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VISION STATEMENT:

St. Joseph's is a family school, with Christ as the centre, celebrating the uniqueness of each child, in a loving and enriching community, and empowering them with life skills.

MISSION STATEMENT:

At St. Joseph's Catholic school, we believe the purpose of education is to provide a learning environment which recognises.....

- our Catholic tradition.
- each child and their potential.
- the importance of community.
- social and cultural diversity.
- the need for learning for life.

The links of the Mission statement with Science are as follows.

In Science and Technology, the '***Catholic values and tradition***' will be recognised and developed through learning experiences. The children's involvement in investigation, project work and unit related excursions will enable them to appreciate their faith and knowledge. The learning outcomes and challenge of learning about ourselves, our society and our environment using multi-strategies based on Gardner's multiple intelligences will help to '***develop each child and their potential***'. The '***importance of community***' is valued highly within the implementation of the Science and Technology policy. This is demonstrated with our involvement in local science and technology around the local area. also invited to be part of class lessons e.g. visit from the Shire workers. The wider Adelong community supports St. Joseph's. We work together to encourage the children's development in Science and Technology. The children are encouraged to appreciate '***social and cultural diversity***' through experiencing local and extended excursions and diverse guest speakers and visitors to the school. Science and Technology aims to give students a love of and enjoyment of social and environment experiences that will develop each child's '***need for lifelong learning***'. It is by participating in outward reaching activities and appreciating the value of these experiences that the students of St. Joseph's will want to continue their journey of growth in these areas.

EXIT OUTCOMES:

When students leave St. Joseph's school we want them to.....

- have love, knowledge and understanding of God and this creation.
- be confident, responsible, caring and compassionate students with positive self-esteem.
- have the ability to work co-operatively, to respect others and to be responsible members of society.
- be numerate, literate, ICT literate and have a positive attitude towards study.
- be able to make positive health choices, be involved in physical fitness and be able to participate in a team or group.
- be able to express themselves creatively in a variety of ways.

RATIONALE:

At St. Joseph's school, Science and Technology is seen not merely as a subject that is taught, but as a way of developing an awareness of the importance of a fulfilled life. As in all other Key Learning Areas taught at St. Joseph's, Science and Technology has a religious dimension. 'The various school subjects do not present only knowledge to be attained, but also values to be acquired and truths to be discovered.' (The Catholic School, p.39) from Treasures New and Old p.25.

At St. Joseph's we aim to develop a positive attitude towards Science and Technology, to support and enhance a fulfilling lifestyle. Encouragement is also given to individuals to explore and develop their skills in challenging and interesting units. The aim of the Science and Technology curriculum is to develop good understanding of units studied, an increasing level of skills in research and an appreciation of the values of this curriculum area.

SITUATIONAL ANALYSIS:

This Science and Technology policy began with initial discussion at staff meetings in late 2004. At that time there needed to be a rethink of how units would be cycled over the two multi-aged classes. As only two staff members teach Science and Technology professional development was sought as part of involvement with another school or schools. After several staff meeting discussions and trialling of Science units the scope and sequence was adopted for 2005 and beyond. Ongoing monitoring of units across the two multi stage classes will continue. This will help to maximise interesting, challenging and developmentally suitable units. It will also help to continually upgrade resources.

Another development of the policy, is the continual learning by staff, both directly and indirectly.

As part of direct learning, a science inservice day was held at St. Joseph's early in Term 2. This day focused on programming of science, the use of technology to support the science program and some practical experiments from the 'Green Machine' resource. This day helped to set up collegiality and support networks with other science teachers in the area. It also showed us a range of resources that were available to enhance science unit work.



At this inservice we also checked our Scope and Sequence against other school models. At this point we have decided to retain the current scope and sequence at St. Joseph's. This is because it addresses all outcomes, indicators and units in a three year cycle for Early Stage 1 and Stage 1, and in a four year cycle for Stage 2 and Stage 3.

As we begin to adapt and trial other experiments, and focus on the processes of Investigating, Designing and Making and Using Technology (separate from Primary Investigations), this will evolve into a different scope and sequence. The draft set of outcomes, 2004, focus on processes.

Indirect learning continues by observation on excursions, learning from other professionals, and learning from a diverse range of guest speakers and local science and technology experiments.

Finally, resources were identified and documented with some culling needed and some areas identified as needing more resources. In Term 2, 2005 the final draft was rediscussed, collated and published.

ACROSS CURRICULUM PERSPECTIVES:

CATHOLIC ETHOS: *Psalm 150:1-6*

At St. Joseph's school the aim is to provide a curriculum which is 'a total cultural experience within which students have opportunities to hear the 'Good News' and to respond to the person and message of Jesus.' ('Treasures New and Old' Core Document p.23.)

Every curriculum area that is taught has a religious dimension, whereby we help our students to learn in an integrated way, the Gospel values that Jesus has taught.

In the Science and Technology curriculum opportunities are provided to....

- develop skills such as reflection, critical thinking and problem solving.
- encourage students to reflect and choose and 'to care for God given resources' (Treasures New and Old core document p.24)
- develop an awareness that the child is made in the image of God with basic needs to be cherished and nurtured.
- recognise that parents, school and parish have a responsibility to mutually support each other in the education of the child.
- acknowledge and respect the social and cultural contributions of individuals.
- achieve and maintain mental, physical, social and spiritual wellbeing.

ABORIGINAL and TORRES STRAIT ISLANDER EDUCATION:

The Aboriginal and Torres Strait Islander perspective at St. Joseph's school recognises the essential relationship between the emotional wellbeing and the strong spiritual links to the land, of indigenous peoples. In Science and Technology opportunities for Aboriginal and Torres Strait Education are provided to ...

- incorporate Aboriginal and Torres Strait Islander perspectives into learning activities.
- develop understandings of the culture and skills of Aboriginal and Torres Strait Islander people.

AUSTRALIAN EDUCATION:

At St. Joseph's school an Australian perspective promotes the understanding and valuing of the heritage of all Australians. Students need to acquire an appreciation of the diversity of the culture of Australian life. The Science and Technology curriculum ensures that local, regional and national activities and issues are treated.

Students' learning experiences should.....

- ensure that Science and Technology uses Australian activities and learning materials.
- provide students with opportunities to be involved in meaningful activities which provide real life issues such as skill development, appreciation of others talents and understanding of the cultural practices to be explored in the Australian society and its environment.

ENVIRONMENT EDUCATION: *Psalm 148:7-9*

At St. Joseph's school an Environment Education perspective is included within the Science and Technology curriculum to help appreciate, and learn about aspects of the local environment.

This perspective assists students to....

- actively appreciate the environment and to use science and technology to raise environmental issues.
- respect the environment and to nurture a balanced and an analytical approach to care of the environment.



GENDER EQUITY: *Psalms 98: 4-9*

Gender Equity at St. Joseph's school is about providing teaching and learning experiences that promote optimum learning for all students. Teachers of Science and Technology will use strategies to promote gender equity by...

- modelling behaviour and language that is respectful towards each gender and actively encourage students to do the same.
- ensuring that teaching and learning experiences include a variety of methods and resources that appeal to both genders.
- broadening their experiences and understanding of appropriate activities for both girls and boys.

INFORMATION COMMUNICATION and TECHNOLOGY: Lk.24:15-18

Technology is a vital tool in finding and managing information across all Key Learning Areas. At St. Joseph's school, students have access to a wide range of communication and technological tools. These include digital camera, computers and printers, computer software, videos, media clippings and internet access to sites offering learning opportunities in Science and Technology.

LITERACY:

Students at St. Joseph's will be required to develop literacy skills that will enable them to read, view, write listen to and talk about a range of subject matter in a variety of contexts.

Students are recognised as individuals with personal histories derived from gender, socio-economic background, geographic location and ethnicity.

MULTICULTURAL EDUCATION:

It is important to acknowledge the primacy of culture in any social interaction. At St. Joseph's opportunities are provided for students to

- develop an understanding of cultural values and ethical issues.
- understand customs, values and traditions in other cultures.

SPECIAL NEEDS EDUCATION: Exodus 31: 3-6

At St. Joseph's the perspective of Special Needs recognises the range and diversity of students' abilities. Some of the perspectives particularly relevant to Science and Technology and provided for are.....

- the catering for difference in learning styles and different developmental stages, both physical and academic, within each composite class.
- the ensuring of a wide range of learning activities within the Science and Technology programme to nurture each student's self esteem.
- the provision of lesson content that is meaningful, well sequenced, challenging yet achievable for all students.
- the acknowledgement, respect and value of diverse abilities in Science and Technology.

BROAD SUBJECT OUTCOMES:

At St. Joseph's school the core document for Science and Technology is the NSW Board of Studies, Science and Technology K-6 Syllabus

Outcomes from this syllabus address Values and Attitudes, Knowledge, Understanding and Skill development.

Values and Attitudes outcomes apply to all stages and include appreciation of the opinions of others, being responsible, identifying values, Knowledge, Understanding and Skill development, outcomes are addressed.

Skills outcomes include social and civic participation, gathering, comparing, recording, classifying and analysing information, communicating information and presentation, decision making, and expressing and listening to different viewpoints.

The Science and Technology syllabus has its own Stage Statements, Stage Outcomes and Indicators and Content.

Class teachers programme units of work from this document, noting outcomes and indicators.

Units are cycled in a three year cycle in Early Stage 1 and Stage 1. In Stage 2 and Stage 3 units are on a four year cycle.

Photo shows Year 3/5/6 with their science experiment on Pendulums



SCOPE and SEQUENCE:

The St. Joseph's Scope and Sequence for Science and Technology has been developed with the understanding that it reflects the ***explicit*** teaching of the outcomes of that unit. Class teachers programme units of work from this document, noting outcomes and indicators.

Units are cycled in a three year cycle in Early Stage 1 and Stage 1. In Stage 2 and Stage 3 units are on a four year cycle.

The Scope and Sequence shows outcomes for each stage level. This scope and sequence is a guide to help teachers focus on the outcomes, and skills and strategies, to be taught by the end of each cycle. This ensures there are no gaps, overlapping or repetition.

There will be other elements experienced throughout the learning programme as each strand is ***integrated*** across other Key Learning Areas. The Science and Technology lends itself very well to integration, and units taught endeavour to achieve this.

For the effective teaching and learning of Science and Technology each class group has a specific Science and Technology lesson once a week. In Early Stage 1 and Stage 1 this lesson is approximately 40 minutes. In Stage 2 and Stage 3 this lesson is approximately 60 minutes.

Appendix 1 shows an Overview of Science and Technology taught at St. Joseph's from Early Stage One and Stage One, through to Stage Two and Stage Three.

The Scope and Sequence for Science and Technology is attached as Appendix 2. Appendix 2 describes how Science and Technology is implemented across stages and cyclical years.

AGREED PRACTICE for TEACHING and LEARNING STRATEGIES:

At St. Joseph's school quality teaching and learning strategies are fostered by, firstly establishing quality relationships based on respect for each student.

At St. Joseph's a number of different teaching styles are used to allow for students' different stages of development and different learning styles and different levels of achievement.

Students at St. Joseph's experience a variety of strategies within a positive, stage developmental environment. Some of the strategies used include;

- modelling
- direct and explicit teaching
- discussion
- open-ended questioning
- activity based tasks
- whole class, group, partner and individual tasks
- investigation and research
- integration of Science and Technology across Key Learning Areas.

SPECIAL PROGRAMS at ST. JOSEPH'S

A number of special programs run at St. Joseph's in the area of Science and Technology.

Assemblies and Guest Speakers

Fortnightly assemblies are the opportunities for student display of Science and Technology projects. This is also an opportunity for a diverse range of guest speakers, correlated where possible to focus on the Science and Technology unit being studied, e.g. recycling, water resources, etc



Excursions

The students from Early Stage 1 to Stage 3 have made a number of excursions. Local day excursions to support and enhance units of work are made around Adelong. These include visits to the Adelong Creek to study waterbugs, rubbish surveys, etc. There has also been an excursion to Landcare to plant and care for seedlings in preparation for school plantings. Stage 2 and Stage 3 visit Canberra in alternate years. This excursion includes a visit to Questacon where science units studied are followed up at Questacon where possible. The possibility of twinning with an area school for the visit of the Green Machine's 'Labs on Legs' is being investigated.

ASSESSMENT :

Assessment at St. Joseph's is a continuous monitoring of knowledge, skills, values and attitudes.

The Science and Technology outcomes and indicators, which are written for each Stage level, are assessed through each unit of work.

The ongoing monitoring of student work is achieved by the use of assessment tasks aligned to the stage outcomes and indicators of each unit.

Assessment tasks form part of each student's portfolio. Portfolios are compiled each term. At the end of each semester portfolios are sent home for parents' perusal.

Assessment tasks show outcomes to be taught and how each student is working towards these outcomes. A variety of assessment strategies is given to students. These may take the form of observation, skill development checklists, student self evaluation sheets, project work, work sheets and anecdotal comments.

Student portfolios show each student's progress and are a means by which each student can be tracked across each stage.

Rich Assessment Tasks are a way to integrate the Science and Technology units across all Key Learning Areas. St. Joseph's staff and students are progressing with assessment in this way.

St. Joseph's Assessment policy is attached see Appendix 3

REPORTING:

Reporting at St. Joseph's is ongoing. Communication to students and parents takes three forms. Firstly oral reporting to students is by incidental discussion and evaluation at the end of units of work. Secondly written reporting occurs at the end of each term by assessment tasks at the end of the unit of work. Student portfolios also provide written reports to parents. The student portfolios allow for the naming of both areas of strength and areas needing to be developed, or areas of concern, which need to be reported.

Finally, oral reporting is communicated to parents at three way interviews at the end of Semester 2. The school keeps written reports of work units on student files.

RESOURCES:

At St. Joseph's there are a number of teacher resources. These are constantly being upgraded to enhance 'best practice' teaching and learning.

These are the main resources.....

Board of Studies Science and Technology K-6 Syllabus

Board of Studies Science and Technology K-6 Units of Work.

Primary Investigations Books 1,2,3,4,5,6,7 these are shared with St. Mary's Batlow

DVD Science

Online resources include www.csiro.au/greenmachine

www.csiro.au/helix

www.sciencechallenge.net.au

www.csiro.au.scienceathon

'Green Machine' is Canberra resource .

Lab on Legs for country schools, (CEO discount) visit school.

Science Resource Box to accompany units from Primary Investigations...e.g.

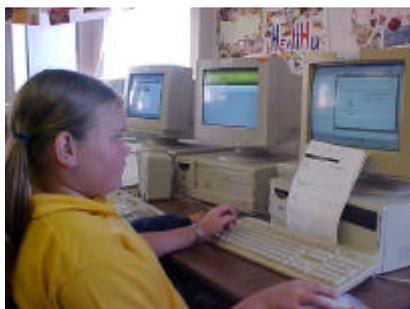
magnets, iron filings, sponges, popcorn, straws, vinegar, food colouring.

LEARNING TECHNOLOGIES:

Staff have developed online learning projects to assist with using technologies within the Science and Technology curriculum. Bloom's Taxonomy and Multiple Intelligences are used and these take in the Visual, Kinesthetic, and Verbal skills used within the Science and Technology curriculum.

Students use technology skills to research science units. Increasingly educational software and the internet is being used.

Presentation skills are taught across all years but more specifically in Year 3/5/6, as part of the use of computer technology within Science and Technology.



EVALUATION:

The Science and Technology programmes at St. Joseph's are evaluated by the classroom teacher. At the end of each unit of work there is an evaluation of that unit. Student self evaluation is also used as input to note the level of learning achieved and the interest for the unit.

At the end of each term these evaluations are collated for the stage overview. At three way interviews at the end of Semester 1, parents, teachers and students summarise their discussion and these points are incorporated into the following semester's work. This policy will be reviewed in 2009.

65APPENDIX 1

Values and Attitudes outcomes apply across all stages VA1 to VA8

SCIENCE and TECHNOLOGY ES1 and S1 Outcomes in Units of Work.

<i>AWARENESS of SELF...</i>	IC ES1.2	IC S1.2
<i>OBSERVATION....</i>	INVE1.7	INV S1.7
<i>MOVEMENT.....</i>	PP ES1.4	PP S1.4
<i>SPACE and TIME....</i>	PP ES1.4	PP S1.4
<i>ORGANISATION INTRODUCTION...</i>	DM ES1.8	DM S1.8
<i>OBJECTS and PROPERTIES.....</i>	PP ES1.4	PP S1.4
<i>MATERIALS and STRUCTURES...</i>	BE ES1.1	BE S1.1
<i>INVESTIGATING COLOUR.....</i>	UT ES1.9	UT S1.9
<i>CHANGES....</i>	ES ES1.6	ES S1.6
<i>LIVING and NON-LIVING...</i>	LT ES1.3	LT S1.3
<i>TOOLS and MACHINES.....</i>	PS ES1.5	PS S1.5
<i>INVESTIGATING ANIMALS...</i>	LT ES1.3	LT S1.3

SCIENCE and TECHNOLOGY S2 and S3 Outcomes in Units of Work.

In almost all of these units there will be some use of technology so the outcomes

 of	UT S2.9	UT S3.9 will be addressed.
<i>PATTERNS.....</i>		INV S2.7	INV S3.7
<i>RECORDS and DATA...</i>		IC S2.3	IC S3.3
<i>CONSTRUCTION and TESTING...</i>		PP S2.4	PP S3.4
<i>INVESTIGATING WEATHER...</i>		ES S2.6	ES E3.6
<i>SYSTEMS and ANALYSIS...</i>		PP S2.4	PP S3.4
<i>INTERACTIONS and VARIABLES...</i>		PP S2.4	PP S3.4
<i>PROBLEMS and SOLUTIONS...</i>		INV S2.7	INV S3.7
<i>INVESTIGATING SOIL.....</i>		ES S2.6	ES S3.6

SCIENCE and TECHNOLOGY S2 and S3 Outcomes in Units of Work.

<i>ENERGY...</i>	PP S2.4	PP S3.4
<i>FOOD CHAINS...</i>	LT S2.3	LT S3.3
<i>DESIGN...</i>	DM S2.8	DM S3.8
<i>ASTRONOMY...</i>	ES S2.6	ES S3.6
<i>BALANCE...</i>	LT S2.3	LT S3.3
<i>ECOSYSTEMS and RESOURCES</i>	LT S2.3	LT S3.3
<i>CONSTRAINTS and TRADE-OFFS</i>	PS S2.5	PS S3.5
<i>MATERIALS...</i>	BE S2.1	BE S3.1

APPENDIX 2

SCOPE and SEQUENCE for SCIENCE for all Stages

Early Stage 1 and Stage 1

	<u>Year A '04</u>	<u>Year B '05</u>	<u>Year C '06</u>
Tm 1	Changes..Bk3 P.I.	Awareness..Bk.1 P.I.	Order..Bk.2
Tm 2	Show evidence of change	Observation	Objects
Tm 3	Tools and machines	Movement	Structures
Tm 4	Investigating animals	Space and Time	Colour

Stage 2 and Stage 3

	<u>Year A '04</u>	<u>Year B '05</u>	<u>Year '06</u>	<u>Year D '07</u>
Tm.1	Patterns..Bk.4 P.I.	Energy..Bk.6	Balance..Bk.7	Systems Bk5
Tm.2	Records and data	Food chains	Ecosystems	Variables
Tm.3	Structures	Design	Constraints	Problems
Tm.4	Weather	Astronomy	Materials	Soil