

## **ONE YEAR WORK PROGRAM**

### **Rationale**

Technology education involves the purposeful application of knowledge, experiences and resources to create and produce relevant processes to meet human needs. Particular technology education outcomes are determined by human needs, wants, and are judged by the impact on communities, environment and well being to an individuals way of life. Decisions about the development and use of technology are influenced by values, cultural issues and experiences of different people and society this often involve a complex combination of consensus, conflict and compromise.

It is important for students to receive a broad based grounding into technology education to extend the individuals capabilities and knowledge about human needs and wants. Student's social values and beliefs are influenced greatly by technology everyday, therefore greater understanding in this area will allow students to combine technology practice with information, materials and systems to form useful relationships.

This course unit has been developed so that year 8 students can receive a broad introduction to technology education through the use of project and research related activities, tools and materials. This will allow students to develop life skills that will aid and encourage them to progress through their technology education studies.

The aims of this course are to address broader social issues as well as allowing students to build hands on skills, knowledge and understanding of the technology subject area. Students will gain confidence and develop awareness to actively, and critically participate in design, creation, management and evaluation of the products of technology. They will develop understandings of the nature; diversity and role technology has in changing and influencing society. Learners will draw on and refine knowledge of technology, and capably define characteristics in the production of feasible solutions to real life challenges. This course will challenge learners to respond to a variety of different situations, this involves-

- Developing products in response to needs, wants or opportunities.
- Following technology practice, information, materials and systems.

- Considering appropriateness of tasks, context and management.
- Generating design proposals that are relevant, realistic and achievable to meet the need.
- Appraise the processes, outcomes and affects of design on technology.

The professional community demands that students become ready active participants when they leave school, this course unit provides and prepares students for apprenticeships and trades and also offers a greater scope of skills in management, appropriateness and contexts. The projects and activities that are undertaken provide interdisciplinary skills and concepts from important learning areas that are relevant to today's ever-changing society. Through designing, making and evaluating students will be enabled to grow in self-confidence, develop creativity to become willing and able to plan work and develop pride in the quality of design and finish.

Design process is another important area of technology study; it is a combination of design process and safety that allows students have the opportunity to develop skills and knowledge required in the workplace. Good design promotes students to expand ideas and create imaginative solutions to learning tasks. The tasks and activities in this course are set in a way that allows technological processes and products to be communicated and related to a need.

This course offers student learning that involves group work and peer interaction, students can learn that technology and society involves people working together with emphasis on collaboration and teamwork. Activities involved in the course projects allow students to build up interaction of social skills and develop self-confidence, so that they can form a firm foundation for further study. All activities and projects associated with this course are action orientated, they allow and encourage students to work with their heads, and their hands as a 'hands-on' approach to learning often promotes greater enthusiasm amongst peers, that leads to better retention and understanding of concepts.

This course will appeal to all kinds of students male and female as it has a format that fulfils greater dimensional requirements. By incorporating deeper issues like values, aesthetics, social, cultural, environmental impact, moral and ethical this course provides

learners with a hands on approach to a wide variety of relevant day to day learning areas. References to the non-technical nature of technology will be addressed to interest a wider range of students into doing this course as they have the opportunity to develop and evaluate a variety of socially just, economically and environmentally sustainable solutions to perceived challenges.

Technology in the school curriculum combines theory and practice to create an interdisciplinary environment for learning. It includes areas related to mathematics, science language and arts it explores the synthesis of ideas and practices, and the affects of technology on societies and the environment. Through the process of design make and appraise students generate ideas and transfer them into practice. This course promotes cooperative learning through active participation, and adds relevance to help build basic skills. Technology programs enable students to reflect on past practices and future opportunities, and demonstrate the influence different groups can exert on how technologies are applied and developed. Students will be challenged to think critically about how technology affects them, their local society and relate the positive and negative impacts of technology for sustainable living environment.

## **ASSESSMENT**

The assessment of this course will consist of accumulated totals in each terms project and class results, to give an overall level of achievement for the year's work. Weighting will vary from the projects carried out in term one and two being 20% each and terms three and four being 30% each, this is because the projects undertaken in the later will increase in difficulty, skills used in the first two units will have to be recalled and followed in units three and four. The table below shows how assessment will be collated for the overall yearlong result.

**OVERALL COURSE RESULTS TABLE**

<b>TERM</b>	<b>PROJECT RESULT</b> 80%	<b>ATTENDANCE</b> 10%	<b>WORK ETHICS</b> 10%	<b>TOTAL WEIGHT</b>	<b>OVERALL RESULT &amp; COMMENTS</b>
ONE				<b>20%</b>	
TWO				<b>20%</b>	
THREE				<b>30%</b>	
FOUR				<b>30%</b>	
				<b>TOTAL</b>	

**NOTES: -**


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### Matrix for planning a program for one year

<i>Strands</i>	<i>Term</i>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
<b>Technology Practice</b>				
PI 4	X			
PD 4				
PP 4				
PE 4	X			
PI 5		X	X	
PD 5				
PP 5	X	X		
PE 5		X		
PI 6				X
PD 6				
PP 6				X
PE 6				X
PI B6				X
PD B6		X	X	X
PP B6			X	
PE B6			X	
<b><u>Information</u></b>				
IN 4	X			
IT 4	X	X		
IN 5			X	X
IT 5				
IN 6				
IT 6			X	
IN B6				
IT B6				X
<b><u>Materials</u></b>				
MN 4	X			X
MT 4	X			
MN 5		X		
MT 5				X
MN 6			X	
MT 6	X	X		
MN B6			X	
MT B6				
<b><u>Systems</u></b>				
SN 4				
ST 4	X	X		
SN 5		X	X	
ST 5				X
SN 6				X
ST 6			X	
SN B6				
ST B6				
<b><u>Activities</u></b>				
Complete projects	X	X	X	X
Exercises	X	X	X	X
Design analysis	X	X	X	X
Individual work	X	X	X	X
Group Work		X	X	

PI – investigation, PD – ideation, PP – production, PE – evaluation  
 IN – the nature of information, IT – techniques used to work with information  
 MN – the nature of materials, MT – techniques used to manipulate materials  
 SN – the nature of systems, ST – techniques of assembling, managing and controlling systems

### Planning for progression of design strategies

<i>Design Strategies</i>	<b><i>Term and number of exercise</i></b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Clarifying the task</b>	A2 A4	A1 A6	A3	A5 A6
<b>Generating ideas</b>	B5	B4	B2 B1	B3
<b>Evaluating products</b>	C2 C3	C6 C4	C1 C7	C5
<b>Communicating intentions</b>	D1 D3	D2 D6	D5	D4
<b>3-d Sketching techniques</b>	E1	E3 E4	E2 E6	E5
<b>Aesthetic</b>	F1	F3	F2	F4

#### **Clarifying the task**

A1. Identifying needs  
A3. Writing a design brief  
A5. Writing a fuller specification

A2. Working back to a design brief  
A4. Writing a simple specification  
A6. Research skills

#### **Generating ideas**

B1. Image boards  
B3. Making connections  
B5. Getting visual ideas

B2. Brainstorming  
B4. Attribute analysis

#### **Evaluating products**

C1. User analysis  
C3. Product analysis  
C5. Is it appropriate?  
C7. Is it sustainable?

C2. Freehand design analysis  
C4. Winners and losers  
C6. End of project evaluation

#### **Communicating intentions**

D1. What a good design sheet looks like  
D3. Layout  
D5. Instructions

D2. Lettering  
D4. Graphs  
D6. Presentation sheets

#### **3-d Sketching techniques**

E1. Isometric

E2. Oblique

E3. One point perspective  
E5. Shading

E4. Two point perspective  
E6. Line strength

**Aesthetic**

F1. Style  
F3. Feel

F2. Colour  
F4. Harmony and scale

<u>Semester</u>	<i>Project</i>	<i>New knowledge</i>	<u><i>New skills</i></u>	<i>Reinforced knowledge</i>	<i>Reinforced skills</i>	<i>Conformity to outcomes</i>
<p style="text-align: center;"><b>1</b></p> <p><b>Term 1</b></p>	<p><b>The project</b> Students will design, model and make a small metal storage box for a stated purpose. They will be required to justify the appropriateness of their design.</p> <p><b>Supporting exercises</b> Writing a design brief; Writing a simple design specification; Exercises to develop metalwork skills both marking out and cutting; Creating a folio.</p> <p><b>Supporting investigations</b> Appropriateness of the box to the specified use; Experimenting with cardboard to achieve correct models; Experimenting with various metals, folded edges and seams.</p> <p><b>Supporting design analysis</b> Analysis of existing small boxes; Analysis of templates for metalwork jobs.</p> <p><b>Project focus</b></p>	<ul style="list-style-type: none"> <li>▪ Introduction to the project method</li> <li>▪ Introduction to sheet metals</li> <li>▪ Basic principles of cardboard engineering</li> <li>▪ The importance of modelling during a project to get good design decisions</li> <li>▪ Different types of joins (including spot welds and rivets)</li> <li>▪ Awareness of waste and how to prevent it</li> <li>▪ Related</li> </ul>	<ul style="list-style-type: none"> <li>▪ Accurate measuring</li> <li>▪ How to make a template</li> <li>▪ How to accurately mark out and cut metal</li> <li>▪ How to fold / bend metal</li> <li>▪ Verbal presentation (presenting and defending a project)</li> </ul>	<p>(this project introduces students to basic project methods and workability of some materials).</p>	<ul style="list-style-type: none"> <li>▪ Development of fine motor skills – the need for very accurate marking out, cutting and folding / bending.</li> <li>▪ Use of scissors</li> <li>▪ Planning time</li> </ul>	<p><b><u>PI 4</u></b></p> <p><b><u>PE 4</u></b></p> <p>PP 5</p> <p>IN 4</p> <p>IT 4</p> <p>MN 4</p> <p>MT 4</p> <p>MT 6</p> <p>ST 4</p>

<p style="text-align: center;"><b>1</b></p> <p><u>Term 1</u> <b>(cont.)</b></p>	<p>Doing a complete project and recognising the main components of a project; Metalwork skills and knowledge of metals as materials.</p> <p><b>Extensions for more able children</b></p> <p>Design and make a lid to hinge to their box; Paint and decorate their box; Use of more complex seams and folded edges.</p> <p><b>Resources</b></p> <p>Sheet metal; Bending and cutting machines and tools; Marking out equipment eg. scribes and rulers; Cardboard, pencils and scissors.</p> <p><b>Interdisciplinary links</b></p> <p><b><u>Mathematics;</u></b> <b><u>Graphics; Art.</u></b></p>	<p>professions</p> <ul style="list-style-type: none"> <li>▪ How to draw up a folio</li> </ul>				
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<i>Semester</i>	<i>Project</i>	<i>New knowledge</i>	<i>New skills</i>	<i>Reinforced knowledge</i>	<i>Reinforced skills</i>	<i>Conformity to outcomes</i>
<p><b>1</b></p> <p><b><u>Term 2</u></b></p>	<p><b><u>The project</u></b> Students, in small groups, will design, model, make, test fly and appraise a kite. Students will be selecting the materials they wish to construct their kite from. Students will be injection moulding their structural join pieces. Students will be presenting their kites in a flying display. Each student will individually design and make their own handle.</p> <p><b><u>Supporting exercises</u></b> Researching skills; Injection moulded plastics; Timber dowel and its use in industry and as a type of woodwork joint; Colours and aesthetic appeal; Oral presentations; Group work and a production procedure;</p> <p><b><u>Supporting investigations</u></b> Investigating different adhesives; Investigating strengths and weaknesses of fabric and plastic materials and structural setups of the timber</p>	<ul style="list-style-type: none"> <li>▪ Introduction to working as part of a team (workforce)</li> <li>▪ Introduction to plastics, fabrics and timber</li> <li>▪ Different types of adhesives and joining techniques</li> <li>▪ Sustainable designs and the impact of waste and certain materials on the environment</li> <li>▪ Related professions</li> <li>▪ Aesthetics in design</li> <li>▪ Testing and measuring materials</li> </ul>	<ul style="list-style-type: none"> <li>▪ Social interaction skills with fellow workers</li> <li>▪ Working with timber, plastics and fabrics</li> <li>▪ How to use different adhesives</li> <li>▪ How to design a structurally sound product</li> <li>▪ How to fly a kite</li> </ul>	<ul style="list-style-type: none"> <li>▪ Workability of different materials</li> <li>▪ Range of materials available</li> <li>▪ The project method</li> <li>▪ How to draw up a folio</li> <li>▪ The importance of modeling</li> </ul>	<ul style="list-style-type: none"> <li>▪ Accurate measuring</li> <li>▪ How to accurately mark out and cut out a design on a piece of material (timber, plastic, fabric)</li> <li>▪ Planning time</li> <li>▪ Verbal presentation (presenting and defending a project)</li> </ul>	<p>PI 5</p> <p>PD B6</p> <p>PP 5</p> <p>PE 5</p> <p>IT 4</p> <p>MN 6</p> <p>MT 6</p> <p>SN 5</p> <p>ST 4</p>

<p style="text-align: center;"><b>1</b></p> <p><b>Term 2</b> (cont.)</p>	<p>supports.</p> <p><b><u>Supporting design analysis</u></b> Analysis of existing kites; Analysis of materials strength and compatibility</p> <p><b><u>Project focus</u></b> Developing students aesthetic awareness; Problem-solving skills; Working with timber, plastics and fabrics. Extensions for more able children Enter their kite in competition; Set up a folio to approach a kite manufacturer</p> <p><b><u>Resources</u></b> Paddle-pop sticks; Glue; Dowel; String, rope, line etc; Canvas, plastic, fabric etc; Paper and stationary for designs and folios; Machines and tools appropriate for working the materials.</p> <p><b><u>Interdisciplinary links</u></b> Mathematics; Graphics; Art; Science; Social Studies; Home economics</p>	<p>properties for strengths and weaknesses</p>				
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<i>Semester</i>	<i>Project</i>	<i>New knowledge</i>	<i>New skills</i>	<i>Reinforced knowledge</i>	<i>Reinforced skills</i>	<i>Conformity to outcomes</i>
<p><b>2</b></p> <p><b>Term 4</b></p>	<p><b><u>The project</u></b> This is an open design brief project where students select a client and then a product to produce for that client. Students will have to select an appropriate product for the available resources and time constraints. Students will be required to enter an agreement with the client and fill the necessary paperwork.</p> <p><b><u>Supporting exercises</u></b> Writing a full design specification; How to draw up a contract; How to do product costing; How to analyse the sustainability of the product; Correct procedures for interaction with client (including original contact).</p> <p><b><u>Supporting investigations</u></b> Investigation of market trends; Investigation into contracts and breeches; Investigating simple legal requirements.</p>	<ul style="list-style-type: none"> <li>▪ As needed for each other project</li> <li>▪ Concepts of costs (including real costs of using machinery, materials and the cost of time)</li> <li>▪ Legal requirements concerning products made for sale</li> <li>▪ Fixed and variable costs</li> <li>▪ Workforce and client relations</li> </ul>	<ul style="list-style-type: none"> <li>▪ As needed for each other project although the emphasis is more on consolidation of making skills</li> <li>▪ How to investigate an unfamiliar context</li> <li>▪ How to make a contract with a client</li> </ul>	<ul style="list-style-type: none"> <li>▪ Whole project method</li> <li>▪ Concepts of costs, profit and loss</li> <li>▪ The concept of sustainable technology</li> </ul>	<ul style="list-style-type: none"> <li>▪ As needed for each other project</li> <li>▪ Time planning</li> <li>▪ Social skills involved in dealing with a client</li> </ul>	<p>PI B6</p> <p>PD B6</p> <p>PP 6</p> <p>PE 6</p> <p>IN 5</p> <p>IT B6</p> <p>MN 4</p> <p>MT 5</p> <p>SN 6</p> <p>ST 5</p>

<p style="text-align: center;">2</p> <p><u>Term 4</u> (cont.)</p>	<p><b><u>Supporting design analysis</u></b> Analysis of existing products and procedures for producing those products.</p> <p><b><u>Project focus</u></b> Consolidation of designing and making skills from last semester; Real life-like in that it contains the concepts of contracts, commission, accurate costing etc; Extensions for more able students Present their product and folio to the prospective client for their appraisal.</p> <p><b><u>Resources</u></b> <b>Available materials including wood, metal, plastics etc; Pens and paper for designs and paperwork; Calculators;</b> <b>Available machines and tools in the workshop.</b></p> <p><b><u>Interdisciplinary links</u></b> Mathematics; Graphics; Art; Social Studies</p>					
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### Term 3

<u>Topic</u> <b>A TIMEPIECE</b>	
<b>Number of school hours</b> 12 - 15	<b>Class</b> 8
<u>Project summary</u> The project requires student to design, model, make, and appraise a timepiece for either themselves or for a particular person or place ie. friend, relative, or for a church, the kitchen, the bedroom etc. Students will evaluate their designs their models and their end products. Students will also be evaluating other peers work in small groups.	<u>Needs</u> The concept of time is essential to all aspects of society as it allows organisation, management and general running of everyday. Hence mechanisms that communicate the time to us are both important and a necessity.
<u>Teacher recommendations</u> Opportunities for extension: creating own hands or mechanism; using a digital display circuit board with an alarm; work out costing and folio to present to a prospective client etc. Students having difficulties can design their project to use hands and mechanisms provided and use a familiar context.	<u>Brief task description</u> Design and make a timepiece for a client or clientele of your choice, it can be for yourself. The product can be made of any material or combinations of materials. It must be able to tell the time and must suit the individual needs of the end user.
<u>Project start-up</u> Trip to clock gallery/museum/shop; Good and interesting video on topics related to timepieces eg. History, culture, etc.; Exercise to do with the importance of time and timepieces.	<u>Expected project results</u> Designs of, models of, and finished products of a variety of timepieces to assess and evaluate including wall cocks, cuckoo clocks, grandfather clocks, bench clocks, pocket clocks, sun dials, watches, alarm clocks.
<u>Materials / Resources</u> Some example timepieces to analyse; Design brief; Design handout; Timber, plastic, metal etc.; Machines and tools; Paper A4 and A3 for design, research and folio work; Stationary.	<u>Terminology</u> <b><u>Design specification; Open design brief; Sustainable technology; Aesthetics in design; Ethics in design; Technology values.</u></b>
<b>Focus</b> Design process (D.M.A); Group work; Research; Selection of appropriate materials tools, and machines; Safety.	<u>Interdisciplinary links</u> Art; Mathematics; Science; Graphics; Social Studies; History (of clocks).

<u>Forming Skills and Knowledge</u>			<u>Practical Activities</u>		
<b>Designing skills</b>	<b>Making Skills</b>	<b>Knowledge</b>	<b>Research and design analysis</b>	<b>Exercises before project start-up</b>	<b>Exercises during project implementation</b>
<ul style="list-style-type: none"> <li>• Sketching</li> <li>• Experiment</li> <li>• Research</li> <li>• Cognition</li> <li>• Modelling</li> <li>• Ideas</li> <li>• Interviews</li> <li>• Brainstorming</li> <li>• Exercises</li> <li>• Image boards</li> </ul>	<ul style="list-style-type: none"> <li>• Working with a range of materials</li> <li>• Working with a range of tools and processes</li> <li>• Use of a variety of adhesives and joining techniques</li> <li>• Development of fine motor skills – accurate measuring, marking out and cutting out</li> </ul>	<ul style="list-style-type: none"> <li>• Whole project method</li> <li>• Workings of cogs and mechanisms</li> <li>• Introduction to electronics and small circuit boards</li> <li>• Sustainable designs and the impact of certain materials on the environment (prevention of waste)</li> <li>• Versatility and properties of materials</li> <li>• Related professions</li> <li>• Planning time</li> <li>• Drawing a folio</li> </ul>	<ul style="list-style-type: none"> <li>• Comparison</li> <li>• Modelling</li> <li>• Consumerism</li> <li>• Surveys</li> <li>• Study of history and development</li> <li>• Health and Safety</li> </ul>	Only those from the previous two projects in semester 1.	<ul style="list-style-type: none"> <li>• Writing a design brief</li> <li>• Brainstorming</li> <li>• Image boards</li> <li>• User analysis</li> <li>• Is it sustainable?</li> <li>• Product analysis</li> <li>• Sketching oblique</li> <li>• Line strength</li> <li>• Aesthetic style</li> <li>• Aesthetic feel</li> <li>• Is it appropriate?</li> </ul>

**Project conformity to learning outcomes**

PI 5	PP B6	IN 5	MN 6	SN 5
PD B6	PE B6	IT 6	MT B6	ST 6