



Good Shepherd
Lutheran School
ANGASTON

Science Policy

Last Reviewed 2008

Preface

In Science, students learn to investigate, understand and describe the physical, biological and technological world and value the systems and processes that support life on our planet. Science helps students to become critical thinkers who use evidence to construct conclusions.

1. Aims

The science Learning Area aims to develop in all children:

The capacity to use, develop and apply scientific knowledge by:

- investigating, explaining and predicting events, and devising solutions in their everyday endeavours in their physical, social and biological worlds
- communicating scientifically to different audiences for a range of purposes
- using science to link with, and across, other Learning Areas, with lifelong learning, work and community contexts.

The understanding that science is a social construction by:

- acknowledging that aspects of scientific thinking are carried out by all people as part of their everyday lives in ways that contribute to their personal and social wellbeing and identities in a range of contexts, including cultural, environmental and economic
- appreciating the evolutionary nature of science and scientific knowledge as a human endeavour with its own histories and ways of contributing to society
- recognising that diverse cultures and groups may have different science systems and that this influences how scientific knowledge develops and is used
- contributing to public debate and decision-making about science.

Positive attitudes, values and dispositions related to science, which involve:

- being open to new ideas, being intellectually honest and rigorous, showing commitment to scientific reasoning and striving for objectivity, and pursuing and respecting evidence to confirm or challenge current interpretations
- being confident and optimistic about their knowledge, skills and abilities to satisfy their own questions about the physical, biological and human-constructed worlds
- recognising and valuing diverse cultural perspectives in and through science
- thinking, planning and making decisions that include ethical consideration about the impact of the processes and products of science on people, future generations and physical and social environments
- considering careers, paid/unpaid work, further education and training in science.

These aims reflect the following beliefs:

Successful students will learn about Earth and Space to,

- identify and share information about features of their natural and built local environment that affect living things, including themselves.
- express ideas about changes that occur in their local environment, and considers implications for sustainable environments.
- describe the characteristics that sustain life on the earth and changes to these characteristics and their impact over time.
- compare the apparent position of the sun to patterns of behaviour in everyday life.
- explore the apparent motion of the sun in relation to the earth and develops models of their understanding.
- describe various components of the solar system and the effects of these on our everyday lives.

Successful students will learn about Energy Systems to,

- identify sources of energy and describes the ways in which energy is used in daily life.
- identify, plans and acts on ways in which they can better use energy in their lives.
- investigate and report on patterns of energy use in the home, school and other places.
- pose questions and explores the ways in which different objects move.
- identify, observe and describe energy transfer, such as light, sound, heat or movement, through common objects.
- use the idea of force to describe and explain different ways of transferring energy.

Successful students will learn about Life Systems to,

- investigate the features and needs of living things, and demonstrates an understanding of their interdependence with each other and the physical world.
- explore relationships between living things by posing investigable questions about features and functions.
- explain the interrelationships between systems within living things, and between living things in ecological systems. They relate these ideas to the health of individuals and to threats to the sustainability of ecological systems.
- explore their own stages of growth and those of other living things. They develop personal future timelines.
- communicate understandings of life cycles and the importance of diversity for the future.
- identify, analyse and communicate confidently the similarities and differences in the ways that living things reproduce, and considers the ethics of related issues.

Successful students will learn about Matter to,

- identify properties of materials that are observable through the senses and recognises the uses of these materials.
- design an investigation to explore properties of common materials, explaining why they have particular uses.
- describe the structure of some common materials, explains how materials are used for different purposes, and understands their impact on the environment.
- identify and predict materials that change and do not change.
- predict, investigate and describe changes in common materials when acted upon in various ways.
- use the changes in properties and uses of materials in product life cycles.

2. Principles for Effective Teaching of Science

The understandings, capabilities and dispositions encompassed in the essential learnings may be achieved by learners through:

- using constructivist approaches to learning
 - practising the relevant skills within supportive and enabling learning environments
 - active involvement in their learning
 - applying their learning to new and different contexts
 - processes that are learner-centred
- are developed in authentic contexts
- are built on over time
- identify evidence of learning over time.

3. Content

Science is organised into four conceptual strands, each with its characteristic scientific knowledge and ideas. The strands are earth and space, energy systems, life systems and matter-which are based on earth and space science, physics, biology and chemistry respectively.

Each science strand is characterised by two scientific ideas. These scientific ideas form the basis for the Key Ideas in each strand at each level of schooling.

Strands

Scientific Ideas

Earth and
Space

The earth sustains life and is composed of materials that are altered by forces within it and on its surface. There are relationships between the earth, our solar system and the

universe.

Energy Systems	The behaviours and properties of the physical world can be explained and understood using the concepts of force, energy and transfers of energy. Energy systems are based on recognising that people have developed patterns of energy use and ways of understanding various events caused by energy.
Life Systems	The structure and characteristics of living things and their functioning are interrelated and interdependent. Organisms grow, reproduce and change over generations.
Matter	Different materials have different properties, and these properties determine their uses. Patterns of interaction of materials enable us to understand and control those interactions.

4. Assessment

Assessment in Science has a number of purposes. These include providing information to:

- students about their progress and achievements
- teachers to inform planning and programming
- parents and caregivers about their children's learning

Judgments' about the student's achievements will be based on clear and explicit criteria.

Assessments draw on a comprehensive range of strategies including anecdotal records based on observations, work samples, portfolios, self assessment tasks, checklists, teacher made lists, standardized tests, audio tapes, video tapes and interviews.

Students are encouraged to monitor and reflect on their progress.

Student development will be mapped across year levels.

5. Teacher's Professional Development

Teachers keep themselves well informed both with content knowledge and teaching strategies and practices. This is achieved through;

- professional reading
- sharing of best practice e.g. at staff meetings, hub groups
- attendance at advertised conferences, workshops, seminars, etc
- related and relevant association memberships.

6. Timetable

It is expected the time allocation for Science will be a minimum of 90 minutes per week. Where possible, teachers need to explore opportunities for integration with other curriculum areas.

7. Resources

Effective resourcing relies on:

- an annual meeting of the Principal, the Science Key Teacher and Business Manager to review spending of the current year's budget and to determine proposed budget for the next year.
- the administration of adequate budgetary commitments for the provision of teacher and student equipment, materials including library resources and software programs, access to the internet and related technology
- a key teacher accepting responsibility for coordinating the selection and purchase of equipment and materials to support the program
- adequate budgetary commitment to ongoing professional development for teachers.

8. Parents

At enrolment interviews, caregivers are informed about curriculum areas making up the school program and studies in which their students will participate.

Both new and existing caregivers of students of the school are given the ongoing opportunity to learn about the key learning area.

This information may be provided:

- parent information nights
- in printed form, through class and school newsletters
- by teachers according to individual need
- internet access to SACSA and LEA website.

9. Scope and Sequence - Science

The Lutheran Curriculum Framework has been developed for use in all Lutheran Schools to support teachers in their planning and programming. The Science Scope and Sequence is used by Good Shepherd to allow for a consistent approach across every year level.

Attached is the Lutheran Curriculum Framework Science Scope and Sequence.