

General Education Certificate

2026 GEC Train the Trainers Subject Breakaway Session Integrated Projects and assessment of the 21st century skills Reporting Template

13-17 April 2026



Integrated project and assessment of the 21st Century Skills Subject Breakaway Reporting Template

Subject: Natural Sciences

Worksheet

Discussion/Focus

Administration/Notes to Teacher

WORKSHEET 1.5

Provided: Illustrations of Electrical Appliances

1.5

- Name electrical components

Bring appliances to class

Teach learners how to look at an appliance

- Identify appliance
- Discussion questions: Where does the electricity enter; What makes it switch on/off
- Identify purpose

21st Century Skills

Please indicate when and how for each skill

Critical Thinking

- Asking questions to identify electrical appliances and their purpose and how it works
- Walk around and listen to learner discussions
- Facilitate discussion by prompting questions



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WORKSHEET 2		
2.1	Draw symbols of given components	Revise ➤ Correct symbols for circuit components ➤ Allow learners to draw symbols individually informally
2.2	Provided Circuit Diagram Redraw the circuit diagram: (correct meter placement) ➤ Add an ammeter to measure total current ➤ Add a voltmeter to measure the potential difference across resistor	Revise in informal activity ➤ Ammeter connected in series ➤ Voltmeter connected in parallel
2.3	Provided with a circuit diagram	
2.3.1	➤ Redesign and redraw the circuit diagram so that each light bulb can be switched on and off independently (circuit design)	Revise ➤ Difference between series and parallel circuits ➤ How to draw the circuits correctly using the correct symbols for components
2.3.2	Identify the type of circuit in 2.3.2 and explain their choice.	Series circuits – one pathway for current Parallel circuits – two or more pathways for current

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Critical Thinking

- Learners apply understanding by evaluating ideas when redesigning the circuits and to place components in correct positions

Creative Thinking

- Learners can come up with many different ideas and possible solutions which are realistically possible

Collaboration

- Group work:
- All learners are able to share their knowledge, ideas and participate and listen in discussion.
 - Learners discuss circuit layout, justify their choices and support their peers.

2.1 - 2.3



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WORKSHEET 4		
4	Given Background information (Scientific Method): Aim, investigative question, hypothesis and variables,	➤ Refer to Teachers Resource Pack: Flow Diagram of Scientific Method ➤ Revise the all concepts of the Scientific Method thoroughly ➤ Informally: Use real life scientific studies that are relevant to learners to strengthen their knowledge and application of Scientific Method ➤ Use the marking guidelines to assess learners and interpret the marks using the rubric for worksheet
4.1.1	Identify independent variable	
4.1.2	Identify dependent variable	
4.2	Formulate Investigative question	
4.3	Formulate hypothesis	
4.4	Select Controlled variables from a list provided	



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Critical Thinking

4.1- 4.4

- Learners demonstrate the ability to identify variables and formulate scientific questions. *What do you want to measure, what should be changed and what should be kept constant?*
- Learners are able to correctly phrase the Investigative question and Hypothesis
- Learners evaluate their solutions as relevant and applicable

Creative Thinking

- Learners are able to come up with many possible solutions, showing originality
- Learners are able to come up with various possible solutions
- Learners are able to accurately reflect the relationship between V/I



Integrated project and assessment of the 21st Century Skills

Subject Breakaway Reporting Template

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WORKSHEET 9		
9.1	Practical Investigation & Data Collection ➤ Method provided ➤ Notes and resources provide to teachers and learners ➤ Table for data recording provided	Prepare for the practical demonstration ➤ Use the resources in the Teachers NOTE ➤ Watch 2 videos on Ohm's Law ➤ Practice the use of PhET Simulations; change setting of the virtual components to match real-life values ➤ Secure the required apparatus Conduct Investigation ➤ Learners can work in groups ➤ Teachers can demonstrate prior to groupwork; Show learners how to use the apparatus and how to take and record their data in the table ➤ Where there is limited resources, apparatus can be rotated between groups ➤ Ensure the availability of required apparatus ➤ Teachers must guide learners in the drawing of graph (suitable scale, labelling, plotting and drawing a line of best fit) ➤ Facilitate the analysis of results to inform the conclusions
9.2	Graphical Representation ➤ Graph paper is provided to draw the graph of findings (V/I)	
9.3	Analysis and Conclusion	
	➤ Shape of graph ➤ Relationship between V/I ➤ Ohm's Law in words ➤ Ohm's Law in symbols (Formula) ➤ Evaluate Hypothesis ➤ Application of knowledge in building the circuit in alarm system	

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21st Century Skills Please indicate when and how for each skill		
9.1-9.3	Critical Thinking	➤ Learners are able to use apparatus to build a circuit ➤ Learners are able to collect and tabulate accurate data, choose an appropriate scale, plot and interpret graphs, apply Ohm's Law and draw evidence-based conclusions ➤ Learners are able to apply the knowledge gained from the investigation in building of the alarm system ➤ Learners are able to observe the relationship between variables V/I
	Collaboration	➤ Observe if learners negotiate roles and responsibilities, share their knowledge, ideas and participate in conducting the investigation

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WORKSHEET 11

11

Assessment of the circuit in the prototype of the alarm system

- Learners should bring their Model/Prototype/Alarm system, built in Technology to the Natural Sciences Educator
- Educator uses Rubric for Worksheet 11 to assess the circuit within the alarm system

21st Century Skills

Please indicate when and how for each skill

Critical Thinking

- Learners are able to apply Scientific Knowledge to build the real-life Model ensuring that the circuit is functional and the Model meets the design requirements

Collaboration

- Learners shared responsibility and made meaningful contributions in building the model.

