Grade 10 Biology

Term 2 - 56 complete lesson plans

Ready to teach, in the KICD lesson-plan format | 40-minute lessons | PDF and editable Word

ABOUT THIS PACK

56 complete, ready-to-teach Grade 10 Biology lesson plans for Term 2, covering nutrition, transport and gaseous exchange and respiration.

TOPICS IN THIS PACK

Topic	Name	Lessons
2.1	Nutrition	12
2.2	Transport	22
2.3	Gaseous exchange and Respiration	22

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

Nutrition in plants: autotrophic and heterotrophic

By the end of the lesson, the learner should be able to: a) define nutrition and distinguish autotrophic from heterotrophic nutrition; b) give examples of each in plants

Types of nutrition

Nutrition is the way an organism obtains and uses food for energy, growth and repair. Autotrophic nutrition: the organism makes its own food from simple inorganic substances (carbon dioxide and water) using an energy source. Heterotrophic nutrition: the organism cannot make its own food and gets ready-made organic food from other organisms.

Most plants are autotrophs (they photosynthesise). A few plants are heterotrophs: parasitic, saprophytic, symbiotic or insectivorous plants.

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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ELIMU254

Nutrition in plants: autotrophic and heterotrophic

Strand 2.0 Anatomy and Physiology of Plants > Sub-strand 2.1 Nutrition | Lesson 1 of 12 | 40 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 nutrition and distinguish autotrophic from heterotrophic nutrition; b) give examples of each in plants

KEY INQUIRY QUESTION(S)

- How do plants obtain food?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Self-efficacy**	Learners attempt each task with confidence and see that effort improves results.
COMPETENCY	**Digital literacy**	Learners use a phone, tablet or the class computer to explore or check the idea.
VALUE	**Unity**	Learners share materials fairly and work as one team.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
PCI	**Environmental conservation**	Examples link to caring for the school and home environment.
PCI	**Safety and security**	Learners follow safety rules when using materials and moving about.

LEARNING RESOURCES

Charts and pictures of parasitic, saprophytic and insectivorous plants | Digital devices for animations (where available) | Manila paper and markers for flow charts | Chalkboard and chalk

ORGANISATION OF LEARNING

Whole class for explanations and animations; groups of four to five for discussions and drawing flow charts; pairs for the leaf test practical; individual written work.

KEY WORDS

autotrophic | heterotrophic | parasite | saprophyte | symbiosis | chloroplast | photosynthesis | photolysis | ATP

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
6 min	9 min	10 min	9 min	6 min

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "Nobody feeds a maize plant, yet it grows tall. Where does its food come from?" 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	9	Take learners through "Types of nutrition" (key ideas on the next page), explaining as you go. Use charts and pictures of parasitic, saprophytic and insectivorous plants, digital devices for animations (where available), manila paper and markers for flow charts. Ask learners to predict what comes next before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	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	9	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	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Explain why all life on Earth depends on autotrophs."	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

Types of nutrition

Nutrition is the way an organism obtains and uses food for energy, growth and repair. Autotrophic nutrition: the organism makes its own food from simple inorganic substances (carbon dioxide and water) using an energy source. Heterotrophic nutrition: the organism cannot make its own food and gets ready-made organic food from other organisms.

Most plants are autotrophs (they photosynthesise). A few plants are heterotrophs: parasitic, saprophytic, symbiotic or insectivorous plants.

Both modes are important: autotrophs make the food that all organisms depend on; heterotrophic plants have special ways of getting food that suit their habitats.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Define autotrophic nutrition.	**Nutrition in which an organism makes its own food from simple inorganic substances using an energy source.**
2	Define heterotrophic nutrition.	**Nutrition in which an organism obtains ready-made organic food from other organisms.**

3	Name the mode of nutrition of a maize plant and of a mushroom.	**Maize: autotrophic. Mushroom: heterotrophic (saprophytic).**
4	Explain why all life on Earth depends on autotrophs.	**They make food from inorganic substances, and this food supports all the other organisms in food chains.**

WATCH OUT FOR

Learners say plants "eat soil". Plants take up water and minerals from soil but make their food themselves.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

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

SUPPORT AND EXTENSION

Learners who need support	Give a sorting activity with pictures of organisms into autotroph and heterotroph.
Learners ready for more	Why can a green plant also be called a producer? (Answer: It produces food (organic matter) from inorganic substances that is available to consumers)
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 "nutrition in plants: autotrophic and heterotrophic" 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.

ELIMU254

Autotrophic nutrition: photoautotrophs and chemoautotrophs

Strand 2.0 Anatomy and Physiology of Plants > Sub-strand 2.1 Nutrition | Lesson 2 of 12 | 40 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) describe how autotrophs make their food; b) distinguish photoautotrophs from chemoautotrophs

KEY INQUIRY QUESTION(S)

- How do plants obtain food?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Self-efficacy**	Learners attempt each task with confidence and see that effort improves results.
COMPETENCY	**Digital literacy**	Learners use a phone, tablet or the class computer to explore or check the idea.
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