



Science Overviews Term 2 - 2022 Physical Sciences

This term in the STEM Labs we will be focussing on the Australian Curriculum sub-strand of Physical Sciences. The physical sciences sub-strand is concerned with understanding the nature of forces and motion, and matter and energy.

In the first week of term we will explore a range of 'physics' related activities and objects to further develop our curiosity and critical thinking relating to forces and energy. We will then in weeks two and three undertake a range of engaging mini STEM challenges, that focus on solving physics based problems. With a strong focus on highlighting and practically utilising the Engineering Design Process in order to explore practical solutions to the different problems posed.

STEM Challenge - Students will explore and further developing their understanding of Sphero technology and its use of block code for programming. They will engage in a range of open ended tasks to help facilitate this. Through these learning opportunities students will work collaboratively to critically and creatively design solutions to a range of real world based problems utilising the Sphero.

Upper Primary

Our focus for inquiry this term will be the exploration of different types of energy. In particular, we will focus on how electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources.

Through hands-on investigations, students will explore how simple circuits and their components, including batteries, bulbs, buzzers, motors and switches work. We will also plan and conduct a range of experiments that highlight how electrical circuits provide a means of transferring and transforming electricity. This will involve exploring the features of some electrical devices, investigating different electrical conductors and insulators, and recognising the need for a complete circuit to allow the flow of electricity.

STEM Challenge - Students will explore and further developing their understanding of Sphero technology and its use of block code for programming. They will engage in a range of open ended tasks to help facilitate this. Through these learning opportunities students will work collaboratively to critically and creatively design solutions to a range of real world based problems utilising the Sphero. They will reflect and critique their designs based on agreed criteria that we have designed together.

Students will further develop their Science Inquiry Skills through such actions as questioning, investigating, completing scientific diagrams, observing, predicting, testing ideas, collaborative group work and conducting experiments. Science as human endeavour will be explored as students investigate the invention and development of the battery. This will include critically evaluating current and future potential benefits to society of this energy source (including the exciting new world of lithium batteries).

Middle Primary

Our focus for inquiry this term will be the exploration of how forces can be exerted by one object on another through direct contact or from a distance. Students will use science inquiry skills to explore how forces, energy and motion are required to move objects and how this applies to the world we live in (and beyond!).

Through hands-on activities and a design project, students will identify and test contact and non-contact forces. Via this experiential learning we aim to answer a range of practical questions and develop our understanding of forces and motion.

STEM Challenge - Students will explore and further developing their understanding of Sphero technology and its use of block code for programming. They will engage in a range of open ended tasks to help facilitate this and also incorporate the concepts we explored and developed around forces. Through these learning opportunities students will work collaboratively to critically and creatively design solutions to a range of real world based problems utilising the Sphero. They will reflect and critique their designs based on agreed criteria that we have designed together.

Students will be working scientifically through such actions as questioning, investigating, observing, predicting, discussions, and planning and conducting experiments. This will be done as a whole class, individually and in groups. Science as a Human Endeavour will be explored through investigating the different types and uses of magnetism in everyday life.

Junior Primary

This term we will be undertaking an inquiry based unit of work that explores the way objects move depend on a variety of factors, including push and pull forces and their size and shape. Including, how a push or a pull affects how an object moves or changes shape. Students will use science inquiry skills to explore forces and motion and how energy is required to move objects through the lens of how different toys move and the ways in which they move.

Students will be working scientifically by engaging in a variety of hands on experiments to investigate some different ways that toys move on land, through water and in the air. Through hands-on activities, design challenges and a fair test experiment, students will gain an understanding that energy is required to move things, pushes and pulls can make things move and stop, and how some toys are moved by the forces of friction, gravity and air resistance. This will also include developing understanding of how different toys they create move and how size and shape of an object can change how it moves.

STEM Challenge - Following the steps of the engineering design process, students will design a toy that uses a push and/or pull force to work. They will do this by critically and creatively designing, building, and testing a toy that uses a push force to make a table tennis ball float. Alternatively, they will demonstrate how changing the size of a toy with wheels can change its rate of descent. They will reflect and critique their designs based on agreed criteria that I have explained to them. They will reflect and critique their designs based on agreed criteria.

Students will further develop their capability in critical and creative thinking as they learn to generate and evaluate knowledge, ideas and possibilities relating to their 'toy that moves challenge' and other investigations and use them when developing and improving upon designed solutions.

Students will be working scientifically through such actions as questioning, investigating, observing, predicting, discussions, and planning and conducting experiments. This will be done as a whole class, individually and in groups. Science as a Human Endeavour will involve actively exploring range of toys from different cultures and comparing their movement similarities and differences.

Feedback and Student Voice - Students will consistently be provided with constructive feedback and will be given opportunities to provide feedback to each other and the teacher. This will be both verbally and in written form. Students will also participate in peer, teacher and self-assessment processes.

Student voice will be evident through such areas as curriculum design, science room values and expectations-development, personal feedback, reflection and STEM challenges.

Science Room Health and Wellbeing - Personal development through exploration and practical application of our school values, the “Play is the Way” program and Growth Mindset principles will be imbedded into our science lessons.

Differentiation – Approaches to teaching and learning will be differentiated to meet the needs of individual learning styles.

