

Australian Horses

For Years: 3-6

Unit length – 6 lessons

By Siobhan O’Neill

Our school supports children living with disability. This unit would be designed to be disability inclusive and will look at the history of horses in European settlement of Australia. Specifically, horses in the context of Australian farming and farm equipment. Horses have been essential for managing cattle on large properties in Australia. They were also our first means of transport in the colony, pulling wagons that supplied remote areas. We now have a wild population of horses, which has an impact on the Australian environment. This unit will look at:

1. Environment: We have wild brumbies in some of our national parks. Do they belong there? Brainstorm ideas to monitor populations. What machines can you build?
2. History: what kind of farms have needed horses and how do we take care of horses on large remote properties?
3. Anatomy of the horse: why have we used horses and what makes them so strong? Use LEGO to construct a horse joint/leg. See if you can create movement through programming
4. What equipment is needed to work with horses? Brainstorm creative grooming device & build

Lesson Sequence

Lessons	Curriculum Overview	Lesson Overview	Resources	Assessment
1	<p>Science: (Biological Sciences) Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)</p> <p>Students will: -Explore the features of wild horses (Brumby’s) in the Australian context -Create inquiry questions to guide their project - Research information in collaborative groups</p>	<p><i>Environment: The Brumby and the Australian Bush</i> What is a Brumby? How did they get there? Research them and the impact they have on the Aussie bush. Discuss conservation and trapping wild Brumby’s humanely. Design a humane wild horse trap. Next lesson will build and program.</p>	<p>Pens / paper for drawing up ideas</p> <p>LEGO Education SPIKE and/or BricQ Prime kits</p> <p>iPads with Lego Spike app available</p>	<p>Teacher anecdotal notes of observations and thoughts expressed throughout the lesson.</p>
2	<p>Science: (Biological Sciences) Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)</p> <p>Digital Technology: (Processes and Production): Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task (?curriculum?)</p> <p>Digital Technology: (Processes and Production) Implement and use simple programming environments that include <u>branching</u> (decisions) and <u>iteration</u> (repetition) (ACTDIP020)</p>	<p><i>Environment: The Brumby and the Australian Bush</i> Time to build the humane wild horse trap. How will conservationists be alerted when the trap is sprung? How can you stop the horses from injuring themselves as they wait? Build and program the trap using SPIKE Prime or BricQ</p>	<p>LEGO Education SPIKE and/or BricQ Prime kits</p> <p>iPads with Lego Spike app available</p>	<p>Teacher anecdotal notes of observations and thoughts expressed throughout the lesson</p>
3	<p>Science: (Biological Sciences) Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)</p> <p>Digital Technology: (Processes and Production): Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task (?curriculum?)</p> <p>Digital Technology: (Processes and Production) Implement and use simple programming environments that include <u>branching</u> (decisions) and <u>iteration</u> (repetition) (ACTDIP020)</p>	<p><i>Horses in the Australian Context</i> When were horses introduced to Australia? What farms now need horses? How do we care for horses on large remote properties? Discuss in groups. Brainstorm ideas on how farmers can remotely monitor their properties. What technologies exist to help? Design and build a remote animal management system. Explain to the class how this can help farmers save costs and protect their stock.</p>	<p>Pens / paper for drawing up ideas</p> <p>LEGO Education SPIKE and/or BricQ Prime kits</p> <p>iPads with Lego Spike app available</p>	<p>Teacher anecdotal notes of observations and thoughts expressed throughout the lesson.</p>

	<p>Students will: -Design and make a design solution</p>			
4	<p>Science: (Biological Sciences) Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)</p> <p>Digital Technology: (Processes and Production): Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task (?curriculum?)</p> <p>Students will: -Provide and receive peer feedback -Follow steps to create a LEGO solution</p>	<p><i>Looking More Closely at the Horse</i> Horses are amazing creatures. They are strong and sturdy and intelligent. What makes a horse so strong? How can they pull or carry such heavy weights? Analyse the structure of a horse leg. Using the gears and levers in your LEGO kits, build a replica horse joint to examine movement.</p>	<p>Pens / paper for drawing up ideas</p> <p>LEGO Education SPIKE and/or BricQ Prime kits</p> <p>iPads with Lego Spike app available</p>	<p>Teacher anecdotal notes of observations and thoughts expressed throughout the lesson.</p>
5	<p>Digital Technology: (Processes and Production) Implement and use simple programming environments that include <u>branching</u> (decisions) and <u>iteration</u> (repetition) (ACTDIP020)</p> <p>Students will: -Use prior knowledge of coding to create a program -Include iteration (repetition) within their program -Make adjustments to code and hardware as required</p>	<p><i>Building a safe Horse enclosure</i> In order to properly care for horses, we need to build safe enclosures. Discuss what this means. What does a horse need to stay safe? Build a gate system for horses to enter to and from open fields, into the farm. Describe the push and pull forces that are at work. Discuss force – opening gates hard or soft.</p>	<p>Pens / paper for drawing up ideas</p> <p>LEGO Education SPIKE and/or BricQ Prime kits</p> <p>iPads with Lego Spike app available</p>	<p>Teacher anecdotal notes of observations and thoughts expressed throughout the lesson.</p>
6	<p>Science: (Biological Sciences) Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)</p> <p>Digital Technology: (Processes and Production): Create and communicate information, including online collaborative projects, using agreed social, ethical and <u>technical protocols</u> (codes of conduct) (ACTDIP022)</p> <p>Students will: -Persuade an audience of their idea -Communicate ideas using digital tools in a safe manner</p>	<p><i>Horse Grooming</i> What sort of ‘personal care’ does a horse require? Discuss hooves, coat, brushing, feed requirements. Let your imagination go wild! Design a grooming or horse care device using mechanisms, sensors and motors from the LEGO kit. Present to class explaining your idea.</p>	<p>Pens / paper for drawing up ideas</p> <p>LEGO Education SPIKE and/or BricQ Prime kits</p> <p>iPads with Lego Spike app available</p>	<p>Teacher anecdotal notes of observations and thoughts expressed throughout the lesson.</p>

BricQ Motion Essential Lesson Plan St Lucy's School

Unit Outline: Australian Horses and the Environment

STEM context: Science – Forces 60 min lesson plan

Unit Overview:

Build a gate system for horses to enter to and from the open fields, into the farm. Describe the push and pull forces that are at work. Students to use the contents of the LEGO Education BricQ Motion Essential Set.

Objectives

Skills

Students develop and apply skills in:

- scientific inquiry through the process of working scientifically
- design and production processes in the development of solutions

Curriculum links: Early Stage 1 outcomes

A student: **STe-2DP-T** develops solutions to an identified need

Knowledge and Understanding

Students develop knowledge and understanding of:

- the natural world including forces
- the built environment including engineering principles and systems

Curriculum links: Early Stage 1 outcomes

A student: **STe-5PW-ST** observes the way objects move and relates changes in motion to push and pull forces

Teaching and Learning

- What does push and pull mean?
- Push and pull are forces that change the way an object moves. It might make them go faster, go slower or stop them.
- You can also use push and pull to change the shape of an object or the direction the object is moving in.

Push: What happens when you push a gate as gently as you can? (It does not move far)

What happens when you push a gate as hard as you can? (It opens all the way)

- **Activity:** Students to design, draw and describe lego gates. Once the students have finished building their gates, encourage them to test them out using their lego horse to enter and leave the paddock.
- Gather students to share what they have built and explain the push/pull effect of their gates.
- Discuss how the gates help transfer the horses from the wild into the paddocks.

Assessment: Students can use their lego gates to explain that Push and Pull are opposite forces, meaning they move objects in different directions. Push moves things further away. Pull brings them closer.

Additional Skills learned through play-based learning:

- Fine Motor
- Sequencing
- Following instructions
- Breaking problems down into simple parts
- Communication and collaboration
- Identifying cause and effect
- Story telling
- Problem solving
- Colour coding