

Activity 19 – Investigate Phases of the Moon

Year Level : Grades F–7 (typically from 5 to 12 years of age)

Background : Eclipses occur when the shadow of one solar system object falls on another. To help younger students understand the basic process it is useful to physically model what happens using everyday objects such as balls.

Aim : Students to understand the cause of Moon phases and be able to model them accurately.

References:

- Section 7 “The Moon” of the AAQ/STAQ teacher booklet.
- PowerPoint presentation PP07 “The Moon and Lunar Eclipses”

Shape of the Australian Curriculum: Science strands on focus areas.

Content descriptors:

Science Understanding	Science as a Human Endeavour	Science Inquiry Skills
	<p>F</p> <p>Science involves exploring and observing the world using the senses (ACSHE01)</p>	<p>F</p> <p>Explore and make observations by using the senses (AC SIS011)</p>
<p>Yr 1</p> <p>Observable changes occur in the sky and landscape (ACSSU019)</p>	<p>Yr 1</p> <p>Science involves asking questions about, and describing changes in, objects and events (ACSHE021)</p>	<p>Yr 1</p> <p>Respond to and pose questions, and make predictions about familiar objects and events (AC SIS024)</p> <p>Participate in different types of guided investigations to explore and answer questions, such as manipulating materials, testing ideas, and accessing information sources (AC SIS025)</p> <p>Through discussion, compare observations with predictions (AC SIS212)</p> <p>Compare observations with those of others (AC SIS213)</p>

<p>Yr 3</p> <p>Earth's rotation on its axis causes regular changes, including night and day (ACSSU048)</p>	<p>Yr 3</p> <p>Science involves making predictions and describing patterns and relationships (ACSHE050)</p>	<p>Yr 3</p> <p>With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (AC SIS053)</p> <p>Compare results with predictions, suggesting possible reasons for findings (AC SIS215)</p>
<p>Yr 5</p> <p>The Earth is part of a system of planets orbiting around a star (the sun) (ACSSU078)</p>		
<p>Yr 7</p> <p>Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)</p>		

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Foundation to year 2

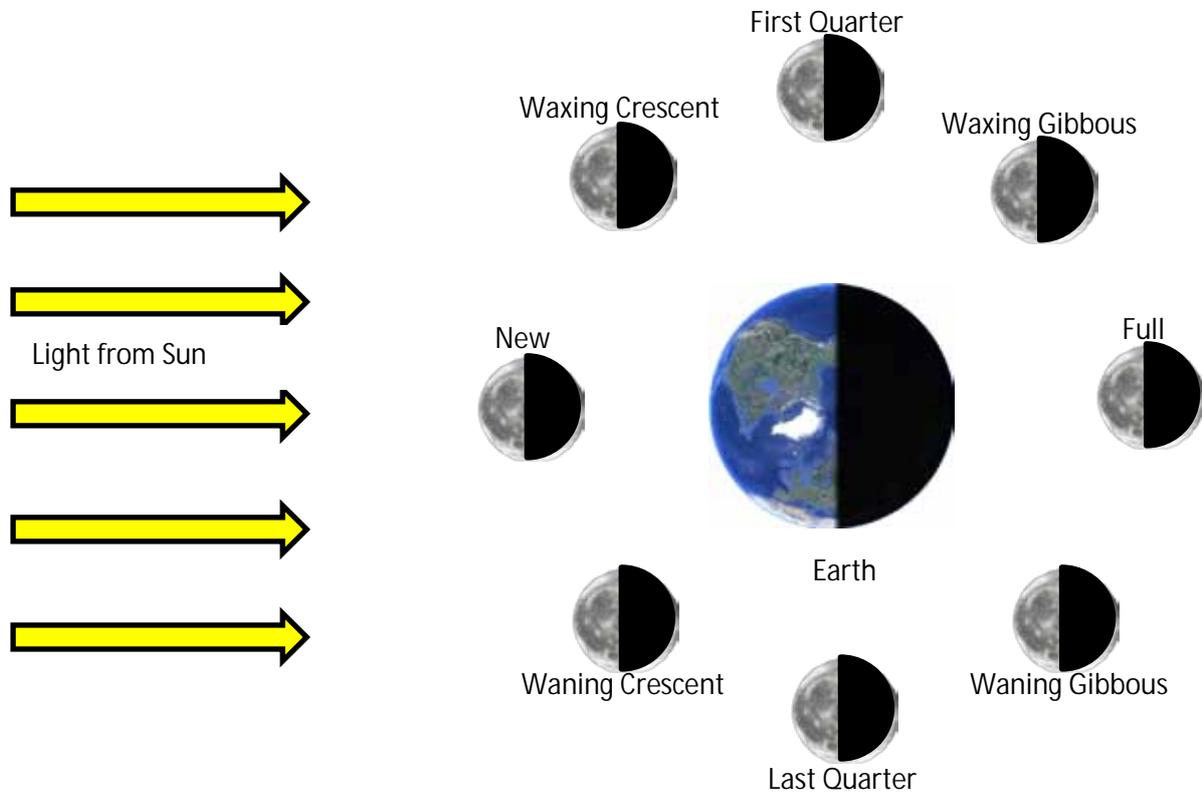
Foundation to year 2 could look at the new, first quarter, full and last quarter phases only, with teachers differentiating the activities according to students' learning needs.

Other Activities

A night viewing of the moon through telescopes is also highly recommended. Contact your local astronomical society to arrange a suitable night. See Activities 14 and 20.

Student Activity

The diagram below shows the Earth and lots of Moons.



How many Moons do we have? _____

Why do you think there are so many Moons in the diagram? _____

Where do you think the Sun is? Draw in a Sun.

Look at the names of the phases of the Moon, Start at the New Moon and work out which way the Moon would go around the Earth (Hint – look at the names of the top and bottom phases)?

What do you think Waning means? Check your answer by using a dictionary. _____

What do you think Waxing means? Check your answer by using a dictionary. _____

What do you know about the phases of the moon?

(A) Discuss this question with your group and **record everything** that you already think you know. Your teacher might write these on the whiteboard or electronic whiteboard for each group. See what the whole class together already knows.

(B) Write down anything about the Phases of the moon that you still aren't sure about (Why is half of a Full Moon called a Quarter?). Put these ideas on the board and choose one to investigate.

Here are some useful websites which should be able to help you:

www.physics.ucla.edu/~huffman/daymn.html

<http://enchantedlearning.com/subjects/astronomy/moon/index.shtml>

www.moonphases.willyweather.com.au

http://en.wikipedia.org/wiki/Lunar_phase

www.timeanddate.com/calendar/?country=29

Do a search on 'moon+phases+diagram' or 'moon+phases+explanation' using Google, Ask Jeeves or other search engines.

Present your findings to the class.

(D) Once you have done your research with a partner, look below for some ideas on how you could **present your knowledge about phases of the moon** to your class. Your teacher will also have plenty of presentation ideas for you.

How many can you think of? You could:

- Get a torch, a globe and some friends to help you do a “living” demonstration. One child will be the sun (with the torch) another will be the Earth (with a globe) and another will be the moon. If you don’t have a moon globe, use a rubber ball which is about 1 quarter the size of your Earth globe for the moon to be held by the third child. Move to show the different phases.
- Discuss how students should hold each object and how each child should move so that Earth orbits the sun while the moon orbits the Earth. “Sun” has the torch on, shining towards the Earth.
- Do some diagrams on the electronic whiteboard and move the sun, Earth and moon to show each moon phase.;
- Find a demonstration of each moon phase on the web and show it to the class, using children’s commentary.

Teachers: be sure to look at the **QSA Science Assessment Bank** and **C2C science units**, as well as materials on the **Learning Place**.