Assessment task	
Year level	6
Learning area	Science
Subject	Physical Sciences
Title of task	Foil circuit investigation
Task details	
Description of task	Students will plan an investigation to demonstrate their understanding of variables. They will select a variable to change, list those to be kept the same, and clearly identify what they will measure. Students are required to make a prediction that demonstrates their scientific knowledge and understanding of how electrical energy can be transferred and transformed in an electrical circuit.
Type of assessment	Summative
Purpose of assessment	To assess students' science understanding and inquiry skills.
Assessment strategy	Short answer
Evidence to be collected	Short answer
Suggested time	3 lessons
Content description	
Content from the Western Australian Curriculum	**Science understanding** Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources **Science inquiry skills** With guidance, pose clarifying questions and make predictions about scientific investigations Identify, plan and apply the elements of scientific investigations to answer questions and solve problems, using equipment and materials safely, and identifying potential risks Decide variables to be changed and measured in fair tests, and observe, measure and record data with accuracy, using digital technologies, as appropriate Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data, using digital technologies, as appropriate Compare data with predictions and use as evidence in developing explanations Communicate ideas, explanations and processes, using scientific representations in a variety of ways, including multimodal texts
Task preparation	
Prior learning	Students are familiar with the investigation process and have sound understanding and experience in developing simple circuits. Students have explored conductors and insulators and understand the basic requirements for energy transfer.

Assessment differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.
Assessment task	
Assessment conditions	Written task, completed individually at the end of the unit of work
Resources	• Worksheet, provided • As stated in Instructions for Teacher • Physical Sciences Teaching and Learning Outline available on website. https://k10outline.scsa.wa.edu.au/__data/assets/pdf_file/0008/411893/Science-Physical-Sciences-Year-6-Sample-Teaching-and-Learning-Outline.PDF

Instructions for teacher

Lesson 1

1. Explain and/or review circuits and how they work.
2. View and discuss concepts in following clip (choose appropriate viewing material):
   https://www.youtube.com/watch?v=VnnpLaKsqGU
   https://www.youtube.com/watch?v=js7Q-r7G9ug
3. Discuss safety issues related to energy use and the associated risks.
4. Allow students to engage in practical tasks and develop their own circuits. Different lengths of wire, battery sizes and globes to be available to students to test.

Lesson 2

1. Teacher to demonstrate and discuss materials that act as conductors and insulators. Use light globe as an indicator of a successful conductor/insulator and battery as a power source.
2. Ensure that students understand that alfoil is a conductor and demonstrate that alfoil can be cut into ribbons and replace wire as a conductor of energy. Explain this concept.
3. Engage students and allow them to test materials. Encourage students to create various circuits, using different configurations.
4. Draw different circuit configurations, using the correct symbols.

Lesson 3

1. Engage students in the moderation task provided. Remind students they are planning an investigation and must consider the application of science understanding and inquiry skills.
2. Students develop an investigation using the materials listed on the worksheet sheet provided.
3. Teacher to read the questions to students. Teachers may clarify any questions that students may have.
4. Students to complete tasks independently. Teacher may re-read any of the questions that students are unsure about.

Investigation
Task title: Foil circuits

Equipment available to plan your investigation

Alfoil (three different brands available – super foil, smart foil, tuff stuff)	**Wooden pegs, paper clips, bulldog clips, sticky tape**
5-volt globes	
AAA, AA, DD batteries (new and fully charged)	

1.

What will we change?	What will we keep the same?	What will we measure?
Only 1	More than 1	And how will we measure?

2. Aim: What are you trying to find out and how will you measure this?

3. Risks: Could we get hurt doing this activity, and how can we prevent this?

4. Draw a labelled diagram to show the equipment set-up.

5. Design a recording method/table.

6. Prediction: What do you think might happen and why?

Sample marking key

Description	Marks
Questions 1 and 2	
Identifies, in detail, the relationship between variables. Explains what will stay the same. Specifies how variables will be changed and measured.	4-5
Identifies simple relationships between variables. Identifies the variable to be changed. Identifies what will be measured.	2-3
Follows a procedure to develop a question that may or may not correctly identify a variable. With guidance, identifies variable to measure.	0-1
Subtotal	**5**
Description	**Marks**
Question 3	
Describes safety risks and suggests ways to improve procedures to minimise risk.	3
Describes safety risks.	2
Lists some safety risks.	1
Subtotal	**3**
Description	**Marks**
Questions 4, 5 and 6	
Draws an electrical circuit that is clearly labelled and correct. Proposes a plausible method of recording valid and relevant information (attempts to use units of measure). Makes a valid prediction about electrical circuits based on scientific knowledge.	6
Draws a mostly correct diagram that represents an electrical circuit. Proposes a simple way of recording information that does specify correct units of measure to be used. Communicates ideas in the prediction that demonstrate some understanding of electrical energy.	4
Draws a simple diagram. Uses a simple table to collect data (units may not be correct). Communicates a simple prediction about energy in an electrical circuit.	2
Subtotal	**6**
Total	**14**