RATIONAL
Science education at St Joseph's School is designed to develop in students the ability to ask questions and to find answers about the physical and biological world.

The Science curriculum at St Joseph’s is based on the Victorian Essential Learning Standards. It focuses on two main Dimensions:

1. Science knowledge and understanding
   The Science knowledge and understanding dimension focuses on building student understanding of the overarching conceptual ideas of science. These include understanding:
   - the nature of the similarities between, and the diversity of, living things and their sustainable relationships with each other and their environment
   - concepts related to matter - its properties and uses, and the production of different substances through chemical change
   - concepts of energy and force as a way of explaining physical phenomena
   - the place of the Earth in time and space and the interactions between the Earth and its atmosphere
   - how scale is important in relating structure to function at microscopic and macroscopic levels.

   These understandings enable students to build on their curiosity and answer their own questions about themselves and their interactions with the world while at the same time allowing them to think through contemporary challenges and issues. Through this, students come to understand how science relates to society and the environment.

2. Science at Work
   The Science at work dimension focuses on students experiencing and researching how people work with and through science. Students learn to be curious and to use scientific understanding and processes to find answers to their questions. They design and pursue investigations ethically and safely; generate, validate and critique evidence; analyse and interpret ideas and link them with existing understanding; work and reason with scientific models and communicate their findings and ideas to others. They identify and practise the underlying values, skills and attributes of science.

   Through their investigations, they gain insight into science as a human activity and the relationship between science, technology and society both now and in the future. They explore how science is used in multiple contexts throughout their lives and its pervasiveness throughout the workplace.

BELIEF STATEMENTS
We believe that children develop knowledge and skills in the area of Science best when:
- They can find meaning and see a purpose to learning about their physical and natural world.
- They can make links with other Domains through an Integrated Curriculum.
- They are supported by a classroom environment enriched with visual displays.
- They are frequently engaged in the scientific processes of predicting, observing and explaining.
- They are actively involved in investigating, experimenting, problem solving and testing – when they can see results.
- They are exposed to numerous scientific demonstrations.
- They are guided towards new understandings through a variety of approaches and strategies.
- They are expected to use scientific understandings flexibly and imaginatively.
- Tasks are open-ended and challenging.
- They are immersed in the language and content of the topic being explored.
• They are given frequent opportunities to talk about, discuss and report on their learnings – communicating ideas and concepts.
• They are encouraged to use approximations and to take risks in their encounters with scientific experiences.
• They are given frequent opportunities to engage in ‘hands-on’ experiences both individually and as a member of a group.
• The scientific concepts they learn about are related to everyday life.
• They are given opportunities to build upon what they already know and to draw upon their own experiences and creativity.
• They are taught / given procedures to follow.
• The science they learn is interesting, exciting and stimulating.
• They are given opportunities to use and manipulate appropriate scientific equipment.
• Learning is fun.

AIMS

Through St. Joseph’s School Science Program we support our vision of providing a Curriculum which is rich and broad, giving children a breadth of knowledge and wide array of skills which will ensure that they are confident, thinking and active members of our Australian Society”.

The Science Program at St Joseph’s School aims to:
• Develop in children the knowledge and skills which are central to biological, physical and earth sciences.
• Assist children to apply their knowledge of science and of scientific processes and concepts to explain and predict events in the natural and physical world.
• Assist children to manage their everyday lives with a greater depth of understanding as they develop their comprehension of scientific concepts.
• Assist children to use scientific language to communicate effectively and further their own understandings.
• Develop in children the ability to use the skills of scientific investigation, reflection and analysis to generate or refine knowledge, find solutions and pose more questions.
• Assist children to develop a range of skills which will make them competent users of a range of equipment and resources.
• Assist children to develop an orientation to the future and to change.
• Assist children to develop a systematic and creative approach to scientific solution.
• Develop in children an ability to be open-minded and show respect for individual differences when responding to scientific challenges.
• Develop in children an understanding and appreciation of scientific knowledge and the nature of science as human endeavour, its history, and its contribution to society.
• Develop in students a measure of responsibility for improving the quality of life and the environment.
• Develop an understanding of issues relating to safety when using equipment and resources.
• Encounter personal enrichment and develop self-esteem.

SCOPE and SEQUENCE

See Integrated Curriculum Scope and Sequence

VELS STANDARDS

See Appendix
STRATEGIES
A variety of teaching styles will be employed in order to cater for the fact that children learn in
different ways and respond to different strategies.
These strategies include:
• Providing teacher directed activities / appropriate modelling.
• Observing real events.
• Conducting experiments.
• Manipulating scientific equipment.
• Concept mapping.
• Drawing / making diagrams and models.
• Group discussion/ sharing ideas.
• Searching for visual and other clues.
• Reading books and organising and analysing the contents.
• Watching videos.
• Using CD Rom technology.
• Going out on excursions to gain first hand experience.
• Listening to and interviewing guest speakers.
• Conducting surveys.
• Brainstorming.
• Listing questions and statements.
• Classifying key words, facts, pictures, objects etc.
• Representing statistics and information using graphs and other forms of visual
  representation.
• Preparing factual texts.
• Following and preparing procedural texts.
• Constructing consequence wheels.
• Preparing oral and visual presentations.
• Conducting mini campaigns in the local community.
**ASSESSMENT**

**Planning for assessment within VELS**
To adequately measure the range of learning reflected in the Science VELS, assessment programs at St Joseph’s School need to allow students to demonstrate:

- *knowledge* and skills in biological, earth and physical sciences
- *application* of scientific knowledge and understanding to explain and predict events in the natural and physical world
- *skills* in scientific investigation, reasoning and analysis to refine knowledge, find solutions and ask questions
- *scientific attitudes* such as flexibility, curiosity, respect for evidence and critical reflection
- *communication* of scientific understanding using appropriate scientific language to a range of audiences.

**Assessment Strategies**
The following strategies may be used by teachers at St Joseph’s School to assess Science.

<table>
<thead>
<tr>
<th>Observations</th>
<th>Written tests</th>
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<tbody>
<tr>
<td>Watching work in progress shows student attitudes, communication and process skills.</td>
<td>Tests can show the extent of students' scientific knowledge and ability to apply it</td>
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<tr>
<th>Questioning</th>
<th>Research projects</th>
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<tbody>
<tr>
<td>can check the depth of student understanding shown in other assessments, show attitudes. Open questions can show ability to apply knowledge to new situations.</td>
<td>Students working on projects can show planning, organising and investigation skills. Project products of can show analysing, interpreting and communication skills.</td>
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<tr>
<th>Fieldwork</th>
<th>Practical tests</th>
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<tr>
<td>Fieldwork allows students to show planning, investigating and data collection skills and the application of their scientific knowledge.</td>
<td>Practical tests can provide information on students' process skills and their ability to apply their scientific knowledge.</td>
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<th>Self-assessments</th>
<th>Peer-assessments</th>
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<td>Students reflect on their learning, listing what they know and their concerns.</td>
<td>Peer-assessments can show students' ability to communicate to an audience.</td>
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<th>Modelling / simulations</th>
<th>Creative writing</th>
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<tr>
<td>Modelling activities allow students to clarify and show the depth of their understanding and to communicate scientifically.</td>
<td>Creative writing can show students' depth of understanding, application of scientific knowledge and communication skills.</td>
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<tr>
<th>Student portfolios</th>
<th>Student profiles</th>
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<tr>
<td>Samples of work selected by students to show the range of their understanding and their progress over time.</td>
<td>Samples of student work annotated with teacher comments on outcomes demonstrated can show progress over time.</td>
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<tr>
<th>Problem-solving</th>
<th>Bundling activities</th>
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<tr>
<td>Problem-solving activities can show students' investigating and analysing skills and ability to apply scientific knowledge.</td>
<td>Collecting, analysing and organising activities can assist student understanding and show process skills.</td>
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<tr>
<th>Concept mapping</th>
<th>Drawing</th>
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<tr>
<td>Identifying and linking key words can show students' level of understanding of a topic</td>
<td>Drawing and labelling can show students' depth of understanding and communication skills.</td>
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REPORTING

Reporting on individual children’s’ programs and progress is made available to parents and relevant parties as appropriate, regularly throughout the year. Opportunities for reporting take place through:

- Twice yearly written reports
- Curriculum nights
- Formal and informal parent/teacher interviews
- Parent education sessions
- Formal/informal displays.

RECORDING

The Integrated Curriculum Planning Sheet is used to record the domains, dimensions, standards and learning experiences covered in each class program.

The overall program is monitored through the use of our Scope and Sequence.

EVALUATION

The evaluation of our Science program and policy will consist of the following components:

- Further professional development for staff that examines current practice in the light of most recent theories of scientific learning.
- A critical examination of the current policy, it’s relationship to other policies and in the light of information gained from the components in the evaluation process.
- A full review of the planning process used within our Integrated Curriculum.