




Learning Scientific Skills Outside the Classroom

Scientific Skills

Measuring	Recording	Selecting an Enquiry
Country of Origin	Suggested Age Range	Suggested Theme
 Spain	8 - 9	Earth and Space
Location outside the classroom		Benefits of using this location
Outside on the playground		Large outdoor space to complete the enquiry
Learning Objectives – Scientific Skills		Learning Objectives – Knowledge
To measure accurately using weighing scales, stop watches and tape measures To record results To plan how to set up a scientific enquiry to answer a question		To discover how gravity affects our body movements To know that the more mass (weight) a planet has, the more force of gravity it exerts To discover how our body movements change when there is less gravity
Key Vocabulary		
Scientific skills vocabulary – measure, measuring, record, recording, enquiry, problem, test Knowledge vocabulary – universe, planet, satellite, gravity, exert, gravitational force, force, mass, weight, athletics		
Resources / Equipment		
<ul style="list-style-type: none"> Equipment for comparing weight – weighing scales, dumbbells, stop watch Equipment for comparing records – stop watches, tape measures, mats, discus, chalk 		
Teaching Activities		
<p>Explain/Pose a Question - Today they are going to be thinking about the question: ‘What would happen to the World records in athletics if the Olympics were held on other planetary bodies?’</p> <p>1. MOON</p> <p>Explain – Take the children outside to see the sky, maybe the moon, and explain that the Moon is a satellite of the Earth, it revolves around the Earth and is smaller than the Earth. The force of gravity pulls the Earth towards the Moon and vice versa. However, the strength of gravity depends on their sizes, the Moon’s force of gravity is about 17% of that on the Earth.</p> <p>Video – Show children the famous video of the arrival of man on the moon.</p> <p>Discuss - How long does it take you to walk across the room? What do you think would be different if we went to the Moon? Why do the men seem to be floating when walking on the Moon?</p> <p>Measure – Using a stopwatch and the video, children measure how long it takes for each step taken on the Moon.</p> <p>Explain – They are now going to measure how long each one of their steps takes on Earth and compare this to the time taken to do a step on the Moon.</p> <p>Measure – Children use a stopwatch to measure how long each of their steps takes on Earth.</p> <p>Discuss - How do their times compare to each other and how do they compare to the time taken to do steps on the moon?</p> <p>Activity: My weight on Earth compared to my weight on the Moon <i>At this stage we are talking about weight rather than mass because the children have not been introduced to the difference between weight and mass yet.</i></p>		





Explain – They are now going to compare their weight on Earth to their weight on the Moon.

Measure – Children weigh themselves using weighing scales.

Activity – Children calculate their weight on the moon by dividing their weight by 5, this calculates their approximate weight on the Moon. Children then need to use dumbbells on the scales so they can see how many they need to make their comparative weight on the Moon.

Discuss – How does your weight on Earth compare to your weight on the Moon?

2. JUPITER

Explain – Jupiter is a much larger planet than Earth so the force of gravity on Jupiter is greater than that on Earth. This means that the children’s weight on Jupiter is double the weight on Earth. They are going to do three athletics exercises and record the results they would get on Earth and then on Jupiter.

Demonstrate – Show the children how to correctly perform a high jump, 30m speed run and a discus throw and how to accurately measure their results.

(Appropriate health and safety considerations need to be considered in accordance with the school).

Activity – Children perform three tests: a high jump, a 30m speed run and a discus throw.

Measure – Children accurately measure the distances obtained or the time taken using suitable measuring equipment.



Record - Children record their results on Earth.



Explain - To calculate their records on Jupiter, they need to replicate their weight on Jupiter by doubling their weight, this is done by carrying another pupil of a similar weight on their back to complete the long jump and the 30m run. The weight of the discus on Jupiter is replicated by using a heavier discus.

Activity - Children repeat the three tests and record the results they would obtain on Jupiter.

Discuss – What did you find out? What was your record on Jupiter like compared to your record on Earth? Why is this? What do they think would happen to their athletic records if they were on the Moon?

Explain – They are going to find out what their athletic records would be on the Moon. They will need to plan their enquiry, thinking carefully about their weight on the Moon.

Select enquiry – Allow children time to investigate ways in which they could solve this problem and plan their enquiry.

Activity – Children complete their enquiry and record their results.

Discuss – How did results/world records compare to their results on Earth and Jupiter?

Conclude – What happens to the World records if you were on the Moon or on Jupiter? What have you learnt about how gravity acts on different planets?



Examples of children’s work and teacher comments from country of origin

As an extension to this lesson, children could think about what happen if Earth was not close to another planet or if there was no gravity.