

# Electric Cars – Learning Outcomes

## **Year 7:**

Change to an object's motion is caused by unbalanced forces, including Earth's gravitational attraction, acting on the object (ACSSU117)

Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate (ACSIS129)

Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence (ACSIS130)

Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements (ACSIS131)

## **Year 8:**

Energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems (ACSSU155)

Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate (ACSIS144)

Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence (ACSIS145)

Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements (ACSIS146)

## **Year 9:**

Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)

Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS169)

Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS171)

Critically analyse the validity of information in primary and secondary sources and evaluate the approaches used to solve problems (ACSIS172)

Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174)

## Year 10:

Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)

The motion of objects can be described and predicted using the laws of physics (ACSSU229)

Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSI203)

Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSI205)

Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSI208)

## Part 1 Guidance

Stage	Demonstrated inquiry	Prescribed inquiry	Structured inquiry	Guided inquiry	Open inquiry
Formulate, question and predict	No question	Provided question	Sharpened question	Learner selects	Learner poses questions
Plan	No planning	Provided procedure	Discussion with teacher	Guided during planning	Learner determines plans
Conduct	Teacher conducts	Conducting and recording method told	Sharpened plan and conduct	Guided during conducting and recording	Learner conducts and records
Process and analyse	Teacher analyses	Analysis method told	Discussed analysis	Guided analysis	Learner analyses data studying trends
Reason, solve and link back	No problem solving	Teacher provides reasoning and links	Discussed reasoning and conclusion	Guided reasoning and formulating conclusion	Learner reasons to formulate conclusions
Communicate and justify	No conclusion	Teacher writes conclusion	Student writes	Guided justification and findings	Learner justifies findings and conclusions

## Part 2 **Guidance**

Stage	Demonstrated inquiry	Prescribed inquiry	Structured inquiry	Guided inquiry	Open inquiry
Formulate, question and predict	No question	Provided question	Sharpened question	Learner selects	Learner poses questions
Plan	No planning	Provided procedure	Discussion with teacher	Guided during planning	Learner determines plans
Conduct	Teacher conducts	Conducting and recording method told	Sharpened plan and conduct	Guided during conducting and recording	Learner conducts and records
Process and analyse	Teacher analyses	Analysis method told	Discussed analysis	Guided analysis	Learner analyses data studying trends
Reason, solve and link back	No problem solving	Teacher provides reasoning and links	Discussed reasoning and conclusion	Guided reasoning and formulating conclusion	Learner reasons to formulate conclusions
Communicate and justify	No conclusion	Teacher writes conclusion	Student writes	Guided justification and findings	Learner justifies findings and conclusions