Curriculum Links – Rube Goldberg

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Year 7
Change to an object's motion is caused by unbalanced forces acting on the object

Elaborations:

- Investigating the effect of applying different forces to familiar objects.
- Investigating common situations where forces are balanced, such as stationary objects, and unbalanced, such as falling objects.
- Investigating a simple machine such as lever or pulley system.
- Exploring how gravity affects objects on the surface of Earth.

Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed

Elaborations:

- Working collaboratively to decide how to approach an investigation.
- Learning and applying specific skills and rules relating to the safe use of scientific equipment.
- Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation.
- Developing strategies and techniques for effective research using secondary sources, including use of the internet.

Reflect on the method used to investigate a question or solve a problem, including evaluating
the quality of the data collected, and identify improvements to the method

Elaborations:

- Discussing investigation methods with others to share ideas about the quality of the inquiry process.
- Identifying and considering indicators of the quality of the data when analysing results.
- Suggesting improvements to inquiry methods based on experience.

Year 8
Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems

Elaborations:

- Recognising that kinetic energy is the energy possessed by moving bodies.
- Recognising that potential energy is stored energy, such as gravitational, chemical and elastic energy.
- Investigating different forms of energy in terms of the effects they cause, such as gravitational potential causing objects to fall and heat energy transferred between materials that have a different temperature.
- Recognising that heat energy is often produced as a by-product of energy transfer, such as brakes on a car and light globes.
- Using flow diagrams to illustrate changes between different forms of energy.

Year 10
Energy conservation in a system can be explained by describing energy transfers and transformations

Elaborations:

- Recognising that the Law of Conservation of Energy explains that total energy is maintained in energy transfer and transformation.
- Recognising that in energy transfer and transformation, a variety of processes can occur, so that the usable energy is reduced and the system is not 100% efficient.
- Comparing energy changes in interactions such as car crashes, pendulums, lifting and dropping.
- Using models to describe how energy is transferred and transformed within systems.

	Demonstrated inquiry	Prescribed inquiry	Structured inquiry	Guided inquiry	Open inquiry
Questions	No question	Teacher provides question	Learner sharpens question	Learner selects question	Learner poses questions
Plans	No planning	Teacher provides procedure	Teacher discusses possible plans	Learner guided while planning	Learner determines plans
Conducts	Teacher conducts	Learner told how to conduct and record	Learner sharpens plan and conducts	Learner guided while conducting and recording	Learner conducts and records
Analyse	Teacher analyses	Leaner told how to analyse data	Teacher discusses possible analyses	Learner guided in analysis	Learner analyses data identifying trends
Problem Solve	No problem solving	Teacher provides reasoning and links	Teacher discusses reasoning and conclusion	Learner guided in reasoning and formulate conclusion	Learner reasons to formulate conclusions
Communicate	No conclusion	Teacher writes conclusion	Learner writes conclusion	Learner guided on justifying findings and communicating	Learner justifies findings and conclusions