one workstation for each effect, you may need to do the activity with half your class and then repeat it with the other half).
- Explain to your class how to set up each workstation and read through the workcard for each workstation with the students.
- In each group choose a leader. Gather the leaders round you and tell them they are responsible for making sure that their group works in an orderly way at each workstation and that everyone in the group joins in. When you call 'stop' the leaders will move their group to the next workstation until they have completed all five.
- Tell the leaders to return to their groups and to start working.
- After ten minutes call 'stop'. Each group puts the equipment back neatly and moves to another workstation. Do this again after another ten minutes, and so on, until everyone has looked at all five workstations.
- Make sure that each group records their observations at each workstation.

At the end, ask each group to present their observations and ideas from one of the workstations.



**WORKCARD 1: HEAT**

What you have:

- a torch cell/a torch bulb
- a 10 cm length of very very thin, bare wire (unravalled from wire flex from an old broken tape recorder) or fuse wire
- a 10 cm length of ordinary bare copper wire

What you do:

- Hold the 10 cm wire with the two ends on the top and bottom of the torch cell.
- Touch the arc of the wire to the back of someone's hand. Do they feel anything?
- Repeat using the length of very very thin wire/or fuse wire. Do they feel anything now?
- What form of energy do you sense here?
- Discuss what you have felt. Try to think of an explanation of your own. Experiment using the different wires to light the bulb. Compare the brightness. What do you think?

**WORKCARD 3: MOVEMENT**

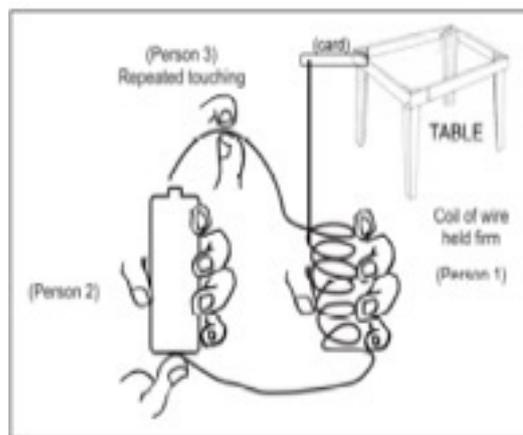
What you have:

- a torch cell
- 25 cm length of insulated copper wire
- a steel needle or pin that has been magnetised (made into a magnet) by being placed alongside a strong magnet for a time
- a 15 cm strip of thin, flexible card
- a small electric motor from an old broken toy or tape recorder
- a drawing pin



What you do:

- Make a tight coil by wrapping the wire around a pencil.
- Fasten the strip of card to the edge of the table/desk so that it is like a swimming pool diving board.
- Push the magnetised needle so that it hangs vertically from the end of the strip.
- Hold the coil steady with the magnetised needle dangling into the centre of the coil.
- Hold the torch cell with one bare end of the wire from the coil in contact with the base.
- Another person repeatedly touches the other end of the wire to the top of the cell.
- Discuss what you have seen happen. What form of energy do you find? What is your group's explanation for what you have seen?
- Now turn the torch cell upside down and repeat the activity. But first PREDICT what you think you will see.
- Finally – use the torch cell to work the small electric motor. What direction is it spinning? Can you reverse the direction?
- Do you think an electric motor might have something to do with coils of insulated wire and magnets?



#### WORKCARD 4: SOUND

What you have:

- a torch cell
- small speakers from old broken electrical equipment
- grains of coarse sand/bits of wire flex

What you do:

- Experiment to see if you can get sounds from the speakers by attaching the torch cell to the speaker terminals (why are there always two?).
- You should be able to get a crackling sound.
- What do you have to do to repeat the sound?
- Sprinkle grains of coarse dry sand onto the open cone of the speaker. What do you notice as you make repeated crackling sounds?
- Look carefully at the speakers. Can you see any arrangement of magnets and coils or spirals of wire?
- Discuss your own ideas of how a speaker works.
- Can you link your ideas to Workcard 3: Movement?

#### **WORKCARD 5: LIGHT**

What you have:

- three torch cells
- four torch bulbs
- assorted lengths of flex wire

You have already seen how we get a bulb to light and you have already investigated the structure of a light bulb.

What you do:

- Investigate different arrangements for getting different numbers of torch cells to light up different numbers of bulbs.
- Record the different arrangements that work. Draw pictures to show these.
- Which were the brightest bulbs?
- Can you think of ways to explain what you see?

## **3 Electromagnetism**

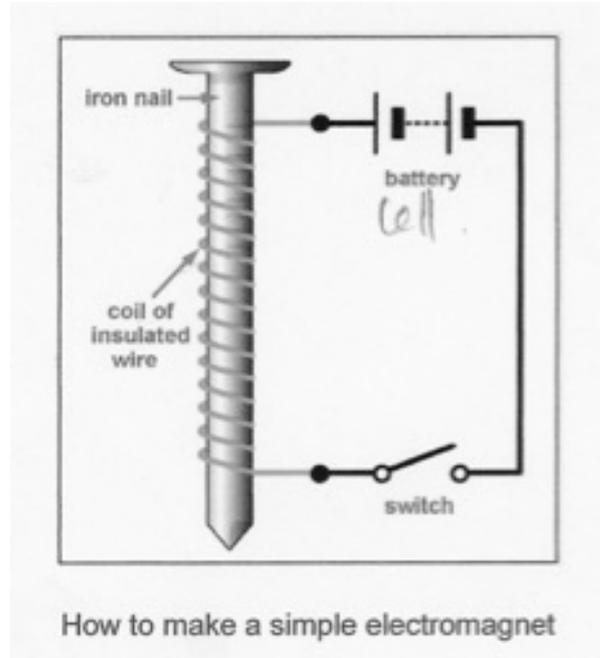
The Activity 3 builds on the ideas of energy change and the need for complete circuits. In it, students work in small groups to explore one effect of electricity – electromagnetism. This type of activity encourages students to think about different scientific processes – planning, observing and recording. After the activity, students could think of uses for their electromagnets.

#### **Electromagnets: Teacher notes**

A magnetic field is produced when an electric current flows through a coil of wire. This is the basis of the electromagnet. We can make an electromagnet stronger by:



- wrapping the coil around an iron core;
- adding more turns to the coil;
- increasing the current flowing through the coil.



The magnetic field around an electromagnet is just the same as the one around a bar magnet. It can, however, be reversed by turning the battery around. Unlike bar magnets, which are permanent, the magnetism of electromagnets can be turned on and off just by closing or opening the switch.

### Using electromagnets

Many objects around you contain electromagnets. They are found in electric motors and loudspeakers. Very large and powerful electromagnets are used as lifting magnets in scrapyards to pick up, then drop, old cars and other scrap iron and steel.

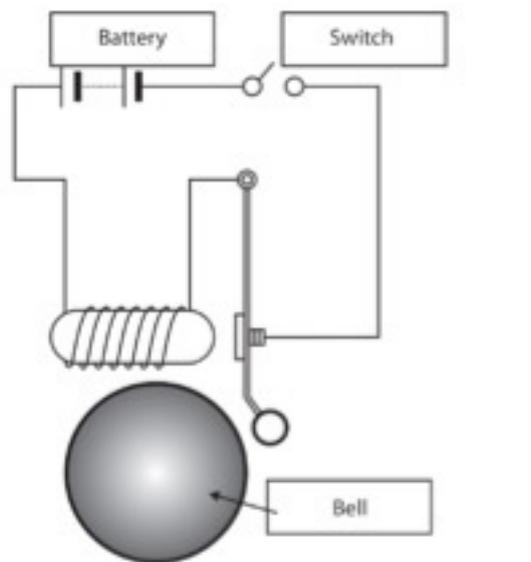
### Electric bell

Electric bells also contain an electromagnet.

- When the current flows through the circuit, the electromagnet makes a magnetic field.
- The electromagnet attracts the springy metal arm.
- The arm hits the gong, which makes a sound and the circuit is broken.
- The electromagnet is turned off and the springy metal arm moves back.
- The circuit is complete again.
- The cycle repeats as long as the switch is closed.

**Electric Bell**

This shows how an electric bell works



Original source: <http://www.bbc.co.uk/science/>

**Teaching Example 3** shows how a teacher with very limited resources encouraged her students to think through the processes involved in an investigation like this.

### Teaching Example 3

Mrs Popoola works in a rural school with little equipment. She likes doing practical demonstrations with her students and is always searching through broken devices in the village to find equipment to use with them.

One day, she took apart an old buzzer to use as an example of an electromagnet. She set it up on her table and gathered her students around her. She showed them that she was using electricity to make a magnet. She then asked them each to discuss with their partner ideas for how she could make the magnet stronger – what could she change? How could they measure the strength of the magnet?

After a few minutes, Mrs Popoola asked students to share their ideas and she recorded the different suggestions on the chalkboard. Some students thought that if she used more torch cell batteries the magnet would get stronger. Others suggested using a different material in the core. Other ideas included longer wire, more coils round the core and using two strands of wire. Mrs Popoola then asked pairs of students to come out and try one of the ideas. They recorded the results in a table on the board. The next pair tried a different idea, and so on, until they had tried all the ideas. Her students copied down the table with the results and then, working with their partner, tried to write a sentence to summarise what they had found out.

Mrs Popoola was very pleased with the way her class listened to each other but she realised that next time she needed to make sure that equal numbers of boys and girls came out to do the experimenting.

### Activity 3

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Gather your class around you and brainstorm the concept of 'magnetism'. You can find further ideas in the additional resource on **Using mind maps and brainstorming to explore ideas**. Where have they seen magnets being used? What sorts of substances are magnetic? Can we make magnets from electricity? This is called an 'electromagnet'. Record their thoughts on the chalkboard or on large newsprint on the wall.

- Organise your class into small groups of between four and six students. Give each group: a steel pin; a working 1.5V torch cell; some small pins or paperclips; and 50 cm of thin insulated copper wire.

Tell the groups you are setting them a problem. They have to use the equipment to make an electromagnet that will pick up as many pins as possible. (You can find further ideas in the additional resource on Using investigations in the classroom).

- Encourage students to investigate how to make an electromagnet with the equipment.

When they have solved the problem, ask students to draw a diagram to show their solution.

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# Arts: The art of storytelling

## 1 Cultural significance of stories

## 2 Traditional tales

## 3 How to write a good story

### Key Question for the teacher:

How can you help students appreciate stories and develop their storytelling skills?

**Keywords:** stories; community; storytelling; writing; culture; group work

### Learning Outcomes for the Teacher

By the end of this section, you will have:

- planned and managed classroom activities to develop an appreciation of stories and storytelling;
- used local contacts and resources to develop your knowledge about the culture of storytelling;
- devised and used strategies to help students write their own stories

## Overview

Stories have been part of human history for centuries. In the past, stories often delivered important messages. The listeners would laugh, cry and sometimes sing along with the storyteller.

It is the ability to carry messages that makes stories so valuable for you, as a teacher. The activities, case studies and resources in this section are intended to help you use this rich heritage to develop your students' skills in the art of writing, telling and reciting stories. This will develop their sense of belonging and give them insight into their cultural heritage.

A story may be told, written, read or recited. It may be a true story or fiction. Often stories have messages in them about the values of the community, how to live our lives and how to care for others.

You and your students will probably have told and listened to stories before. You may even have written some. This part will help you develop your students' understanding of the art of storytelling and also that storytelling is embedded in the culture of your society.



# 1 Cultural significance of stories

You may be fortunate and know someone in your community who is skilled at telling stories and could come and tell a story to your class. Or, as in **Teaching Example 1**, you may be able to visit the storyteller and record them on a tape and use this in your class. **Activity 1** suggests ways to organise students to share their own favourite stories.

## Teaching Example 1

Mrs Biyela teaches at Furaha Primary School, Tanzania. She is preparing for her next teaching topic, which is 'Story'. She consults books and website resources on storytelling, writing and reciting. She learns that storytelling has deep cultural significance, and wants to find some way of conveying this to her students.

She has heard of an old lady, Bibi Koku, who lives nearby and is famous as a storyteller. One afternoon, she visits Ma'Koku and asks if she would be willing to tell a story to Mrs Biyela's Standard 4 students. The old lady agrees, but, she says, 'Only during the evening.' She insists that people who tell stories during daytime invite famine into their community and she is not willing to do that.

Immediately, this becomes an interesting issue for Mrs Biyela – she is sure it would grab her students' attention and give them insights into a cultural aspect of storytelling. Therefore, she arranges to bring a tape-recorder and record Ma'Koku telling a story, as well as talking about the taboo on daytime storytelling. She is concerned to try to make sure that the old lady talks about this in a way her students can understand. As it turns out, Ma'Koku solves the problem for her by telling the story about what happens to people who tell stories during the day!

On the day of the lesson, Mrs Biyela checks the tape-recorder to make sure everything is fine. She introduces the lesson, asking students if they have ever listened to any stories told by old people. The students are curious – they listen to Ma'Koku telling her story.

Next, Mrs Biyela conducts an animated discussion about why Ma'Koku could not come to tell the story at school that morning. She is excited by the fact that so many of the students are aware of the custom of not telling stories during the day. By the end of the lesson, they have built up a rich understanding of the tradition and the taboos associated with it.

## Activity 1

Prior to the lesson, ask each student to decide on a favourite short story to share in class.

- Organise the class into small groups of between four and six students. Ask each student to tell their story to the members of their group. Before they start, emphasise that everyone is to have a turn and they must each listen to each other's stories.



- Next, ask each group to choose between them one story from their group. They will present these to the class. If you become aware that any group is finding it hard to agree, step in to help the group decide on a story.
- Give the groups time to prepare. If possible, provide a range of props – clothing, tools, toys, musical instruments, etc. – or ask students to bring these in, to enhance their stories and help convey the meanings.
- Each group in turn tells their story to the whole class and explains why they like it.
- Finally, discuss with your class the important parts of a story; the beginning, the body, episodes, setting, characters and the ending.

**Were you surprised at the stories your students chose?**

**How well did your students work together in the small groups? Do you need to plan different groupings for the next activity?**

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## 2 Traditional tales

Many traditions and beliefs are passed on through story. In this part, we suggest how to develop students' understanding of the importance of story in passing on such traditions and providing messages about how people should live.

It is very exciting for students to hear expert storytellers telling their stories. In **Teaching Example 2**, a teacher organises a visit to a storyteller. In **Activity 2**, you use brainstorming to investigate your students' knowledge of traditional tales and explore ways to gather these stories together.

### Teaching Example 2

Mr Mncube is an arts and culture teacher at a school in KwaZulu-Natal. Mr Mncube visited his village leader, Inkosiu Shandu, and asked him if he could bring the Grade 6 students to his kraal. He also asked the village leader if he would tell a traditional tale to the students. This was agreed.

A day before the appointment, Mr Mncube told the class that he would be taking them out on a visit to the village leader's home to listen to the traditional tales of the amaZulu. In order to prepare his students, he conducted a brief discussion about their experiences of story and what they thought they might encounter the next day and made a mind map of their ideas on the chalkboard.

The tale that the village leader narrated is set out in 'The snake chief' below. It had an important message and lessons to be learned. Mr Mncube, as he listened to the story, was already preparing questions that he would ask the class about the story in order to bring out these lessons. Because the village leader was an old, respected man, he was also able to impress on the children the rich sense of ancestry attached to the story in Nguni tradition – it had been handed down over time, with its meanings reinforced



from generation to generation. Mr Mncube realised that he had made a wise choice in actually bringing his students to the storyteller's home, rather than simply telling them the story himself.

### **The snake chief**

#### **This is a Zulu folk tale.**

Nandi was very poor. Her husband was dead and she had no sons to herd cattle and only one daughter to help in the fields.

In Summer, when the umdoni trees were full of creamy flowers, she and her daughter dug for amadumbe to eat with their maize porridge. But in Autumn, she collected the umdoni berries, purple and sweet, and gave them to her neighbours in return for strips of dried goat meat or calabashes of thick creamy sour milk.

One hot day, Nandi went to the river as usual to gather the purple berries, but she found nothing.

Just then she heard a loud hissing. Looking up, she saw a great green-grey snake wound around the dark red trunk of the tree, his head swaying among the branches. He was eating all the berries.

'You are stealing my berries,' she called. 'Oh snake, you are stealing all my berries. What will I have to exchange for meat if you take all the fruit?'

'What will you give me in exchange for the umdoni berries?' he hissed. 'If I fill your basket, will you give me your daughter?'

'Yes,' cried Nandi, 'I'll give you my daughter this very night. Only let me fill my basket with the purple fruit.'

But once her basket was full, she began to tremble at what she had promised. How could she give her daughter to such an ugly creature? She must make sure that snake did not find out where she lived. She must not go straight home lest he were watching.

At last she reached her hut and cried out to her daughter, 'My child, I have promised you to snake in return for this basket of purple fruit.' And she burst into tears.

Meanwhile, snake had followed Nandi to her hut. Just as she burst into tears, snake hissed at the entrance to her hut.

'No! No!' cried Nandi. 'I did not mean my promise.' The young girl looked up fearlessly and said, 'A promise is a promise, Mother.' She put out her hand and stroked his grey-green head. She gave snake food and made a bed for her snake master. During the night, Nandi heard voices, one deep and strong. She silently crept from her skin blankets and she saw a handsome young man, tall, brown and strong sitting with her daughter. Surely he was a chief's son or a chief himself. Her daughter was making a bead necklace, weaving a wedding pattern with the multicoloured beads. The young man was talking gently and lovingly to her as she worked.

Nandi looked at the folded blanket where snake had slept and on it lay a long coiled green-grey skin. She snatched the skin and threw it into the fire that still burned low in the middle of the hut.



'Now the spell is broken,' spoke the snake chief. 'For a virtuous girl took pity on me and a foolish old woman has burned my skin.' But in spite of his harsh words he smiled gently at Nandi.

*Adapted from: Pitcher D. in Gordon M Ed, Madiba Magic: Nelson Mandela's Favourite Stories for Children, Tafelberg 2002, page 26*

## Activity 2

Before the lesson, gather as many written or oral versions of local traditional stories as you can find. There are some examples below.

### Stories and fables from across Africa

#### Thunder and Lightning

A long time ago, both thunder and lightning lived on this Earth, among the people. Thunder was a mother sheep and Lightning was her son, a ram. Neither animal was very popular with the people, for when somebody offended Lightning, he would fly into a furious rage and begin burning whatever he came across. This often included huts and corn bins, and even large trees. Sometimes he damaged crops on the farms with his fire and occasionally he killed people who got in his way. As soon as Thunder knew he was behaving this way, she would raise her voice and shout at him as loudly as she could, and that was very loud indeed. Naturally the neighbours were very upset, first at the damage caused by Lightning and then by the unbearable noise from his mother that always followed his outbursts. The villagers complained to the king on many occasions, until at last he sent the two of them to live at the very edge of the village, and said that they must not come and mix with the people any more. However, this did no good, since Lightning could still see people as they walked about the village streets and so found it only too easy to continue picking quarrels with them.

At last the king sent for them again. 'I have given you many chances to live a better life,' he said, 'but I can see that it is useless. From now on, you must go away from our village and live in the wild bush. We do not want to see your faces here again.' Thunder and Lightning had to obey the king and agree to abide by his ruling; so they left the village, angry at its inhabitants. But still there was plenty of trouble in store for the villagers, since Lightning was so angry at being banished that he now set fire to the whole bush, and since it was the dry season this was extremely unfortunate. The flames spread to the little farms of the people, and sometimes to their houses as well, so that they were in despair again. They often heard the mother ram's mighty voice calling her son to order, but, since it was always after the fact, it made very little difference. The king called all his counsellors together and asked them to advise him and, after much debate, they hit on a plan. Why not banish Thunder and Lightning completely away from the Earth, and send them to live in the sky?

And so the king proclaimed. Thunder and Lightning were sent away into the sky, where the people hoped they would not be able to do any more damage. Things did not work out quite as well as they had hoped, however, for Lightning still loses his temper from time to time and cannot resist sending fire down to the



Earth when he is angry. Then you can hear his mother rebuking him in her loud rumbling voice.

*Adapted from original source: <http://www.gateway-africa.com>*

Ask students to brainstorm as many traditional tales as they can remember hearing.

Next, divide the class into groups of four. Ask each group to identify a story that was identified in the brainstorm and to write up and illustrate a fuller version of the story.

Provide guidelines, such as:

- What is the name of the traditional tale?
- To which society/community/clan does the tale belong?
- What message(s) does the tale provide?
- What lesson(s) can be learned from the tale?
- Who normally tells the story?
- Who is the intended audience and why is this audience targeted?
- What time of the year is the tale normally told? Why?
- What time of the day is the tale normally told? Why?

The stories that are produced can be bound together as readers for use in the school. It may even be possible to publish them in the community or beyond.

Having a good understanding of local traditional tales is a good base for your students to devise their own stories. Listening to stories told with animation and which use words to gain effect will give them confidence to take risks in their writing and produce more creative tales.

### 3 How to write a good story

The purpose of this part is to use local resources to develop your students' skills in writing their own stories and poems. You will also develop your skills in planning learning activities that allow students to participate fully. In **Teaching Example 3**, a teacher uses a radio programme to stimulate interest about writing stories and **Activity 3** uses pictures as the stimulus. With younger students, you might want to encourage them to draw pictures for their story; it is important that all students feel able to tell a story, rather than struggle with spellings and handwriting.

#### Teaching Example 3

While listening to the radio, Miss Sala, a social studies teacher, heard that on the coming Friday there would be a programme in which a renowned local storyteller and writer would be interviewed.



Fortunately, the programme was at a convenient time during the school day, so Miss Sala came to school with her radio. She also prepared to tape-record the radio programme.

Before the programme started, she discussed with her students what they knew of the writer, and what they expected she would be talking about when she was interviewed.

During the programme, the writer explained about the structure of a story, the theme/main idea, the characters and setting. She gave some advice on the process of writing. She also spoke about what inspired her and where she got her ideas from.

When the programme was over, Miss Sala asked the following kinds of questions to promote discussion among her students:

- What can you learn from this writer that could help you become a better writer yourself?
- What inspires her? Are there things in your life or community that you want to write about?
- What is the structure and content of a good piece of writing?

She asked the last question at the end because she wanted it to be inspired by the bigger issues.

At the end of the lesson, she said that with their next piece of creative writing, she would like students to try some of the techniques suggested by the storyteller. She would then mark it by looking for evidence they had considered these issues and give careful feedback.

### Activity 3

- Present students with a stimulus to draw out ideas about life, community or broader society.
- Using 'Using pictures as a stimulus for story writing' to guide you, discuss the picture your class has chosen.
- Ask each student to write their own version of the story. Encourage them to add in their own ideas and scenarios as they write. For example: What happened before that led to the picture and what happens next?
- The next day, students read their stories to each other in small groups and each group chooses one to read to the whole class. Remind them of how important it is to use their voices and props if possible to help them.

You might want to put all the stories into a class book.

#### Using pictures as a stimulus for story writing

Pictures or photographs can be a very good stimulus for creative writing for your students. Discussion focused around a picture can stimulate ideas before students write their own stories or poetry.

You can discuss a chosen picture or photograph with the whole class or have



more copies of the same or different images so that they can discuss them in groups. If you have a large class, you may need to have many more images or work with half the class at a time while the other half of the class is working on another task.

The following questions can be used with any picture to stimulate ideas and imagination. You can write the questions on the chalkboard and discuss them as a class or give each group a set of the questions and ask them to report back after a few minutes. Some of these questions will not be useful with every picture. You will have to select those that fit your purpose best and maybe add your own questions to the list or ask your students to raise questions about the picture.

1. What do you think is happening in this picture?
2. What do you think it is called?
3. What catches your interest in this picture? Why?
4. What do you like in this picture?
5. What do you not like in this picture?
6. What is the story around this picture?
7. What led up to this picture being painted / photograph being taken?
8. What do you think will happen next?

Record students' answers on the chalkboard so that they can look at these as you set them the task of writing a story, but encourage them to be creative and use their own ideas.

Encourage them to think what happened before the picture and maybe start their story there.

Practise the whole song until everyone is happy and then perform it to another class or at an Open Day.

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## Life Skills: Taking responsibility for our environment

- 1 Local water use
- 2 Using stories to understand environmental issues
- 3 Taking action on environmental issues

### Key Question for the teacher:

How can you gather data to develop students' learning about the environment?

**Keywords:** environment; data gathering; assessment; diaries; real-life stories

### Learning Outcomes for the Teacher

By the end of this section, you will have:

- used real-life stories, data gathering and diaries to develop understanding of environmental issues;
- planned, carried out and reflected on an action on a local environmental issue;
- assessed the learning of the class and the success of the project.

## Overview

LA major issue across the world is the impact that people have on their environment. If we use up or misuse resources and pollute the environment we have a negative effect on wildlife and crops, and we run the risk of damaging the world for future generations.

As a teacher, and a responsible citizen, you need to be aware of environmental matters and act as a role model for your students as well as helping them to understand the issues. You can do this best by giving them activities that involve gathering information about the environment, both locally and more widely, and using what they find out to think about the consequences of different actions.

There are many ways to do this. This first part of the section focuses on gathering information from your students' own experiences to explore the concepts and their own responsibilities and rights.



# 1 Local water use

Learning about some of the complex concepts about the environment needs you as the teacher to break down the ideas into smaller parts and build up the picture in a logical way. Students find this easier if you take think about the ideas they already have and you use the local environment to show them how these ideas relate to their situation.

## Teaching Example 1

Mrs Namhlane in Nigeria was starting a topic on the local environment with her large Primary 2 class, looking at the importance of water in everyone's life.

To stimulate her students' interest in the topic, she decided to set up a class research project. First, she asked them to get into groups of six to eight people who lived in the same part of the community and told them that there were three people coming into school next day – one from each part of the community – to talk about how they got and used water. She asked them to think about and write down questions to ask. These area groups shared their questions together so that each area group could check they had thought about all aspects.

The next day each visitor talked, either in the classroom or outside under a tree, with students from their area. The groups asked their questions in different ways – in one group different students asked one question each, in another group a girl and a boy asked all the questions and the others took notes.

After the visit, students were asked to list three important things they had found out and report to the whole class. Mrs Namhlane asked each group in turn to tell what they had found out but not to repeat any answer already recorded on the board.

They then discussed the problems that there were about water and thought of possible solutions.

- Long distances to travel to obtain water.
- Leaving younger children behind to get water.
- Students out of school to collect water.
- Is the water clean and safe?
- Size of containers to carry water and weight of water to carry over long distances.
- Time taken to obtain water stops people doing other things.
- The water collected may be contaminated by poor sanitation and animals' use.
- Open to infection by water-borne diseases.
- Drought can restrict access to clean water.



- Lack of infrastructure e.g. pipes and storage containers to capture rainwater etc.
- Lack of systems to purify water.
- Lack of education about ways to use and keep safe natural water resources.
- No sustained access to water.

### Activity 1

Ask your students to keep a 'water diary' for one week. They will record (perhaps on a wall chart) how much water they use and what they use it for.

After a week, ask them to work in groups and to list all the uses in their group and then put them in the order of which activities use most water and which use least. Display each list on the wall and allow them to read each other's lists before having a final session together discussing the issues about water in their area.

**You may want to consider questions like: Where does our water come from? Does everyone have access to water? Is our water clean and safe? How could our water services be improved? How can we help?**

You could also link this activity to number work (by looking at the data – the amount of water used), to science (why water is essential to life) and to social studies (the problems of providing water in some parts of Africa).

## 2 Using stories to understand environmental issues

Drawing is a useful way to explore students' ideas about any topic. It allows them to show their ideas without having to speak aloud or be able to write. It is especially useful with young students and provides a way for them to talk about their ideas. The drawings do not have to be of a high standard but have to tell a story or show an idea.

Using stories is another way of encouraging students to think more deeply about a problem. It removes the focus from the individual and allows students to talk more openly. Stories can also provide a wider perspective for students and give them inspiration. Teaching **Example 2** and **Activity 2** show how you could use both techniques in your classroom.

### Teaching Example 2

Mr Ngede read the story below to his class to stimulate their ideas about the Earth and its resources.



### The story of the selfish farmer

There was once a young farmer, who had a wife and two children, who lived in a small village. The farmer had inherited his farm from his hardworking grandfather whom he loved. While being sad at the death of his grandfather, the farmer was pleased to be his own boss and own all the land.

He was a hardworking young man and he maintained the farm as well, if not better, than his grandfather. He had learned a lot from his grandfather but also had learned well at school and read all about different ways to preserve water and tend the ground, which increased his crops. However, he was not like his grandfather in that he would not share his ideas or extra produce with other farmers and growers in the village.

The villagers were surprised when they went to ask for some seeds or advice to be told to get off his land. His wife was not happy about this but respected his views. The villagers watched what he did and some tried to copy the things he did but without as much success. Others just laughed or moaned about what he was doing.

One very dry season, the crops in the village did not do well. There was little water as the stream had dried up and there was a long walk of over six kilometres to the next source of water, which meant that only water for drinking was brought back.

The selfish farmer, however, had plenty of water and food, but did not help villagers who came to seek help. His wife begged him but he did not change his mind. He had put up guttering and sheets to catch the rainwater and stored this in big drums that he had collected so when the drought came he was able to water his plants, which grew as well as ever.

As it got hotter and hotter and drier and drier, people's crops began to fail and many were hungry. The wife tried to persuade her husband to help the villagers. The children tried to persuade their father, but he would not listen. He said he had worked hard and it was his and the others were lazy or had not planned ahead.

However, one day, a very thin and ragged man came to the farm to ask for food for his ill wife. The farmer shouted at him to go away but his wife stopped him and said: 'Don't you recognise your cousin?' The farmer was shocked at how thin and old his cousin looked. The cousin explained how he'd tried to save water but failed, and so his crops failed.

The farmer told him what he could do next time. But his wife said he is too weak to do this unless you give him and his wife food. The farmer relented and gave the cousin food. The cousin returned a week later saying his wife was getting better and could he have more food. The farmer was going to say no but his wife told him that they were so hungry it would not be enough to give just one lot of food. The farmer gave the food and over the next few days he slowly changed his ideas as he thought about how selfish and thoughtless he had been to his grandfather's memory and to his neighbours. So he asked the villagers to his farm and shared his food with them and promised to help them prepare better for the next crops.



1.	How many different ways can we use the land? Make a list.
2.	Why is it important to look after the land?
3.	Why are some people more selfish than others? Why should we share our land?
4.	How can we encourage people to share? Should we share everything?
5.	Do we look after our land well?
6.	Who else do we share our land with?
7.	How can we look after the land better?
8.	What can we, as a class, do to look after the school land?
<p>He then gave his students a small piece of paper and asked them to draw a picture of 'why the farmer was selfish'.</p> <p>He explained the idea carefully and encouraged them not to copy, but think of their own ideas. As the students finished, they stuck their pictures on the wall. Mr Ngede asked some students to say what their drawings were about and he tried to guess what some were. The students enjoyed this very much.</p>	



Next, he led a discussion about how important it was for everyone to look after the land. They listed together on the board how people in the local community used the land and looked after it.

He then asked them some questions, which they discussed in groups. For example:

- How did the people use the land?
- Did they look after it?
- In what ways could the farmer have looked after his land?
- Who did the work?
- Was the land productive? If so, why? If not, why not?
- How could they improve the way they looked after the land?

As a class, they thought about the questions and shared some ideas.

At the end of the day, Mr Ngede asked the students to look on their way home at all the different ways the land was being used and to come back the next day with any that could be added to their list.

## Activity 2

This activity looks more widely at the importance of looking after our environment. Sebastian Chuwa tells the story of a Tanzanian man who has inspired communities to come together to solve environmental problems. Read this before you plan your lesson.

Tell your class this story. On the wall have a number of words spelled out clearly, for example 'conservation'.

After you have read the story, discuss these words and their meanings.

Ask your students, in pairs, to imagine themselves as someone like Sebastian Chuwa. What particular environmental issue would they like to do something about? How would they do this? Move around the class and ask pairs with good ideas to explain their ideas to the rest of the class.

Ask them to look closely at their local environment as they go home and see if there are other issues they had not noticed before and share these the next day. Make a list of their five favourite issues

Sebastian Chuwa is a man with a vision for his country, his people and the future generations who will inherit their legacy. For 30 years he has been actively studying environmental problems in his east African homeland of Tanzania, and the solutions he has found offer results that benefit not only the land, but all the populations that depend on it for life and sustenance. His methods are based on the two primary objectives of community activism – organising people to address their problems at a local level, and youth education – influencing the teaching of conservation in schools, beginning at the primary level.

He has inspired large groups of community volunteers to come together to solve not only their environmental problems, but problems of poverty alleviation,



women's empowerment and youth employment within the area of Kilimanjaro Region in northern Tanzania. His efforts on behalf of African blackwood have created the first large-scale replanting effort of the species. Because of the establishment of multiple community nurseries and numerous cooperative projects geared towards reforestation over the past decade, in 2004 the ABCP and the youth groups associated with Sebastian's work celebrated the planting of one million trees. The ever-expanding nature of his work has given him and his community a reputation as leaders in the field of Tanzanian conservation.

### **History of the African Blackwood Conservation Project**

In 1996, James Harris, an ornamental turner from Texas, USA, and Sebastian Chuwa founded the African Blackwood Conservation Project (ABCP), to establish educational and replanting efforts for the botanical species *Dalbergia melanoxylon*, known as mpingo in its home range of eastern Africa. The wood of mpingo is widely used by African carvers and by European instrument manufacturers for the production of clarinets, flutes, oboes, bagpipes and piccolos. Because of overharvesting and the lack of any efforts directed towards replanting the species, its continued existence is threatened.

In 1995, James Harris, who uses mpingo in his craft, saw *The Tree of Music* film in the US and determined to do something for the conservation of the species. He made contact with Sebastian by mail and proposed a joint effort: he would launch a fundraising effort among woodworkers, musicians and conservationists of the western world, and send the money to Sebastian to start tree nurseries in Tanzania. The project was enthusiastically endorsed by Mr Chuwa. Since that first contact, the ABCP has become a leading force for mpingo conservation in northern Tanzania, founding nurseries for the production of large numbers of mpingo seedlings and raising awareness about the importance of the species internationally.

### **Conservation at Ngorongoro**

Sebastian Chuwa's childhood home was on the southern slope of Mt Kilimanjaro at 4,900' elevation. He learned to love nature at an early age from his father and mentor, Michael Iwaku Chuwa, who was a herbalist. Together they would take long forays into the forests to collect plants for the remedies his father used in his work. On these expeditions over many years he learned the names of the plants and trees of Kilimanjaro's abundant flora. His love for the natural world continues to this day and is the guiding force behind his work.

After finishing secondary school, he studied at Mweka College of Wildlife Management and after his graduation was hired as a conservator at Ngorongoro Conservation Area. During his 17 years of employment there, he studied and catalogued the plants of the area, discovering four new species (of which two are named in his honour) and assembling a herbarium of 30,000 plants at the visitor's centre for the use of visitors and staff personnel. Because of his considerable knowledge about the flora of the area, he worked with Mary Leakey at nearby Oldavai Gorge, identifying plants in the area of the Leakey early hominid discoveries. At Ngorongoro, he also instituted a successful protection programme for the endangered black rhinoceros, which was duplicated in other African locales.

Ngorongoro Park is a co-management area where the Maasai communities still



live with their cattle herds. During his employment at the park, Sebastian worked closely with the Maasai, studying their medicinal remedies and setting up tree nurseries for their use. He also set up the first youth conservation education programme in Tanzania for Maasai children, focusing on practical activities like establishing tree seedling nurseries and replanting programmes. This club was so successful that it became the blueprint for a nationwide movement, called Malihai Clubs of Tanzania (see below), established in 1985, with offices at Ngorongoro Park headquarters in Arusha and now operating nationwide with about 1,000 clubs.

#### Offices and awards

In 1999, Sebastian was honoured with an appointment as chairman of Kilimanjaro Environmental Conservation Management Trust Fund by the Regional Government Authority of Kilimanjaro Region, Tanzania. This office automatically makes him a member of the Regional Environmental Conservation Committee. His valuable contributions to environmental conservation will be amplified through this position.

*Adapted from: <http://www.blackwoodconservation.org>*

## 3 Taking action on environmental issues

As a teacher, you need to help students understand their responsibility to their environment in ways that stimulate their interest and develop a caring attitude towards it. In Activity 3, a poster campaign is used as a stimulus and in Teaching Example 3, a small-scale project is described that shows how different groups can interact in order to make a difference.

As the students work through such a project, your role is to be well prepared to anticipate some of their needs and provide resources to support their learning. If you have a large class, you will have to think how you can involve all your students and perhaps divide the tasks up between groups. With younger students, you may have to plan to do something on a much smaller scale and involve some members of the community in helping you more.

### Teaching Example 3

A class in Ngombe school in Iringa decided to launch a 'clean-up' campaign. Their teacher Mrs Mboya had been working on a cross-curricular theme with the title 'looking after our land'.

Having spent one morning walking around the school and the area just outside it, Mrs Mboya and her class discussed what they had seen. They listed everything they liked about the area and also those areas or things they would like to change or improve.

They decided they could work on two small areas to clean up the environment – the school playground and the local stream. The class was divided into two groups with two teams working in each area. The teams discussed what they could do and then shared their ideas with their



other team. They agreed who would do which tasks and then each team worked out its own action plan for the week, around school hours.

The class carried out the clean-up over a one-week period. They then made a display in the school hall that showed:

- the amount and type of material collected in the clean-up;
- their plans for keeping the environment attractive and litter-free in the future;
- how to dispose of the litter, including recycling and reusing some of it and burning or burying some.

The assembly went well and many students from other classes were pleased at the work done and helped to keep the school area tidier.

### Activity 3

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This activity builds on your students' raised awareness of litter and waste management and takes a step-by-step approach to learning through action.

**Step 1** – Ask the class (perhaps working in pairs) to identify litter and waste issues in and around the school. Select one issue (probably the one that was mentioned the most).

**Step 2** – Work with the class to design a 'plan of action'. To do this, ask each pair to suggest ways of solving the problem. Make sure that the agreed plan of action you develop is realistic and can be attempted by the class. Give out tasks to groups of students.

Make the plan into a large poster with deadlines that can be displayed on the class walls.

**Step 3** – Take action: this might involve days or months of work but make sure each group keeps a record of what they do, when and in which order.

**Step 4** – As they complete each part of the action plan, ask them to record their progress on the poster.

**Step 5** – On completion, reflect on the success of the action with the class. What went well? What did they learn? What were the problems? What could they do to extend this idea? Is the area staying clean?

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