Soluble Materials

Lesson plan and teacher's notes · Grade 2 Science · 1 period of 40 minutes

School	(write school name)	**Teacher**	(write name)
Date	(date)	**Class**	Grade 2
Subject	Science	**Enrolment**	Boys ___ Girls ___ Total ___
Time	40 minutes	**Topic**	Soluble Materials

Learners find out which materials dissolve in water and which do not by trying them, then sort picture cards into soluble and insoluble. One period of 40 minutes.

Specific outcomes

By the end of the lesson, learners should be able to:

1. Identify soluble materials such as sugar, soda and salt
2. Identify insoluble materials such as chalk and sand
3. Sort materials into soluble and insoluble
4. Explain that dissolving is not the same as melting

Prior knowledge

- Learners know sugar, salt, sand and chalk
- Learners have stirred something in water

Teaching and learning materials

- Water in clear cups
- Sugar, soda, salt, chalk, sand, rice
- Spoons for stirring
- Picture cards of soluble and insoluble materials
- A worksheet for sorting

References

Ministry of Education (CDC) Grade 2 Science syllabus and module; 25Schools learners' note: Soluble Materials.

Lesson development

Stage and time	Teacher activities	Learner activities
Introduction 5 min	Show a cup of water and ask which things from the kitchen disappear when stirred into water.	Share ideas.
Experiment 15 min	Learners stir sugar, soda, salt, chalk and sand in water in turn. Ask which materials dissolved in water and which did not dissolve. Emphasise that sugar, soda and salt are soluble, and chalk and sand are insoluble.	Stir, observe and record.
Clear misconceptions and try more 10 min	Allow learners to try other materials such as soda, rice and chalk. Clear the misconception that dissolving is the same as melting.	Test more materials and discuss.
Assessment 10 min	Provide picture cards showing soluble and insoluble materials in water. Learners sort the cards and complete the worksheet.	Sort the cards and complete the worksheet.

Teacher's content notes

Read these before the lesson. They are what you need to know, not what to copy onto the board.

Soluble

Some materials like sugar, soda and salt are soluble because they dissolve in water.

Insoluble

Some materials like chalk and sand are insoluble because they do not dissolve in water.

Tip

Let learners try more materials such as soda, rice and chalk. Soda means sodium bicarbonate. Dissolving is not the same as melting.

Questions to ask during the lesson

Question	Expected answer
The teacher stirs sugar into water for the class to see at the front. (a) What happens to the sugar. (b) What do we call it. (c) Which other material does the same.	(a) It dissolves. (b) Soluble. (c) Salt or soda.
The teacher puts sand into a cup of water and stirs it in front of the class. (a) Does it dissolve. (b) What do we call it. (c) Name another.	(a) No. (b) Insoluble. (c) Chalk.

A learner says that sugar melts in the water when it is stirred at the school desk. (a) Is that right. (b) What really happens. (c) Why is it not melting.	(a) No. (b) It dissolves. (c) Dissolving is not the same as melting.

Worked examples for the board

Testing a material

Step 1: Put the material in water. Step 2: Stir. Step 3: Look. Step 4: If it disappears it is soluble, if it stays it is insoluble.

Sorting cards

Step 1: Take a picture card, such as sugar in water. Step 2: Ask if it dissolved. Step 3: Put it in the soluble group or the insoluble group.

Board plan

Write the title Soluble Materials. Make two columns: soluble and insoluble, and list the materials tested.

Soluble	Insoluble
Sugar	Chalk
Soda	Sand
Salt	

The finished board

Mistakes to expect

Learners often think	Put it right
Dissolving is the same as melting.	Show that sugar in water has dissolved and that melting is a different change.
A material that goes cloudy has dissolved.	Let it settle: chalk and sand stay behind and are insoluble.

Differentiation

Learners who struggle

Test only two materials first, sugar and sand, and compare them.

Learners who finish early

Ask learners to test rice and one more material and predict the result first.

Hearing or visual impairment

Let learners feel the water and the materials. Pair learners who find reading hard with a helper.

No projector, no printing

Use cups or tins, water, salt, sand and ground chalk from home.

If time is short

Keep the experiment with sugar, salt and sand. Do the card sorting in the next lesson.

Evaluation

Question or task	A correct answer shows
The teacher gives Bupe picture cards of sugar, chalk and salt in water. (a) Which dissolve. (b) What do we call them. (c) Which does not dissolve.	(a) Sugar and salt. (b) Soluble. (c) Chalk, which is insoluble.
Mwamba stirs sand and soda in two cups of water at home. (a) Which dissolves. (b) Which stays in the water. (c) Is dissolving the same as melting.	(a) Soda. (b) Sand. (c) No.

Homework

Njavwa tries salt and sand in water at home. (a) Which dissolves. (b) What do we call it. (c) What do we call the other.

Extra practice with answers

Question	Answer
1. Chanda is in the school science corner with her teacher and a group of friends who want to test materials. She stirs salt and chalk into two cups of water. (a) Which dissolves. (b) Which stays. (c) Which is soluble.	(a) Salt. (b) Chalk. (c) Salt.
2. Mulenga is at home on Saturday and wants to test materials from his mother's kitchen for his class. He mixes sugar and sand into water and watches closely. (a) Which dissolves. (b) Which is insoluble. (c) What do we do to the water first.	(a) Sugar. (b) Sand. (c) Stir it.
3. Banji is helping her teacher sort cards before a science lesson at school and has cards of soda, rice and chalk to sort for the class. (a) Which is soluble. (b) Which is insoluble. (c) Is dissolving the same as melting.	(a) Soda. (b) Chalk. (c) No.
4. Bwalya is at the school science corner on a Friday with her group, and they test sand, salt and sugar in water before they write a report. (a) Name the soluble materials. (b) Name the insoluble one. (c) How do we find out.	(a) Salt and sugar. (b) Sand. (c) Stir them in water and look.

Answers to the learners' check-yourself questions

1. What does soluble mean.
   It dissolves in water.
2. Name one insoluble material.
   Chalk or sand.

3. Is dissolving the same as melting.
   No.
4. Mulenga is helping his mother in the kitchen at home. She puts salt in one cup of water and sand in another cup, then stirs both. (a) Which one dissolves. (b) Which one stays in the water. (c) Which is the insoluble material.
   (a) Salt. (b) Sand. (c) Sand.
5. Chanda is sorting things at school for her teacher with sugar, chalk and soda in water. (a) Name the two soluble materials. (b) Name the insoluble material. (c) What do we do to the water to see if they dissolve.
   (a) Sugar and soda. (b) Chalk. (c) Stir it.

Teacher's reflection

What went well:

What I will change next time:

Learners who need follow-up: