

Science Overviews Term 3 - 2022 Earth and Space Sciences

This term in the Science labs we will be exploring a wide range of exciting science based ideas and activities. One of our main focusses will be on the Australian Curriculum Science sub-strand of Earth and Space Sciences. In essence, Earth and Space Sciences is the area of science concerned with Earth's dynamic structure and place in the cosmos. The key concepts developed within this important area of science is that Earth is part of a solar system that is part of a larger universe; and over time Earth is subject to constant change within and on its surface, as a result of natural process and human use of resources. Student exploration of human endeavour will be explored in a range of ways (eg advancements in disaster warning systems, human influence in relation to causing and preventing erosion and human impact on drinking water quality) as this supports students to develop their understanding and make connections through linking tangible examples of science in their world with the scientific relevance of the concept being taught.

Students will continue to develop their Science Inquiry Skills throughout this process via such actions as questioning, investigating, researching, comparing, measuring, observing, predicting, testing ideas, collaborative group work and conducting experiments. Comparing, contrasting, reflection and evaluation will also be a key part of their work.

National Science Week will be celebrated via a range of interesting and thought provoking science demonstrations designed to challenge and engage. Students will use their science inquiry skills to plan, test, evaluate and reflect on a science demonstration that they will present, in small groups, as part of their classes 'pop up' virtual science demonstration. Furthermore, the focus of their presentation will not only be audience engagement but clearly explaining the aim, process and science behind their experiment/demonstration to aid concept development of for the audience. In effect the students will become the teachers. It is planned for these to videoed and shared with other classes and also via Seesaw.

Oliphant Science Competition - This year the Oliphant Science Competition is partnering with Science Alive for the Open Day event. Models & Inventions entries and winning entries from all other categories will be on display from Friday 5 August - Sunday 7 August at the Adelaide Showgrounds. There will also be a range of come and try activities, as well as a full program of exhibitions and science shows on offer from Science Alive!

Scientist Incursion – Marine Biologist Elaine Anderson will visit our Upper and Middle Primary classes and share her interesting experiences working as a marine biologist on the Great Barrier Reef. Her interactive presentation will explore how all life on the reef relies on each for survival and the fragile balance that is needed to maintain its rich levels of biodiversity. This will also include the importance of the reef to our worlds fragile ecosystem, the many challenges the reef faces and positive things we can do to make a difference (3R's – reduce, reuse, recycle) and 'turn back' the damage that is currently occurring. Elaine will also touch on the current innovations in kelp 'farming' and how this is being used to reduce carbon emissions. Following Elaine's presentation, we will further explore and hopefully commit to practical action(s) we can take in relation to implementing the '3R's' principles on a school based level.

Junior Primary

This term we will be undertaking an inquiry based unit of work that explores the weather and its effects on everyday life and also, investigate how Earth's resources are used a variety of ways. Students will use science inquiry skills to explore how daily and seasonal changes in our weather impact on us and how the precious resource of water forms, is used and how humans impact both positively and negatively on this valuable natural resource.

Students will be working scientifically by engaging in a variety of hands on investigations and experiments to explore and describe different ways that the weather and seasonal changes affects their lives and the world around them. They will also explore where water can come from, describe some different ways we use it, explore ways to conserve it and consider the impact of drought on society and the environment. Through hands-on activities, design challenges and a fair test experiment, students will gain an understanding of, and an appreciation for the precious resource of water and develop solutions to the problems of how to use it responsibly and sustainably.

Science based STEM Challenge – Students will simulate how water is transferred from its source to its point of use and the impact of human influence along the way. In effect they will follow 'Danny the Drip' from when he falls at the top of Mount Lofty and flows through a creek to a river and beyond. Following the steps of the engineering design process, students will explore the problems of the different types of pollution Danny encounters on his journey and then design potential solutions to these issues.

Science as a Human Endeavour will explore and consider how Aboriginal and Torres Strait Islander Peoples live in regions with scarce resources or in sensitive environments and how they ensured there were enough resources for future generations.

Middle Primary

Our focus for inquiry this term will be the exploration of how Earth's surface changes over time as a result of natural processes and human activity. Students will be working scientifically by engaging in a variety of hands on investigations and experiments to explore how natural processes and human activity shape our surroundings. Students' understanding of soils, rocks and landscapes and how they change over time, will be further developed through hands-on activities and student-planned investigations. This will include exploring, identifying and suggesting best use for rocks at our school. Students will also investigate factors that affect erosion of soils, including around our school environment.

STEM Challenge - Following the steps of the engineering design process, students will work in collaborative learning teams and utilise the information they have developed over the unit to critically and creatively design sustainable 'rock exploration' zones around our school. They will reflect and critique their designs based on agreed criteria that we have developed within the classes.

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 different challenges and other investigations and use them when developing and improving upon designed solutions.

Science as a Human Endeavour will be explored through how human influence has resulted in coastal erosion and how science is being used to remediate and minimalise this impact. The focus will be areas students may have connections with (eg Fleurieu Peninsula, South Coast, etc).

Upper Primary

Our focus for inquiry this term will be around how sudden changes in the Earth's surface may be caused by geological or meteorological events. Students will investigate the internal structure of the Earth and how the structure and properties of the Earth's outer layers may result in sudden geological changes in the form of earthquakes, volcanic eruptions and tsunamis. Students will be working scientifically through a range of hands on investigations to further develop their understanding of the phenomena of earthquakes, volcanos and tsunamis are their interconnectedness. They will research and identify similarities and differences between these three types

of sudden geological changes/natural disasters and also explore how they can be both 'creators' and 'destroyers'. It is anticipated that this unit will continue into term 4.

Science based STEM Challenge - Following the steps of the engineering design process, students will work in collaborative learning teams and utilise the information they have developed over the unit to critically and creatively design and build a structure that can withstand the force of a simulated tsunami. They will reflect and critique their designs based on agreed criteria, in order to enhance scientific understandings.

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 different challenges and other investigations and use them when developing and improving upon designed solutions.

Science as a Human Endeavour will involve students further developing their critical and creative thinking through exploring and considering the various scientific tools and methods can warn communities of the potential geological events. Through data collection and analysis, students explore how scientific investigations can be used to help predict and minimise the impact of sudden geological events.

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 embedded into our science lessons.

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