

Science lessons for Grade 1

Lessons in this section

Life science

- 1 Looking at green plants

Materials

- 2 Classifying household objects

Physical processes

- 3 How things move
- 4 A touch walk

Resource sheets for the lessons

Using these lesson plans

These sample lessons for Grade 1 are suitable for use with a whole class. The lessons are single examples to illustrate different teaching and learning activities. They are not intended to be taught as a sequence. They are drawn from different topics and points in the teaching year to show spread rather than sequence.

The objectives for the lessons are drawn from the standards for Grade 1. The relevant standards are shown in the lesson plans.

The lesson plans indicate any safety issues relevant to the lessons. They also provide equipment lists and any short- and long-term preparation required by the lessons. Some of the plans include notes that provide additional information relevant to the teaching of the lesson that may not be readily accessible elsewhere.

Most of the lessons are organised in three parts: an introduction to the lesson, a main activity, and a final phase to help students to reflect on the lesson and consolidate their learning. As part of the introduction, you should outline the purpose of the lesson, drawing out for students what they will learn and how this builds on previous work. In the final part of the lesson, you will need to establish the key learning points, what students need to remember and what they will go on to learn next. There is no expectation that students should copy out the key learning points in their exercise books.

The lesson plans do not include homework tasks because the lessons are single examples taken out of sequence. If your school's policy is to provide homework for Grade 1, you will need to provide this, since homework is an important part of a lesson.

Each lesson plan has enough material to support about 45 minutes of teaching. You may need to supplement the activities with simpler or more challenging tasks if the students in your class have a range of attainment. You could choose from activities in textbooks or from your own resources. If you wish, different tasks can be given to different groups of students, according to their needs.

For some classes there may be too much material in the lesson plan for 45 minutes. In this case, you could designate one of the activities in the lesson as homework, or carry it forward to the next lesson. Be selective about which activity to cut – it does not have to be the last one merely because it comes at the end.

Two of the lessons involve work outside the classroom. One of these includes a trip into Doha and it is expected that such a trip will provide learning experiences in other subjects as well as science. The work suggested around the trip to the port area of Doha cannot be done in a single lesson as some of it describes the preparation and the remainder describes possible follow-up work.

1.1

Looking at green plants

Objectives

- Know that green plants have roots, stems and leaves.
- Describe how things feel and appear.

Preparation

You will need a large pot plant for the introductory activity and enough other pot plants so that each group of students has one to study. A number of different plants should be available so that different groups can study several plants. You should also provide a wide range of illustrations of green plants, including some of trees. Some of the work in this lesson could be done outdoors in the school grounds or area around the school. It could also form an activity on a field excursion. Appropriate arrangements will need to be made.

Safety

In this lesson students will handle plants. It is important that you know if any student is allergic to the plants you have selected for study and that you take appropriate action. Students will also come into contact with soil so you should make sure that they wash their hands thoroughly after the activities.

Introduction

Vocabulary

leaf
root
stem

Looking at a pot plant

Show the class a large pot plant with an obvious stem and many green leaves. Use this as a focus to ask the class about green plants.

- Q (pointing to the whole plant) **What is this?** (establish that it is a plant and not a flower which is a part of a plant) **Can you describe it?**
- Q (pointing to a leaf) **What is this part? Can you describe it?**
- Q (pointing to the stem) **What is this part? Can you describe it?**
- Q **What else can you see?** (plant may have flowers or fruits)
- Q **Does the plant have any parts that you cannot see** (students may know that plants have other structures at other times that are not present on the specimen shown as well as knowing that plants have roots in the soil)

You should now remove the plant from the pot to reveal the roots.

- Q (pointing to the roots) **What is this part? Can you describe it?**
- Q **Can you use the words *stem*, *leaf* and *root* to describe this plant?** (solicit several descriptions and encourage students to incorporate quantitative and qualitative factors, such as estimates of number and size of leaves, height of stem, colour of stem and leaves, and shape of leaves)

Key words such as *stem*, *leaf* and *root* should be repeated, as should important aspects of students' descriptions. This could be supported by a simple diagram.

Main activity

Resources (per group)

A green pot
Some pictures of green plants

Describing green plants

Students should work in groups of about four.

Each group should be given a small pot plant to examine and talk about. Encourage students to touch and smell their plant as well as look at it. They should remove the plant from the pot to look at the roots (you may need to have some old newspapers

to put on the tables). They should use appropriate describing words as well as the science words introduced at the start of the lesson. They should be encouraged to construct quantitative as well as qualitative descriptions.

Move round the class and ask each group to tell you about their plant.

As you talk with students you should ask them to point out the roots, stem and leaves and describe the main features of their plant. You should ask questions such as:

- Q Can you describe your plant for me?**
- Q What is the largest part of the plant?**
- Q Which part is the stem?**
- Q What do the leaves look like?**
- Q How do the different parts feel?**
- Q Does your plant have a smell? Can you describe the smell?**

You should also ask students to compare their plants with the pictures of plants that you have provided. Encourage them to talk about similarities and differences that they can see. Again, move round the class and talk with students. Ask questions such as:

- Q How is your plant similar to the ones in these pictures?**
- Q How is your plant different from the ones in these pictures?**
- Q How are the plants in the pictures different from each other?**
- Q Can you show me the roots, stems and leaves of the plants in the pictures?**

If time allows, students could exchange plants and compare their observations of two plants.

Bring the activity to an end by asking each group to think about how they would describe their plant so that someone could recognise it. Their description should include information about one or more of the leaves, stem and roots of their plant.

Consolidation

In the final section of the lesson ask one or more members of three or four groups to bring their plants to the front of the class. Label each plant but do not allow the rest of the class to know which plant belongs to which group. Now ask group members to describe their plant so that the class can identify which plant they are describing. Get the class to identify the plants from the descriptions. This can be repeated for as many plants as time allows.

Discuss students' descriptions and why class members were able or unable to identify their plant. Make sure that students know that green plants have roots, stems and leaves and that they can identify these. Involve as many students as possible in this consolidation activity and encourage the use of a wide range of appropriate descriptive words.

Other tasks

Students could be asked to do a drawing or painting based on their plant. They could also do tracings of leaves or make leaf prints. They could also make a model of a plant with roots, stem and leaves. On an outdoor excursion, students could identify the parts of plants and describe these.

Summary for students

- Green plants have roots, stems and leaves.
- Roots, stems and leaves can vary in size, shape, colour, feel and smell.
- Good description allows objects to be identified.

Notes

This lesson should help the development of students' communication skills.

1.2

Classifying household objects

Objectives

- Name a number of common materials and show some of the ways we use them.
- Classify common objects according to the material from which they are made.
- Classify objects into groups according to common characteristics.

Preparation

Collect a supply of common household items that are made mainly from a single material. For example: metal items such as cutlery, pans and tools; plastic items such as food storage boxes and plastic cups; wooden objects such as a cutting board and wooden spoons; ceramic objects such as cups and plates; paper items such as books and magazines; fabric items such as dishcloths and clothing; rubber items such as rubber bands and rubber gloves. This collection should be displayed near the front of the class; it can be used for many lessons. You could also assemble a display of drawings or photographs of common objects linked with their names. You will need a word board.

Introduction

Vocabulary

bendy, hard
rough, smooth
shiny, dull
soft, hard
warm, cold

This lesson will be part of a series on the uses of materials. Students will be aware of the names of common materials (such as metal, wood, plastic, paper, cloth, rubber) and of some of the words that describe properties that can be readily detected using the senses of sight and touch (such as strong, shiny, bendy, rough, smooth, cold). This lesson begins to link properties to uses through some classification exercises.

Start the lesson by introducing common objects in a way that captures students' interest, such as playing 'I spy ...' or 'Brown bear, brown bear what do you see?' Hold up each object and ask questions about them.

Q What is this called?

Q What is this made out of?

Q What do we use it for?

Repeat the process with several different objects.

Ask further questions to explore again the differences in properties between materials.

Q What does this feel like? (hand the object around)

Q What does this look like?

Remind the class, using their answers, of pairs of descriptive words that have opposite meanings (these may be on display from an earlier lesson).

Ask the same kinds of questions but this time get the class to identify objects that have particular properties.

Q Find me an object made of metal / plastic / paper / etc.

Q Which of these objects will feel cold when I touch it?

Q Find another object made out of the same materials as this one.

Main activity

Resources (per group)

- Objects from the display described in 'Preparation' – about 6 per group
- Three or four hoops, loops of string or suitably sized containers

Sorting objects

Students should work in groups of four to six per table.

Give each group of children about six objects from the display and ask them to sort their objects by putting similar ones together in the hoop (or loop of string or container). They should decide which objects go where, but help any groups that are unable to make a start on the activity and correct any major errors in their work. Ensure that by the end of the session all groups have classified the objects in one way or another: by the way they are used, by what they look or feel like, by the material from which they are made, or by some other obvious characteristic. The names of the objects should be on the word board.

After allowing sufficient time, go around the class and ask questions to the whole class about each method of classification. Ask children to look at the classification of one group and comment on it. Ask more difficult questions first, followed by simpler ones if the class cannot answer them.

Q Why did Hassan and his friends put all these things together?

Q What are all these things made out of?

Q What are all these used for?

Repeat the process in a similar but varied way for all the groups.

There may be some errors in the classifications. If so, ask the whole class to help correct the error. There should not be many errors at this stage; major ones should have been corrected by you when you were assisting them.

Consolidation

Ask students to draw all the objects in a group in their books and to write the correct name for each object next to the drawing. Ask them to write a sentence explaining the classification underneath. This can be in the form of a sentence that you give them with a key word missing, for example:

These are all used for _____.

All these are made from _____.

All these objects feel _____.

Provide a set of possible missing words on cards or on the word board and ask students to find the correct one and copy it.

Before the end of the lesson students should return the objects to the correct place in the display.

Instead of drawing in their books, ask some class members to make larger drawings of the objects on display paper. These can be labelled with words written on card. The labels can be removed and replaced later as a revision exercise. This work will become part of the display of different materials set up in the class.

End the lesson with a variation of 'I spy ...', referring not to the name of the object but to the material from which it is made: 'I spy with my little eye, something made from p' (for plastic, or 'w' for wood, etc.).

Summary for students

- Familiar objects look and feel different.
- Objects look and feel different because they are made from different materials.
- Different objects can be made of the same material.

1.3

How things move

Objectives

- Recognise that objects move in different ways.
- Use words to describe how things move.
- Observe and compare different movements.

Preparation

This lesson will involve a trip to the waterfront. It is expected that the trip will be planned with objectives from other subjects, such as Standard 5.1 in the life science strand on habitats. Investigate the waterfront before the trip and identify places where different kinds of movement can be seen, such as by the sea (e.g. waves, fish, sea birds), at the harbour (fishing nets, boats, people) and on the Corniche (traffic, palm trees). Be prepared at any time to note a special event involving movement, such as an aircraft taking off.

You will arrange to use the school bus. You will also need a digital camera with a fully charged battery and empty CF card. Prepare a movement word board.

Safety

Follow your schools' regulations governing taking children out of school.

Introduction

This is a sequence of three linked teaching activities: preparing for a field trip, working on the field trip and following up the field trip.

Preparing for the field trip

Ask students to move in different ways and to watch each other moving. Ask some to describe the movement. For example, ask one student to move towards the door. Ask general questions to start with and then become more focused. Write on cards any words that indicate direction (e.g. up, down, forwards, backwards) and put them on the movement word board.

- Q What is Ahmad doing?**
- Q How is his body moving?**
- Q What is happening to his arms?**
- Q What other parts of his body are moving?**

Ask a student to carry a box across the room, stop and then drop it. This time ask questions that focus on the *changes* in direction of movement and on how fast or slow the movement was.

- Q What is Najla carrying?**
- Q How is the box moving when she is walking?**
- Q What happened to the box when she stopped? And when she dropped it?**

Make a note of any more words used (e.g. slower, faster, fell down).

Ask the students to draw something that moves. Help them write a sentence (or a word) underneath the drawing that describes the movement. Write example sentences on the board.

Tell students that they will be going on field trip and that they should look at the different ways things move. Note that children tend to think of movement in terms

of something moving from place to place and they often fail to notice other kinds of movement, such as the up-and-down movement of things on water.

Main activity

Resources

Digital camera
Computer and printer
Notebook and pencil

The field trip – finding out how things move

Students should work in groups of three or four.

Take the students to the first observation place that you have chosen. Ask them to work in their previously assigned groups and look around them at the different ways things are moving. Then ask each group to report briefly on just one kind of movement that they have seen. Try to get each group to report a different movement. If necessary, help the reporter (or ask the class to help) to get the verb that best describes the movement. Make a note of each movement, and the verb used, for the follow-up work.

Allow each group to take one photograph of the object that is moving. (One photograph per group over the two or three observation places will be sufficient, so not all groups will use the camera at each stop.) Give help as needed with the use of the camera. Ensure that the camera strap is always around the neck of the photographer when the camera is in use.

Consolidation

After the field trip

Make prints of the photographs before the lesson.

Ask questions directed at recalling the different kinds of movement that the class reported. Encourage students to use appropriate movement verbs and add the verbs to the movement word board. Write some of the phrases on the board, for example:

The aeroplane flew fast.

The fish wriggled.

The palm tree leaf waved.

Ask each group to prepare a caption for their photograph. Put the photographs and the captions on the display board.

Ask the class to draw more pictures of moving objects in their books and help them write a descriptive sentence, or a word describing the movement, under it. They should draw objects they saw on the field trip.

Other tasks

Resource 1.1 shows some examples of ways to help students learn to use words to describe the movement they have seen. Prepare some exercises like those described and give them to the groups with appropriate instructions. Move between the groups helping with difficulties.

Summary for students

- Objects move in many different ways.
- Movement can be fast or slow and in many different directions.
- There are many different words to describe how things move.
- We can do things to objects to make them move and to change the way they are moving.
- We use our sight to observe how things move.

1.4

A touch walk

Objectives

- Use sense of touch to detect heat.
- Describe the important physical characteristics of common materials.
- Use all their senses to collect evidence.
- Describe how things feel.

Preparation

Look around the school environment for different materials and surfaces that students can safely touch and feel. Identify, if possible, several places within the school grounds where there are a variety of different materials, both artificial and natural.

You will need a digital camera with a fully charged battery and empty CF card.

Prepare a collection of words on cards that describe the feel of surfaces that can be touched; see the suggested vocabulary list below.

Provide paper wipes for students to clean their hands after the activity.

Find the storybook *Rosie's walk* in the library (English medium) or an equivalent Arabic medium storybook about a journey that looks at objects.

Safety

Follow your school's safety rules for working outside the classroom. Do not select surfaces to study that could be unsafe and instruct students not to touch anything without your permission.

Introduction

Vocabulary

bumpy
gritty
hand, cheek, skin
hot, cold
smooth, rough
soft, hard
touch, feel, sense
wet, dry

Show students the list of words you have made, placing each of them on the word board after you have shown it and said the word. After each word, challenge the class to find a surface that feels like the word.

Q Who can find something near them that is soft / hard / cold / rough / etc?

Q How do you know it is soft / hard / cold / rough / etc?

This should lead to the words *touch* and *feel*. Explain that touch is another one of our senses. Question the class further to identify the parts of the body used to touch things.

Q How do we touch things?

Q What part of our bodies do we use to touch things?

The most likely answer is the hands, but if you ask how they like touching a furry object someone might suggest using their cheek, which is particularly sensitive to touch. Someone might realise that any part of our skin can be used.

Recall earlier work on the senses to place the sense of touch in perspective. It is a good idea to have a table on the display board with two columns that list the sense and the organ used. Refer to the table when the following questions are correctly answered.

Q What do we use our eyes for?

Q What part of our body do we use to hear things?

Add 'touch' and 'skin' to the sense table.

Main activity

Resources

Digital camera
Computer and printer
Notebook and pencil

The touch walk

Students should work in pairs on the walk. Time: the walk should last 15 to 20 minutes.

Prepare the class for going outside. Tell them they must look for objects that have surfaces they can feel. Take them to the first place on the planned walk. Ask them to predict what a surface might feel like and then work in pairs to test their predictions.

Q What do you think that wall/leaf/tree/feels like?

Q Find out if you are right.

Ask them to try a number of different surfaces. Help pairs with appropriate words to describe the texture of what they are feeling and, if necessary, with the name of the object they are investigating. Take photographs of the surfaces and of students touching them. Make sure that you have at least one photograph for each table of students. Make a note of their comments as they touched the materials. They should explore artificial materials, such as buildings, windows and gates, as well as natural materials, such as bark, leaves, grass and soil.

If some of the objects can be brought back to the science exhibition, ask students to bring them.

Move around the walk and repeat the process at the different places that you identified during your preparation.

Eventually, return to the classroom.

Ask the children to sit down and draw in their books one thing that they have touched. While they are doing this, print out the photographs and give them out to the appropriate student tables.

Ask students to write a word that describes the feel of the object they are drawing underneath it. Ask them to decide what they should write underneath each photograph to describe the feel of the object in the photograph. Give help by pointing out the suggested words on the word board.

Get students to make a display of the photographs they have labelled.

Other tasks

Resources

The book *Rosie's walk* by Pat Hutchins (Simon and Schuster, first published 1968)

Settle the class in a group on the reading mat and read *Rosie's walk* to them. This is a story about a hen that took a walk around a farmyard and many objects are described on the way. Show children the pictures in the book. Ask questions about what the objects in the pictures might feel like. If you are teaching the lesson in Arabic and an Arabic translation of the book is unavailable, find a suitable storybook that permits the discussion of what the objects shown in the book might feel like.

Summary for students

- We feel objects with our skin. This is called our sense of touch.
- Different objects have a different feel.