Grade 5 Science and Technology

Term 2 - 32 complete lesson plans

Ready to teach, in the KICD lesson-plan format | 35-minute lessons | PDF and editable Word

ABOUT THIS PACK

32 complete, ready-to-teach Grade 5 Science and Technology lesson plans for Term 2, covering mixtures and water pollution.

TOPICS IN THIS PACK

Topic	Name	Lessons
2.1	Mixtures	14
2.2	Water Pollution	18

INSIDE EVERY LESSON PLAN

- The specific learning outcomes, key inquiry question, core competencies, values and PCIs, and the resources needed.
- A timed lesson flow: what the teacher does and what the learners do, from introduction to summary.
- The key content (a worked example, notes or a practical with its expected results), then four practice questions with the answers for the teacher.
- The common mistake to watch for, and ideas for learners who need support and for those ready for more.
- A four-level CBC assessment rubric (EE, ME, AE, BE), homework, and a blank reflection space to fill in after teaching.

A TASTE OF LESSON 1

What a mixture is

By the end of the lesson, the learner should be able to: a) explain what a mixture is; b) give examples of mixtures

> **What a mixture is**
> A mixture is formed when two or more substances are combined together, but each substance keeps its own properties - nothing new is chemically formed. Salty water, a bowl of rice and beans, and even the air we breathe (a mixture of gases) are all real examples of mixtures.
> Because the substances in a mixture keep their own properties, they can usually be separated back out again, which the rest of this sub-strand explores.

You also receive this pack as an editable Word file, so you can change any lesson to suit your class before you print it. Lessons follow the order of the KICD curriculum design.

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What a mixture is

Strand 2.0 Matter > Sub-strand 2.1 Mixtures | Lesson 1 of 14 | 35 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) explain what a mixture is; b) give examples of mixtures

KEY INQUIRY QUESTION(S)

- What are the applications of mixture separation in day-to-day life?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Critical thinking and imagination**	Learners choose a method, check their answers and give reasons for their choices.
COMPETENCY	**Learning to learn**	Learners say what they found easy or hard and decide their next step.
VALUE	**Social justice**	Every learner gets a turn and a fair chance to answer.
PCI	**Health issues**	Examples link to healthy habits at home and at school.

LEARNING RESOURCES

Real examples for mixing: salt, sugar, water, sand, stones, rice, beans, cooking oil | Clear containers or cups | A stirring spoon

ORGANISATION OF LEARNING

Whole class for the introduction and the summary; pairs or groups of four to five for guided practice; individual work for the independent tasks.

KEY WORDS

mixture | homogeneous | heterogeneous | substance

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
5 min	8 min	9 min	8 min	5 min

Inside this plan: the step-by-step lesson flow with what the teacher and learners do, the key content, practice questions with answers, a common mistake to watch for, an assessment rubric on the four CBC levels, support and extension ideas, homework and a reflection page.

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	5	Greet the class and ask: "If you stirred sand into a glass of water, would the sand and water become one new substance, or stay themselves?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	8	Work through the worked example on the next page, thinking aloud. Use real examples for mixing: salt, sugar, water, sand, stones, rice, beans, cooking oil, clear containers or cups, a stirring spoon. Ask learners to predict each step before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	9	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	8	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	5	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Why can the substances in a mixture usually be separated back out?"	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

What a mixture is

A mixture is formed when two or more substances are combined together, but each substance keeps its own properties - nothing new is chemically formed. Salty water, a bowl of rice and beans, and even the air we breathe (a mixture of gases) are all real examples of mixtures.

Because the substances in a mixture keep their own properties, they can usually be separated back out again, which the rest of this sub-strand explores.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	What is a mixture?	**Two or more substances combined together, each keeping its own properties**
2	Give one example of a mixture.	**Any of: salty water, rice and beans, air**
3	Does mixing substances create a new chemical substance?	**No, each substance keeps its own properties**
4	Why can the substances in a mixture usually be separated back out?	**Because they keep their own properties, rather than becoming one new substance**

WATCH OUT FOR

Learners think mixing always makes something totally new. Clarify that in a mixture, the original substances are still really there, just combined.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can explain what a mixture is confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can explain what a mixture is accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly explain what a mixture is, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet explain what a mixture is without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Mix sand into water in front of the class and ask what each part still looks/feels like.
Learners ready for more	Name one mixture you have seen or eaten today. (Answer: Any genuine, reasonable real example)
Inclusion	Seat learners with low vision near the board and read aloud whatever you write; use large, clear, tactile materials; allow extra time; pair with a patient partner; use gestures or Kenyan Sign Language for the key words.

HOMEWORK AND FOLLOW-UP

Redo questions 3 and 4 neatly in the exercise book. Then tell someone at home what you learned about "what a mixture is" and bring one question of your own to ask next lesson.

TEACHER SELF-CHECK

- Did every learner get a turn to handle materials or explain their thinking?
- Did most learners meet the outcome? Write down the names of those who did not.
- Was the pace right — did any step take too long or too short a time?
- Which competency and value did I see learners showing?
- What will I change the next time I teach this lesson?

REFLECTION ON THE LESSON / SELF-REMARKS

Write this after teaching - what worked, what to change, which learners need follow-up.

Homogeneous mixtures

Strand 2.0 Matter > Sub-strand 2.1 Mixtures | Lesson 2 of 14 | 35 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) define a homogeneous mixture; b) give examples of homogeneous mixtures

KEY INQUIRY QUESTION(S)

- What are the applications of mixture separation in day-to-day life?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Critical thinking and imagination**	Learners choose a method, check their answers and give reasons for their choices.
COMPETENCY	**Learning to learn**	Learners say what they found easy or hard and decide their next step.
VALUE	**Social justice**	Every learner gets a turn and a fair chance to answer.
PCI	**Health issues**	Examples link to healthy habits at home and at school.

LEARNING RESOURCES

Real examples for mixing: salt, sugar, water, sand, stones, rice, beans, cooking oil | Clear containers or cups | A stirring spoon

ORGANISATION OF LEARNING

Whole class for the introduction and the summary; pairs or groups of four to five for guided practice; individual work for the independent tasks.

KEY WORDS

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THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
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LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	5	Greet the class and ask: "If you dissolve sugar in water and stir it well, can you still see the sugar as separate grains?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	8	Work through the worked example on the next page, thinking aloud. Use real examples for mixing: salt, sugar, water, sand, stones, rice, beans, cooking oil, clear containers or cups, a stirring spoon. Ask learners to predict each step before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	9	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	8	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	5	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Has the salt actually disappeared once dissolved?"	Say the key idea in their own words and answer the exit question in the exercise book.

WORKED EXAMPLE

Homogeneous mixtures

A homogeneous mixture is one where the different parts are mixed so evenly that you cannot see them as separate substances - it looks uniform throughout. Examples include salt dissolved in water, sugar dissolved in water, and air.

Even though you cannot see the separate parts, they are still both really there - the salt has not disappeared, it is just spread evenly through the water.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	What is a homogeneous mixture?	**One where the different parts are mixed so evenly you cannot see them as separate substances**
2	Give one example of a homogeneous mixture.	**Salt dissolved in water, sugar dissolved in water, or air**
3	Can you see salt as separate grains once it is fully dissolved in water?	**No**
4	Has the salt actually disappeared once dissolved?	**No, it is still there, just spread evenly through the water**

WATCH OUT FOR

Learners think dissolved salt has "vanished" or been destroyed. Clarify it is still present, just evenly distributed and too small to see.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can define a homogeneous mixture confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can define a homogeneous mixture accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly define a homogeneous mixture, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet define a homogeneous mixture without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Dissolve a spoon of salt or sugar in water in front of the class and discuss why it becomes invisible.
Learners ready for more	Taste (safely, with a clean spoon, teacher-supervised) a small amount of salt water. Is the salt really still there? (Answer: Yes - it can be tasted even though it cannot be seen)
Inclusion	Seat learners with low vision near the board and read aloud whatever you write; use large, clear, tactile materials; allow extra time; pair with a patient partner; use gestures or Kenyan Sign Language for the key words.

HOMEWORK AND FOLLOW-UP

Redo questions 3 and 4 neatly in the exercise book. Then tell someone at home what you learned about "homogeneous mixtures" and bring one question of your own to ask next lesson.

TEACHER SELF-CHECK

- Did every learner get a turn to handle materials or explain their thinking?
- Did most learners meet the outcome? Write down the names of those who did not.
- Was the pace right — did any step take too long or too short a time?
- Which competency and value did I see learners showing?
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