Grade 10 Electrical Technology

Term 1 - 60 complete lesson plans

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

ABOUT THIS PACK

60 complete, ready-to-teach Grade 10 Electrical Technology lesson plans for Term 1, covering introduction to Electrical Technology, D.C circuits, capacitors and capacitance, cells and batteries and magnetism.

TOPICS IN THIS PACK

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1.1	Introduction to Electrical Technology	10
1.2	D.C Circuits	18
1.3	Capacitors and Capacitance	8
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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 electrical technology is, and how electricity is used

By the end of the lesson, the learner should be able to: a) explain what electrical technology is; b) list the uses of electricity at home, in school and in the community

> **Electrical technology**
> Electrical technology is the study and application of electricity: how it is produced, carried, controlled, measured and used, and how the equipment that uses it is made, installed, maintained and repaired. It covers the wires in a building, the machines in a factory, the phone in your pocket and the power station many kilometres away.

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 electrical technology is, and how electricity is used

Strand 1.0 Fundamentals of Electrical Technology > Sub-strand 1.1 Introduction to Electrical Technology | Lesson 1 of 10 | 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) explain what electrical technology is; b) list the uses of electricity at home, in school and in the community

KEY INQUIRY QUESTION(S)

- Why is the study of electrical technology important in society?
- How is electricity utilised in various applications?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
COMPETENCY	**Digital literacy**	Learners use a phone, tablet or the class computer to explore or check the idea.
COMPETENCY	**Self-efficacy**	Learners attempt each task with confidence and see that effort improves results.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
VALUE	**Love**	Learners help a classmate who is stuck.
PCI	**Disaster risk reduction and management**	Developed through the activities in this lesson.

LEARNING RESOURCES

Career brochures and pictures of electrical workers at work | Digital devices or print media for research on uses of electricity | A chart of electrical safety signs | Manila paper and marker pens | Notebooks and pencils

ORGANISATION OF LEARNING

Whole class for discussions, the resource person and demonstrations; groups of four for research, role play and presentations; pairs for the drawing practice; role play uses no live supply, and any practical work with electrical parts is supervised by the teacher.

KEY WORDS

electricity | technology | electrician | technician | hazard | isolation | PPE | regulation | stakeholder | licence

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: "Imagine that all the electricity in your school and your home stopped for a whole week. What would you no longer be able to do?" 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 "Electrical technology" (key ideas on the next page), explaining as you go. Use career brochures and pictures of electrical workers at work, digital devices or print media for research on uses of electricity, a chart of electrical safety signs. 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: "Which form of energy does a heater give out, and which form does a fan give out?"	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

Electrical technology

Electrical technology is the study and application of electricity: how it is produced, carried, controlled, measured and used, and how the equipment that uses it is made, installed, maintained and repaired. It covers the wires in a building, the machines in a factory, the phone in your pocket and the power station many kilometres away.

Uses of electricity: light (bulbs, streetlights); heat (cookers, kettles, irons, water heaters); motion (fans, pumps, lifts, motors in factories and on farms); communication (phones, radio, television, the internet); computing and data; transport (electric trains and the electronics in every vehicle); health (X-ray machines, ultrasound, refrigerators for vaccines); security (alarms, cameras, electric fences); and money (mobile money, ATMs and shop tills).

In your group, use the library or a digital device to list ten uses of electricity that you see between home and school, and say which form of energy each one produces: light, heat, motion, sound or information. Present your list, and compare it with the other groups.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Define electrical technology.	**The study and application of electricity: how it is produced, carried, controlled, measured and used, and how the equipment is made, installed, maintained and repaired.**
2	Name four uses of electricity in the home.	**For example: lighting, cooking, refrigeration, charging phones, television, ironing, heating water.**
3	Name two uses of electricity in health care.	**For example: refrigerators for vaccines, X-ray and ultrasound machines, sterilisers, monitors, lights in theatres.**
4	Which form of energy does a heater give out, and which form does a fan give out?	**A heater gives out heat; a fan gives out motion (kinetic energy).**

WATCH OUT FOR

Learners think that electricity is only for light. It supplies light, heat, motion, sound and information, and almost every modern activity depends on it.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

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

SUPPORT AND EXTENSION

Learners who need support	Give a table with rooms at home and school, and learners write the electrical devices in each and the form of energy each gives.
Learners ready for more	Explain why a clinic in a rural area without electricity cannot store vaccines safely. (Answer: Vaccines must be kept cold, which needs a refrigerator, and a refrigerator needs a continuous electricity supply, or a solar or battery system)
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 electrical technology is, and how electricity is used" 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.