WORK SAMPLE PORTFOLIO

Annotated work sample portfolios are provided to support implementation of the Foundation – Year 10 Australian Curriculum.

Each portfolio is an example of evidence of student learning in relation to the achievement standard. Three portfolios are available for each achievement standard, illustrating satisfactory, above satisfactory and below satisfactory student achievement. The set of portfolios assists teachers to make on-balance judgements about the quality of their students’ achievement.

Each portfolio comprises a collection of students’ work drawn from a range of assessment tasks. There is no pre-determined number of student work samples in a portfolio, nor are they sequenced in any particular order. Each work sample in the portfolio may vary in terms of how much student time was involved in undertaking the task or the degree of support provided by the teacher. The portfolios comprise authentic samples of student work and may contain errors such as spelling mistakes and other inaccuracies. Opinions expressed in student work are those of the student.

The portfolios have been selected, annotated and reviewed by classroom teachers and other curriculum experts. The portfolios will be reviewed over time.

ACARA acknowledges the contribution of Australian teachers in the development of these work sample portfolios.

THIS PORTFOLIO: YEAR 8 SCIENCE

This portfolio provides the following student work samples:

Sample 1  Written examination: Particle model
Sample 2  Investigation report: Bouncing ball
Sample 3  Analysis task: Rock samples
Sample 4  Board game: Digestive system
Sample 5  Written examination: Cells
Sample 6  Investigation report: Coffee cup evaluation
Sample 7  Research report: Science careers
Sample 8  Investigation report: Mousetrap racer
Sample 9  Investigation report: Classifying chemical and physical changes
Sample 10  Investigation: Trebuchet design and function
Sample 11  Letter: Water fluoridation

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Work sample portfolio summary

Science

In this portfolio, the student compares physical and chemical change (WS9) and uses the particle model to explain the behaviour of substances (WS1). The student identifies different forms of energy and describes how energy transformations cause change in a system (WS2, WS8, WS10).

The student describes the processes that led to formation of particular rock samples (WS3), analyses different cell types to determine the relationship between structure and function (WS5) and constructs a board game that explores structure and function at organ and body system levels (WS4). The student identifies the different science knowledge required by a science career of their choice, and researches the way in which an inspirational scientist collaborated with others to solve a contemporary problem (WS7). The student investigates the scientific evidence that underpins a science idea that is publicly contested (WS11).

The student demonstrates an ability to identify and construct a question or problem for scientific investigation (WS6, WS8, WS10) and to plan an experimental investigation (WS2, WS6, WS8), including identification of appropriate safety precautions (WS9, WS10). The student identifies variables to be changed, measured and controlled (WS2, WS6, WS10). The student constructs representations of data to reveal and analyse patterns and trends (WS2, WS3, WS6, WS8, WS10) and uses data when justifying their conclusions (WS2, WS6, WS8, WS10). The student explains how modifications to investigations could improve the quality of data (WS2, WS6, WS10) and communicates science ideas, methods and findings in a range of text types, using appropriate language and representations (WS2, WS3, WS4, WS6, WS7, WS8, W9, WS10, WS11).
Written test: Particle model

Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

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Summary of task

Students had explored the particle model and engaged in class discussion about particle explanations of change of state. They then worked in small groups to develop a particle model representation (physical model or computer animation) of a solid, liquid and gas, and shared their representations with the class.

Following their presentation, students were asked to complete a short test to demonstrate their understanding of particle model explanations of change of state. Students completed the test in 20 minutes.
Written test: Particle model

**Annotations**

1. Out of the three states of matter, which particles have the most energy? Explain why you chose this state.
   
   _Gas because gas moves around the most._

2. Out of the three states of matter, which particles have the least energy? Explain why you chose this state.
   
   _Solids because they are stuck in place._

3. Describe what happens to the particles of butter when you put a spoonful of solid butter in a hot frying pan.
   
   _The butter melts so it goes from solid particles to liquid particles. The particles get hot and move more._

4. On a warm spring day, if you take a cold can of soft drink out of the fridge and place it on the kitchen bench, after a few minutes the outside is dripping wet. Explain, in detail, what is happening here. You should include an explanation of what is happening to the water particles found in the air.
   
   _Water from the air gets cold and sticks to the can so it gets wet. The water particles get cold so they stick together._

5. Imagine if you had a sample of a gas in a very large 1 litre sealed, syringe. Explain what you think would happen if you applied a huge amount of pressure on the syringe and squeezed the volume of the gas down to 1 mL.
   
   _The syringe would push back up when I let it go._

**Annotations (Overview)**

The student uses appropriate language to communicate science ideas.
Investigation report: Bouncing ball

Year 8 Science achievement standard

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Summary of task

Students had investigated forms of energy and energy transfers and transformations.

As part of the unit, students were required to undertake a practical investigation to identify the relationship between drop heights and bounce heights of a variety of balls. A report planning scaffold was provided. They were required to interpret their results with reference to energy transfers and transformations. Students completed the task over two 50-minute lessons.
Investigation report: Bouncing ball

**Investigation:** Bouncing Ball

**Student Name:** _______________  **Class:** _____

**Other members of my group:** ___________________

**Background information**

If you drop a tennis ball onto a hard surface you notice that it bounces back to a specific height. We can change the height from which we drop the ball (Drop Height) and see the effect it has on the height the ball bounces back to (Bounce Height).

The tennis ball has energy before you drop it and it has energy at the top of its bounce.

You will investigate the effect of changing the **Drop Height** on the **Bounce Height**.

**Planning**

What is the topic of my investigation?
How high do different balls bounce from different drop heights.

What do I predict will happen (Hypothesis)?
The ball will bounce the highest on the highest drop height.

Why I think it will happen (give some scientific reasoning – Hint energy and its transformation might help).
Because that is when the ball contains the most conesthetic energy.

What am I going to do? (Method)
- Drop one ball from the first drop height
- Record bounce height
- Drop ball one from the second drop height
- Record bounce height
- Drop ball one from third drop height
- Record results

Identifies that the ball has a form of energy.
Investigation report: Bouncing ball

- Repeat method for other ball

Which variables are you going to?
- Change (Independent)
- The balls and the drop heights
- Measure (Dependent)
- Keep the same (Controlled). Think of as many of these as you can.

What will I need (equipment)
- 2 metre rulers
- Tennis ball

Conducting
- How can I make it a fair test?
- Bounce the balls on the same surface.

Results (table) – you will also need another group's results to compare.

<table>
<thead>
<tr>
<th>Test 1</th>
<th>Drop Height</th>
<th>Tennis ball</th>
<th>Ping pong ball</th>
<th>Heigh bounce ball</th>
</tr>
</thead>
<tbody>
<tr>
<td>67cm</td>
<td>45cm</td>
<td>49cm</td>
<td></td>
<td>52cm</td>
</tr>
<tr>
<td>134cm</td>
<td>67cm</td>
<td>84cm</td>
<td></td>
<td>103cm</td>
</tr>
<tr>
<td>200cm</td>
<td>102cm</td>
<td>101cm</td>
<td></td>
<td>142cm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test 2</th>
<th>Drop Height</th>
<th>Tennis Ball</th>
<th>Ping Pong Ball</th>
<th>Hand Ball</th>
</tr>
</thead>
<tbody>
<tr>
<td>67cm</td>
<td>45cm</td>
<td>50cm</td>
<td></td>
<td>51cm</td>
</tr>
<tr>
<td>134cm</td>
<td>66cm</td>
<td>84cm</td>
<td></td>
<td>100cm</td>
</tr>
<tr>
<td>200cm</td>
<td>103cm</td>
<td>100cm</td>
<td></td>
<td>142cm</td>
</tr>
</tbody>
</table>

Draw a graph of your results and the other group's results onto a single graph on graph paper.

Annotations

Identifies the variable to be changed.

Identifies one variable to be controlled.

Designs tables to present data for analysis.

Constructs a line graph to present data.
Investigation report: Bouncing ball

What do your results suggest you?
My results suggest to me that not all balls go up in the same amount of bounce height if you raise the drop height at the same amount in a short drop height distance.

Data Analysis
Why did you get these results? Try to use some science ideas, and your understanding so far of energy, to help explain what happened.
The reason that the balls lost bounce height every time that they were dropped is that they loose energy every time they bounce because of the gravitational and kinetic energy is transferred into other energy such as sound every time it hits the ground.

Was the outcome different from your prediction? Explain.
I predicted that the ball would go up by a certain amount every time that the height was raised.

Evaluating
What difficulties did you experience in doing this investigation?
No major difficulties were found.

Compare your group results to the other group you chose, are their results the same or different? If there are differences then can you suggest why?

How can I improve this investigation, for example fairness and accuracy?

Extension
If you finish this you can explore changing the ball to a different type (one used in down ball?)

Graph the results of this on your original graph and then compare these results to those with the tennis ball.

Annotations (Overview)
The student uses appropriate language and representations to communicate science ideas, methods and findings.
Analysis task: Rock samples

Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

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Summary of task

Students had completed a unit on the rock cycle, linked to an analysis of rock types in the local area, and the ways in which those rocks had formed over time.

For this task, students were required to analyse five rock samples and use their observations to infer how the rock was formed. They were also required to complete a Venn diagram to highlight the similarities and differences between sedimentary, igneous and metamorphic rocks, and to apply their knowledge to an everyday situation. These tasks formed part of an in-class written examination over two class lessons.
Analysis task: Rock samples

Annotations

Constructs diagrammatic and textual representations of rock samples to describe features.

Uses knowledge of rock formation to infer some conditions in which the rock was formed.
Analysis task: Rock samples

Specimen 3

Granite

rocks
Crystals or quartz

The rock looks like it has little crystals in it. There are shiny rocks, large and small rocks. It must of been in high temp.

Specimen 4

Sedimentary

Sand rocks Shells

This rock has rock, sand and shells in it. All of the containing would have been compacted to form this rock at the bush.

Specimen 5

White slate

This rock has a white, grey rock type thing in it. It may have crystals in it because it is very shiny.
Analysis task: Rock samples

Annotations

Identifies some similarities and differences in the processes of formation of sedimentary, igneous and metamorphic rocks.

Uses knowledge of some properties of rocks to suggest a suitable material for a stated purpose.

Annotations (Overview)

The student uses appropriate language and representations to communicate science ideas, methods and findings.
Board game: Digestive system

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Summary of task

Students had explored the respiratory system and reproductive system, focusing on the structure of the body systems and the function of their component organs, tissues and cells.

Students were asked to work in pairs to research the digestive system and construct a board game that demonstrated their understanding of the main organs of the system, their structure and function, and what would happen if some of the organs weren’t functioning.

Students were provided with five 40-minute lessons to complete the task.
Board game: Digestive system

Annotations

Identifies the component organs of the digestive system.

Identifies the function of each component.

Identifies two problems that affect the digestive system.

Annotations (Overview)

The student uses language and representations to communicate science ideas through a specific text type (board game).
Written test: Cells

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Summary of task

Students had completed a unit on cell structure and function, including investigating physical and digital models of different cells, viewing a range of samples under a microscope and researching the structure and function of cells in particular tissues.

Students were required to complete a written test following completion of the unit. They completed the test over 50 minutes in closed-book conditions. A selection of test questions is included in the attached sample.
Written test: Cells

12. a) Explain how multicellular organisms benefit from having specialised cells.

Multicellular cells benefit from having Specialised cells because every specialised cell has a special job to do.

b) Pick one type of cell from the diagram below and describe how it is suited to its specialised role in the body.

Red Blood Cells carry oxygen around, through your veins, to your lungs, from your heart.

Annotations

Recognises that specialised cells perform particular functions.

Describes the role of red blood cells.
Written test: Cells

c) Skin cells, blood cells, and the cells that line the digestive tract reproduce more often than other types of cells such as nerve and muscle cells. Explain why this is the case.

Skin cells, blood cells, and digestive tract cells produce more than other cells because we need more of them. As they die, new ones are made and it's a cycle that occurs every day rather than one of your nerve or muscle cells dying which happens rarely.

Annotations

Explains that cells that die need to be replaced.

Annotations (Overview)

The student uses appropriate language to communicate science ideas.
Investigation report: Coffee cup evaluation

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Summary of task

Students were presented with a scenario in which they were required to determine the best coffee cup to be used by a local coffee shop. Students determined the variables that they thought would qualify a coffee cup as ‘the best’. They designed and carried out an investigation to test their chosen variables and presented their findings in the form of a written report. Students worked in groups over three lessons to undertake the practical and submitted an individual report completed in their own time.
Investigation report: Coffee cup evaluation

Which coffee cup is the best one

Aim:
To see which coffee cup is the best one

Hypothesis:
The best coffee cup will be the one that makes the coffee stay the hottest

Materials:
Coffee cup
Thermometer
Boiling Kettle
Stop watch

Method:
1. Get the six cups
2. Stick a thermometer in their lids
3. Boil a kettle
4. Fill the cups half full with water
5. Put the lids on the cups and start stop watch
6. Record the temperature of the thermometers after 5 minutes
7. Do the experiment again

Results:

<table>
<thead>
<tr>
<th>Cup</th>
<th>Experiment 1</th>
<th>Experiment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>81</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>83</td>
<td>84</td>
</tr>
<tr>
<td>3</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>4</td>
<td>80</td>
<td>78</td>
</tr>
<tr>
<td>5</td>
<td>86</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>85</td>
<td>85</td>
</tr>
</tbody>
</table>

Conclusion:
Cup 5 is the best because the water was the hottest after 5 minutes.

Annotations

Identifies a factor to be investigated in order to solve a problem.

Represents data in the form of a table.

Forms a conclusion based on the data collected.

Annotations (Overview)

The student uses some appropriate language and representations to communicate science ideas, methods and findings in a range of text types.
Research report: Science careers

Year 8 Science achievement standard

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Summary of task

Over the course of the year, students had investigated a range of science careers, prominent scientists and contemporary research related to each area of study.

For this task, students were asked to reflect on their science learning and identify a potential science career they would be interested in pursuing. They were asked to research the occupation and to identify its contributions to solving contemporary problems, including providing specific information on an ‘inspirational’ scientist’s work.
Research report: Science careers

My science career
Name:

Description of my chosen career:
If I had to be a scientist, I would be a dentist because they make half of many. Dentists fix up people’s teeth and do brushes and fillings.

Science knowledge I use:
- Knowledge about teeth
- Fillings
- X-ray

Scientists in my area have solved these problems:
- How to make people’s teeth white and straight.
- The best toothpaste.
- How to stop decay.

One inspiring scientist in the field and the ways they worked with others to solve an important problem:
Dr. Weston A. Price.
He was an American scientist who searched for the causes of dental decay. He travelled all over the world and found that people who ate the foods from the Americas had the best teeth. So he thought that decay must be caused by too much processed food.

Annotations

Identifies some knowledge used in dentistry.

Describes how a scientist worked with a range of people to solve a problem.

Annotations (Overview)
The student uses appropriate language to communicate science ideas.
Investigation report: Mousetrap racer

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Summary of task

Students had investigated forms of energy and energy transfers and transformations.

As part of the unit, students were required to undertake a practical investigation to build a mousetrap racer. They were asked to observe the mousetrap racer’s motion when released and explain the energy transfers and transformations that take place. They were then required to modify the racer and make a prediction about how its motion might change, using their knowledge of energy transfers and transformations.
Investigation report: Mousetrap racer

Annotations

Identifies different forms of energy in the system, including potential energy and kinetic energy.

Describes how energy transfer causes movement.

Suggests a modification that can be investigated scientifically.

Makes a prediction.

Annotations (Overview)

The student uses some appropriate language and representations to communicate science ideas, methods and findings.
Investigation report: Classifying chemical and physical changes

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Summary of task

Students had studied the difference between physical changes and chemical reactions. They had engaged in a number of investigations as part of the chemistry unit and had developed a good understanding of the safety requirements of working in a laboratory environment.

For this investigation, students were provided with a number of experiments to conduct. Prior to conducting the experiments they were required to develop and obtain teacher approval for their risk assessment and safety considerations. For each experiment, they were asked to make observations, and to record their observations in an appropriate table. They were required to classify the observed change as a physical change or a chemical reaction, and to justify their classification based on their observations.

Students completed the investigation planning and practical component over two lessons in class, and constructed their report as a homework task.
Investigation report: Classifying chemical and physical changes

The Report

Aim:
We were learning about everyday reactions by doing experiments. We observed whether it was a physical or chemical change by putting them in tables.

Introduction:
Physical reactions are when you can change it back. Chemical reaction is when something else is formed and it can't be changed back. Equations and Classification because scientists use equations in solving real world problems because it gives them a easier route to success.

Risk Assessment:

Results:
It is on the next page

Annotations

Defines physical and chemical changes with reference to reversibility and formation of new substances.

Identifies that a risk assessment was required.
## Investigation report: Classifying chemical and physical changes

<table>
<thead>
<tr>
<th>Experiment summary table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exp No.</td>
</tr>
<tr>
<td>1. Decomposing copper carbonate</td>
</tr>
<tr>
<td>2. Melting chocolate</td>
</tr>
<tr>
<td>3. Warming washing soda</td>
</tr>
<tr>
<td>4. Blow 10 big breaths into a Balloon</td>
</tr>
<tr>
<td>5. Magnesium in acid</td>
</tr>
<tr>
<td>6. Dissolve salt in water</td>
</tr>
<tr>
<td>7. Reacting iron with copper sulphate</td>
</tr>
<tr>
<td>8. Baking soda and hydrochloric</td>
</tr>
</tbody>
</table>

### Annotations

Constructs a table to organise data.
# Investigation report: Classifying chemical and physical changes

<table>
<thead>
<tr>
<th>Work sample 9</th>
<th>Annotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Crush an aspirin tablet</td>
<td>It turn into a white powdered</td>
</tr>
<tr>
<td>10. Burning Magnesium in air</td>
<td>It went into a bright light</td>
</tr>
<tr>
<td>11. To test tube containing 10 drops lead nitrate add, 5 drops of sodium lodide</td>
<td>It turn yellow and bubbled up</td>
</tr>
<tr>
<td>12. Fold a piece of paper</td>
<td>It has change shape and it can be folded back</td>
</tr>
<tr>
<td>13. Place a small amount of manganese dioxide A/B</td>
<td>A) It made a popping sound</td>
</tr>
<tr>
<td>14. To a test tube 10 drops of sodium, add 5 drops of silver nitrate</td>
<td>It started fizzing up and then it turned white</td>
</tr>
</tbody>
</table>

Classifies chemical changes on the basis of formation of a new substance or perceived reversibility.
### Investigation report: Classifying chemical and physical changes

<table>
<thead>
<tr>
<th>15. To test tube containing 10ml of copper sulphate, add piece of magnesium</th>
<th>It started fizzing up (Gas) it also changed colour</th>
<th>Chemical</th>
<th>Because it turn into a gas and it changed colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. The test tubes containing 10 drops of copper sulphate, add a piece of magnesium</td>
<td>It turned dark green and it was warm</td>
<td>Chemical</td>
<td>Because it changed colour and got warm</td>
</tr>
<tr>
<td>17. Using a straw, blow into a test tube</td>
<td>When it was blow it would blow bubbles and it also change colour to a cloudier colour</td>
<td>Chemical: because it changed colour</td>
<td>Because it changed colour</td>
</tr>
</tbody>
</table>

### Annotations

Identifies that colour change and heat production can indicate a chemical change.

### Annotations (Overview)

The student uses some appropriate language and representations to communicate science findings and ideas.
Investigation: Trebuchet design and function

Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 8, students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances. They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems. They compare processes of rock formation, including the time scales involved. They analyse the relationship between structure and function at cell, organ and body system levels. Students examine the different science knowledge used in occupations. They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems.

Students identify and construct questions and problems that they can investigate scientifically. They consider safety and ethics when planning investigations, including designing field or experimental methods. They identify variables to be changed, measured and controlled. Students construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions. They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others. They use appropriate language and representations to communicate science ideas, methods and findings in a range of text types.

Summary of task

As part of a unit focused on energy transfers and transformations in simple machines, students investigated catapult design and function. In this task, students were required to build and investigate the function of a simple trebuchet.

After building and testing their trebuchet, students were required to investigate the effect of varying one variable on the function of the trebuchet. Students conducted their investigation in small groups and completed their report independently. They received some teacher feedback on their draft report, then wrote the final report under exam conditions, with access to their draft report and planning notes.
Investigation: Trebuchet design and function

Annotations

Identifies phenomena for investigation.

Identifies variables that can be changed and measured.

Identifies two variables to be controlled.

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Experimenting with Trebuchets

**Aim of the investigation:** The aim of this investigation is to test the effect of the fulcrum position and to test the effect of the gravitational potential energy.

**Variables:** The variable which will be changed (independent variable) is the fulcrum position. The variable which will be measured (dependent variable) is the distance of the load. The variable which will be controlled is the mass of the load and the effort of the Trebuchet. How much mass is in the load.

**Hypothesis:** It is expected that the more away the fulcrum is the more distance gained.

**Materials:**
- 1 Trebuchet
- 1 white cap
- 1 metal ruler

We have changed the position of the fulcrum. Because the load will get a better distance.
Investigation: Trebuchet design and function

Method: 1) The Trebuchet was positioned. We have moved the Trebuchet into position. 2) Placed white cap on to the trebuchet arm. 3) Placed the load into the white cap on the trebuchet arm. 4) The trebuchet was released we have let go of the arm. 5) The distance between the ball and the white cap was recorded. 6) The distance was recorded with a in ruler. 7) Repeated steps 4, 5, and 6 two more times. 8) We modified the fulcrum so the load can gain more distance by 10 cm.

Safety considerations: make sure no one is in the way of the load being launched. Don’t fire at animals or people on purpose.

<table>
<thead>
<tr>
<th>Test</th>
<th>Try 1</th>
<th>Try 2</th>
<th>Try 3</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cm away</td>
<td>91 cm</td>
<td>34 cm</td>
<td>47 cm</td>
<td>59 cm</td>
</tr>
<tr>
<td>2 cm away</td>
<td>50 cm</td>
<td>30 cm</td>
<td>19 cm</td>
<td>33 cm</td>
</tr>
<tr>
<td>3 cm away</td>
<td>2 cm</td>
<td>3 cm</td>
<td>2 cm</td>
<td>2.33 cm</td>
</tr>
</tbody>
</table>

Annotations

Plans an investigation, including repeat trials.

Identifies some safety precautions.

Constructs a table to present data.
Investigation: Trebuchet design and function

Annotations

Graph showing the relationship between Trebuchet and the distance traveled

Represents summary data points and attempts to represent the trend graphically.
Investigation: Trebuchet design and function

Discussion: The aim of this experiment was achieved to investigate how the position of the fulcrum effect how far the load on the trebuchet will go. The hypothesis was correct the load on the trebuchet will be the more away the fulcrum is the more distance it is going to get. This can be seen as a result. The trebuchet was released and it was 10 cm away and it gained 2 cm and we repeated this two more times. The other two times they gained 3 cm and 2 cm but the average was 2.33 cm. The trebuchet was released again but this time it was 50 cm away from the fulcrum and it gained 50.36 cm and the average was 33 cm long. This was repeated one more time but the fulcrum was 70 cm away from the equal position and it gained 98 cm, 94 cm, and 47 cm and the average was 100 cm. We got these result because of the energy that was involved in these tests is gravitational potential energy because gravity is pushing down. There were some errors that occurred in this experiment. We did not know what was the exact distance of the load travelled because it happened quickly. We could have done better if someone keeping a close eye on the load.

Conclusion: Our aim was achieved our aim was to test how far the load on the trebuchet. The hypothesis was correct the load would gain distance.

Annotations

Identifies that energy transfer was involved in the observed phenomena.

Identifies improvements in the method that could reduce human error in the data.

Identifies the trend in results and provides a conclusion.

Annotations (Overview)

The student uses some scientific language and appropriate representations to communicate ideas, methods and findings.
Letter: Water fluoridation

Year 8 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

By the end of Year 8, students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances. They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems. They compare processes of rock formation, including the time scales involved. They analyse the relationship between structure and function at cell, organ and body system levels. Students examine the different science knowledge used in occupations. They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems.

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Summary of task

Students watched a Catalyst episode as a stimulus for a discussion about water fluoridation in Australia. As a whole class, they discussed why adding fluoride to water is controversial and identified the research evidence that might help them understand the positive effects and/or risks of water fluoridation.

They were then provided with a range of websites to conduct further research, and were required to write a letter to the Federal Minister for Health and Medical Research with their recommendation regarding mandatory water fluoridation. They were required to include a clear explanation of the scientific evidence that underpins their position.
Letter: Water fluoridation

Dear Government

I think that it is a great idea to add fluoride to all water in Australia because it makes your teeth stronger and much healthier! There have been lots of arguments about fluoridated water causing bone cancer and other false facts, but we have been drinking fluoridated water for over 50 years and no human being has ever been affected by drinking fluoridated water.

The local councils of Queensland are making the wrong decision to remove water fluoridation. They are being persuaded by community members who are being misled by incorrect information, instead of receiving real proof that it is good or bad for you. This is leading to a rise in tooth decay in Queensland. These are horrific results and we are demanding a change.

Kind regards

Annotations

States the health benefits of fluoridation.

Refers to evidence to refute claims that fluoridation is unsafe.

Refers to the need for evidence to improve understanding of science ideas.

Annotations (Overview)

The student uses appropriate language to communicate science ideas.