

SPARKLAB AT QUEENSLAND MUSEUM

Australian Curriculum Links for Years P-2

Term 4, 2019

SparkLab is a Sciencentre experience at Queensland Museum. Refer to the [Exhibition Guide](#) for an overview of the interactive exhibits and programs. Visit the *SparkLab* website to view the current program in the [Maker Space](#) and the various programs on offer at the [Science Bar](#).

SparkLab exhibits and programs link to the Australian National Curriculum specifically in the learning areas of Science, Technologies and Mathematics, and support students to develop their general capabilities in Literacy, Numeracy, and Critical and Creative Thinking.

General capabilities relevant to SparkLab

Direct links

Literacy

Comprehending texts through listening, reading and viewing.

Text, word and visual knowledge.

Numeracy

Recognise and using patterns and relationships.

Using spatial reasoning.

Using measurement.

Critical and Creative Thinking

Inquiring – identifying, exploring and organising information and ideas.

Generating ideas, possibilities and actions.

Reflecting on thinking and processes.

Analysing, synthesising and evaluating reasoning and procedures.

Science

	Knowledge and Understanding	Science as a Human Endeavour and Science Inquiry Skills	Sample of linked <i>SparkLab</i> exhibits and programs
Prep	Physical sciences (ACSSU005) The way objects move depends on a variety of factors, including their size and shape.	Nature and development of science (ACSHE013) Science involves exploring and observing the world using senses. Questioning and predicting (AC SIS014) Respond to questions about familiar objects and events. Planning and conducting (AC SIS011) Explore and make observations by using the senses. Processing and analysing information (AC SIS011) Engage in discussions about observations.	Speedy planets: Students observe how the shape of the well changes the path the balls take as they roll. Flight test: Students make and test out flying machines made from paper in a fast moving column of air. What happens when they change the shape of their paper flying machine? Gravity run: Students work together to make a long ball run out of tubes and wheels. Problem solve to make a faster or longer gravity run.
Prep	Chemical sciences (ACSSU003) Objects are made of materials that have observable properties.		Science Bar: Mix Master: Students observe the properties of a variety of household products and observe the changes when different products are mixed together. This program is facilitated by a Learning Officer. Flowing mist: Students play with flowing mist and explore the properties of fluids (liquids and gases) – how they move, swirl and change.
Year 1	Physical sciences (ACSSU020) Light and sound are produced by a range of sources and can be sensed.	Nature and development of science (ACSHE021) Science involves asking questions about, and describing changes in, objects and events. Questioning and predicting (AC SIS024) Respond to and pose questions, and make predictions about familiar objects and events. Planning and conducting (AC SIS025) Participate in guided investigations to explore and answer questions, manipulate materials and test ideas. Processing and analysing information (AC SIS212)	Coloured shadows: Students stand in front of spotlights of red, blue and green light. Combined, these primary colours of light make white light. Blocking one or two of these lights makes a number of coloured shadows. Frozen shadows: Students pose in front of a phosphorescent wall and after a bright flash, step away leaving behind their shadow. Similar to glow in the dark stickers, the light energy causes the wall to glow, except for the part of the wall you block with your body. Sound studio: Students use a rubber thong to hit different length pipes (Thongophone) to investigate how to make a

		<p>Through discussion, compare observations with predictions.</p> <p>Evaluating (ACSIS213) Compare observations with those of others.</p>	<p>sound and how changing the length of piping changes the pitch of the sound.</p> <p>Voice manipulation: This exhibit takes the sounds you speak into a microphone and manipulates them. Students can experiment to change how their voice sounds, including altering the pitch and adding special effects.</p>
Year 1	Chemical sciences (ACSSU018) Everyday materials can be physically changed in a variety of ways.		<p>Science Bar: Mix master: Students observe the properties of a variety of household products and observe any physical changes when they choose different products to be mixed together. This program is facilitated by a Learning Officer.</p> <p>Watch water freeze: Students use the heat from their hand to melt ice into liquid water and watch the water freeze again through special lenses.</p>
Year 1	Earth and space sciences (ACSSU019) Observable changes occur in the sky and landscape.		<p>Science on a sphere: Clouds real time: This presentation shows a dynamic 3D model of the Earth and the cloud movements over the past several days.</p> <p>Spinning Earth: Students observe day and night on a large rotating Earth and also observe the orbit of the moon around the Earth.</p>
Year 2	Physical sciences (ACSSU033) A push or a pull affects how an object moves or changes shape.	<p>Nature and development of science (ACSHE034) Science involves asking questions about, and describing changes in, objects and events.</p> <p>Questioning and predicting (ACSIS037) Respond to and pose questions, and make predictions about familiar objects and events.</p> <p>Planning and conducting (ACSIS038) Participate in guide investigations to explore and answer questions, manipulate materials and test ideas.</p> <p>Processing and analysing information (ACSIS040) Through discussion, compare observations with predictions.</p> <p>Evaluating (ACSIS041) Compare observations with</p>	<p>Air cannon: Students pull down on a rope, lifting up a heavy bowling ball. As they let it drop, the bowling ball pushes air through a tube, pushing a lighter tennis ball way up high. Students experiment with the effect of changing how high they lift the heavy ball.</p> <p>Lift a fridge: Students experiment with a giant lever and notice the effect of pulling down on ropes located at different positions on the lever.</p> <p>Magnetic pendulum: Swing the magnetic pendulum across the table and notice how the pendulum is pushed and pulled in different directions by magnets in the table. Physically feel this force by holding onto the pendulum.</p> <p>Maker Space: Push and pull using air in our Air Machines. Use everyday materials to add new parts to our air powered</p>

		those of others.	machines and use the machines to move another object. What will you make your machine do?
Year 2	Chemical sciences (ACSSU031). Different materials can be combined, including by mixing, for a particular purpose.		Science Bar: Will it float? Students select and observe how objects and liquids float or sink in different liquids. If we mix something into the liquid will this change how different objects float? This program is facilitated by a Learning Officer.

Technologies – Design and Technologies

	Knowledge and Understanding	Design and Technologies Processes and Production Skills	Sample of linked <i>SparkLab</i> exhibits and programs
Prep – Year 2	Explore how technologies use forces to create movement in products. (ACTDEK002)* Explore the characteristics and properties of materials and components that are used to produce designed solutions. (ACTDEK004)	Explore needs or opportunities for designing, and the technologies needed to realise designed solutions. (ACTDEP005)* Use materials, components, tools, equipment and techniques to safely make a designed solution. (ACTDEP007)	Maker Space: Use everyday materials to design and make a solution to the Maker Space challenge – <i>Air Machines</i> . Use everyday materials to add new parts to our air powered machines and use the machines to move another object. What will you make your machine do? Make a change to improve your design. Balance bridge: Students build different shaped bridges across ever widening gaps in a river. Will the bridges be high enough for a boat to pass underneath?

Mathematics

	Number and Algebra	Measurement and Geometry	Sample of linked <i>SparkLab</i> exhibits
Prep – Year 2	<u>Number and place value</u> Connect number names, numerals and quantities. (Prep - ACMNA002) Recognise, model, read, write and order numbers. (Yr 1 - ACMNA013)	<u>Using units of measurement</u> Use direct and indirect comparisons to decide which is longer, heavier or holds more and explain reasoning in everyday language. (Prep - ACMMG006) Measure and compare the lengths and capacities of pairs of objects. (Yr 1 - ACMMG019)	Spinning Earth and Science on a Sphere: Students explore the rotation of the Earth and various changes on the Earth's surface and discuss days, hours, weeks, months and years. Shape maker: Students recognise familiar 2D shapes and combine them to make 3D objects.

	<p><u>Fractions and decimals</u></p> <p>Recognise and describe one-half as one of two equal parts of a whole. (Yr - ACMNA016)</p> <p>Recognise and interpret common uses of halves and quarters of shapes and collections. (Yr 2 - ACMNA033)</p>	<p>Describe duration using months, weeks, days and hours. (Yr 1 - ACMMG021)</p> <p>Compare and order several shapes and objects based on length, area, volume and capacity. (Yr 2 - ACMMG037)</p> <p><u>Shape</u></p> <p>Sort, describe and name familiar 2D shapes and 3D objects. (Prep - ACMMG009)</p> <p>Recognise and classify familiar 2D shapes and 3D objects using obvious features. (Yr 1 - ACMMG022)</p> <p>Describe the features of 3D objects. (Yr 2 - ACMMG043)</p>	<p>Air cannon: Students pull down on a rope, lifting up a heavy bowling ball. They can measure how high they lift the ball against a scale. As they let it drop, the bowling ball pushes air through a tube, pushing a lighter tennis ball way up high. They can measure and compare how high the tennis ball goes.</p> <p>Giant arch: Students work together to build a giant arch with specific numbered blocks. After putting in the final keystone, the giant arch will stay up without any glue or nails. Knocking over the arch is as fun as building it.</p>
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* Indirect link