Community mural: Case study

Strand	Organiser	Level						
		1	2	3	4	5	6	B6
Technology Practice	*Investigation*							
	Ideation							
	Production							
	Evaluation							
Information	*Nature*							
	Techniques							
Materials	*Nature*							
	Techniques							
Systems	*Nature*							
	Techniques							

Purpose

The activities within this case study were planned to provide students with opportunities to design and enhance the environment in the children's ward of the local hospital.

Overview

The following table provides an overview of the activities associated with this case study and the way in which these were organised into introductory, developmental and culminating.

Introductory	Developmental	Culminating
Worked collaboratively in groups to identify organisations involved in community work or projects. Arranged interviews. Decided to enhance the environment in the children's ward at the local hospital.	Brainstormed ways of enhancing the environment of the children's ward. Produced three variations of the murals. Investigated sheet sizes of timber, plywood and metal. Completed their murals.	Consulted with the hospital staff to negotiate a time to install the murals. Celebrated the occasion with a formal ceremony.

Core learning outcomes

The activities within this case study focused on the following core learning outcomes from the *Years 1 to 10 Technology Syllabus*:

Technology Practice

TP 6.1 Students formulate detailed plans for gathering knowledge, ideas and data and validate choices of information, sources and methods.

TP 6.2 Students generate design ideas and communicate these in design proposals that indicate various options and incorporate management strategies.

TP 6.3 Students negotiate and refine production procedures in making quality products that meet detailed specifications.

TP 6.4 Students identify methods for evaluating commercial or industrial products and processes and use these to judge the appropriateness of their own processes and products.

Information

INF 6.1 Students analyse issues related to the ownership and control of information in societies.

INF 6.2 Students use specialised techniques for managing and organising the presentation of information to meet detailed specifications.

Materials

MAT 6.1 Students incorporate in their design proposals ideas about the impacts of particular materials used in products.

MAT 6.2 Students use specialised equipment and refined techniques to make quality products to detailed specifications.

Systems

SYS 6.1 Students explain principles underlying complex systems in terms of structures, control and management.

SYS 6.2 Students devise ways to manage and monitor the operation of complex systems.

Core content

The core learning outcomes are the focus for planning learning activities and assessment tasks. Students will engage with core content (see pp. 37–40 of the syllabus) when they are provided with opportunities to demonstrate core learning outcomes. While the content is listed in strands for organisational convenience, no one part of that content is to be viewed as discretely associated with a single strand.

The organisation of content within a strand should not be considered hierarchical. Any of the content can be addressed at any appropriate level; not all of the content need be addressed at every level. Core content should be selected to suit students' needs, interests and abilities and to take account of their prior knowledge and experiences.

The core content should be studied in a range of contexts. These could include personal and global contexts, as well as contexts of agriculture, business, communities, home and family, industry, leisure and recreation, and school.

Using this case study

The activities within this case study were designed to provide opportunities for students to demonstrate core learning outcomes at Level 6. These activities also provided opportunities for students to develop and demonstrate the related learning outcomes at other levels.

This case study describes a series of activities that were designed to meet a specific community need. Teachers can modify aspects of the case study to suit their local contexts, and the availability of materials and resources.

Advice to teachers

The activities within this case study provided opportunities for students to participate in a real-life situation where consultation and consideration of many factors played an important part. Students needed to consider various aspects of appropriateness as they devised and produced their murals. They were also encouraged to consider ways to judge the effectiveness of their work.

Resources

A variety of resources were collected over time and made accessible to students as required. Equipment was safely stored and made available to students as required

Evaluation of a unit of work

After completion of a unit or units of work developed from this module, teachers collected information and made judgments about:

- teaching strategies and activities planned or selected to allow students to demonstrate the core learning outcomes
- future learning opportunities for students who had not yet demonstrated the core learning outcomes and to challenge and extend those students who had already demonstrated the core learning outcomes
- the extent to which activities matched needs of particular groups of students and reflected equity considerations
- the appropriateness of time allocations for particular activities
- the appropriateness of resources used.

Information from this evaluation process can be used to plan subsequent units of work to support future student learning. The evaluated units of work may also be adapted prior to their reuse. For further information, refer to the 'Curriculum evaluation' section of the sourcebook guidelines.

Links

Links to other key learning areas

This case study has links to the following key learning areas:

- The Arts
- Studies of Society and Environment.

Contributions to the cross-curricular priorities

The activities upon which this case study is based contributed to students' development of the cross-curricular priorities:

- **literacy**
- **numeracy**
- **lifeskills**
- **a futures perspective.**

The valued attributes of a lifelong learner

The overall learning outcomes of the Queensland Years 1 to 10 curriculum contain elements common to all key learning areas and collectively describe the valued attributes of a lifelong learner.

Knowledgeable person with deep understanding

- gains knowledge and conceptual understanding about technology practices, materials, information and systems as they design a mural for a community setting
- explores issues behind challenges and predicts the impacts of the products of technology on people and environments.

Complex thinker

- uses inductive and deductive thinking to make predictions about the impacts of the processes and products of technology
- appreciates the value and potential of participating in a product's development
- makes decisions and justifies choices in realising designs.

Active investigator

- tests the suitability of materials for specific purposes and experiments with materials
- investigates and evaluate aesthetic, cultural, economic, environmental, ethical, functional and social implications of design challenges.

Responsive creator

- uses imagination, originality, enterprise and aesthetic judgments in meeting the challenge
- explores techniques to create new effects
- realises and refines innovative designs.

Effective communicator

- comprehends information presented in different forms
- composes design specifications and design proposals
- uses a variety of ways to communicate design proposals.

Participant in an interdependent world

- works individually and cooperatively with confidence and initiative
- negotiates with others to work towards a common goal
- shares equipment and resources
- becomes creative, self-motivated and capable of transferring skills
- develops dispositions of confidence and critical thinking.

Reflective and self-directed learner

- critically evaluates processes and products and search for improvement
- displays self-discipline in managing time and resources
- displays self-motivation and perseverance in completing the project
- predicts possible obstacles and ways to handle them.

Assessment strategies

Examples of the information gathered about student learning are provided in the activities section of this case study. The table below provides descriptions of anticipated evidence that the teachers used to support their judgments about students' demonstrations of learning outcomes.

[This table spreads over three pages.]

Core learning outcomes	Anticipated evidence	Sources of evidence
TP 6.1 Students formulate detailed plans for gathering knowledge, ideas and data and validate choices of information, sources and methods.	Include sources of information, consultation strategies and a timeline in their plans for market research and needs analysis. Gather information using a range of methods including scans of relevant information and interviews and surveys with students and adults. Justify sources and data collection methods in their plans and provide evidence of cross-referencing of data to ensure accuracy and relevance. Produce reports of needs analysis and market research that identify market niches, existing solutions to similar needs and changes in needs.	Observations of students' participation in activities and discussions. Consultations with students to verify evidence gathered. Technology project folios.
TP 6.2 Students generate design ideas and communicate these in design proposals that indicate various options and incorporate management strategies.	Produce detailed design ideas and proposals that include: • consultation plans • knowledge requirements • resource and skill requirements • proposed production methods • cost estimates • anticipated impacts. Specify and clarify options in design proposals using appropriate: • formats — for example, circuit diagrams, flow charts, multiview plans, patterns, charts • technical terms, standards and conventions • well-sequenced instructions for production methods. Identify project constraints and management strategies related to people, resources and time in production plans.	Observations of students' participation in activities. Students' detailed design proposals and production plans in Technology project folios. Feedback sheets.
TP 6.3 Students negotiate and refine production procedures in making quality products that meet detailed specifications.	Describe strategies for assuring product quality in design proposals. Adapt industrial practices to streamline production processes and explain how these enhance the quality of the product or production procedures. Document negotiated changes to production processes and provide justifications. Describe how modifications enhanced production processes to ensure that products meet specifications.	Technology project folios. Consultations with students to verify evidence. Observations of student participation in activities. Students' products.

TP 6.4 Students identify methods for evaluating commercial or industrial products and processes and use these to judge the appropriateness of their own processes and products.	Develop criteria to evaluate the appropriateness of products and processes that demonstrate consideration of potential impacts and consequences from a variety of perspectives. Explain how specific criteria can inform judgments about appropriateness. Report on comparisons between their processes and commercial production methods. Respond to self-evaluation and advice from external 'experts' — including parents/carers, other teachers, peers and people from industry — to enhance production processes. Devise and use methods of assessing product performance — for example, field testing.	Feedback sheets. Peer- and self-assessment sheets. Students' presentations. Annotated work samples in Technology project folios.
INF 6.1 Students analyse issues related to the ownership and control of information in societies.	Identify ethical issues related to, for example, access to information, censorship and privacy. Identify and discuss how standards and conventions affect the way information is communicated between, for example, different cultures, communities, professional groups or sports teams Anticipate the effects of sensory modes of communication such as sight and hearing and mechanical sensors on audiences. Identify issues associated with print or electronic media, including: • influences on the way we view and interpret information • mechanisms of control and elements of bias in media • influences of central access to information on various media.	Observations of students' participation. Technology project folios.
INF 6.2 Students use specialised techniques for managing and organising the presentation of information to meet detailed specifications.	Record detailed specifications and evaluation criteria in design proposals and production plans. Develop and use specialised techniques to manage, organise and present information. Create a suite of related information products, such as a series of media releases, brochures or web pages, that relate to a perspective on a particular topic. Manipulate information from a variety of sources and present it for different audiences. Observe appropriate conventions when creating information products for specific audiences.	Technology project folios. Students' work samples.

MAT 6.1 Students incorporate in their design proposals ideas about the impacts of particular materials used in products.	Use their understandings about the characteristics of materials and the consequences and impacts of their use to justify the selection and/or modification of materials to meet design requirements. Test the durability of materials, for example, softwood, hardwood and metal to determine their suitability for a design task. Demonstrate consideration of all aspects of the appropriateness in justifying design decisions and identify and explain compromises made. Identify the benefits of combining materials in the designs of others — for example, textile and furniture manufacturers. Combine and modify materials to meet design requirements — for example, construct specialised furniture from spring steel and wood. Combine materials to enhance their suitability for specific designs — for example, lining cloth to reduce its transparency.	Observations of students' participation. Technology project folios. Students' work samples.
MAT 6.2 Students use specialised equipment and refined techniques to make quality products to detailed specifications.	Modify work practices in response to workplace health and safety requirements for the use of specialised equipment and techniques. Select and use equipment and techniques that mirror those used in the workplace to achieve design specifications. Report on analyses and comparisons of commercial products, identifying factors that might have influenced design and development decisions. Explain how packaging requirements might alter their product designs.	Observation of students' participation. Students' work samples. Products.
SYS 6.1 Students explain principles underlying complex systems in terms of structures, control and management.	Evaluate commercial systems and suggest modifications to meet new needs and wants. Draw relational diagrams that depict relationships between system components including inputs, outputs and processes. Suggest and trial ways to eliminate faults and optimise systems — for example, seeking input from users during field tests. Justify the modification of systems in terms of improving functionality, aesthetics, economic viability and minimising impacts.	Evidence from Technology project folios. Analysis of students' work samples.
SYS 6.2 Students devise ways to manage and monitor the operation of complex systems.	Outline monitoring strategies in design proposals and production plans, such as: • fault-finding methodology • using specialised equipment • consulting with users during field tests. Use management and monitoring systems to enhance systems operations.	Analysis of students' samples. Assessment of products. Peer-and self-assessment.

Background information

Terminology

Activities in this case study involved the use of the following language in the context of Technology:

interactive	mural	scan
market research	needs analysis	

School authority policies

Teachers made themselves aware of and observed school authority policies that were relevant to the activities in this case study. Teachers considered policies relating to:

- safety
  - activities conducted outside the school boundaries in the local community
  - the effects of fumes from paints on the creators of the products and the intended user
  - use of tools and equipment
- school policy
  - on matters involving the school and the broader community.

Equity considerations

The activities on which this case study is based provided opportunities for students to increase their understanding and appreciation of equity and diversity within a supportive environment. It included activities that encouraged students to:

- be involved
- work individually or in groups
- value diversity of ability, opinion and experience
- value diversity of language and cultural beliefs
- support one another in their efforts
- become empowered to communicate freely
- negotiate and to accept change.

Information from this evaluation process can be used to plan subsequent units of work so that they build on, and support, student learning. The evaluated units of work may also be adapted prior to their reuse. For further information, refer to the ‘Curriculum evaluation’ section of the sourcebook guidelines.

Activities

Introductory activities

Focus

Design challenge

Design and create a product to enhance the environment in the children's ward of the local hospital.

Resources

Local directories, community organisations.

Teaching considerations

The introductory phase involved students in investigation. It was necessary to consider the level of preparation required to allow students to interact with members of local community organisations. This required lessons on interview techniques.

Activities

Students worked collaboratively in groups to identify organisations involved in community work or projects. They also consulted local directories and members of the community. This resulted in the generation of a short list of local organisations.

Students arranged interviews with members of local organisations to ascertain if there were any local needs that could be met by a suitable student project. They then discussed a number of possible projects to decide on the most suitable. Their decision was based on considerations of the scale of the task, the human resources that may be required and the estimated time needed to complete various options.

Students decided to enhance the environment in the children's ward at the local hospital.

Assessment

Sources of evidence could include:

- observations of participation in brainstorming, consultation, discussions and interviews
- interview questions.

Developmental activities

Focus

The developmental activities focused on the design and production of the murals.

Teaching considerations

The class decided that the most appropriate means of obtaining the required information was to conduct interviews with hospital personnel, in particular, the matron and ward sisters. A group was selected to visit the hospital and carry out the task. The class provided the delegated group with possible questions. A spokesperson for the group made the necessary arrangements.

The students found that the children's ward was visually uninspiring. They thought that brighter surroundings would boost the spirits of the young patients.

Activities

The students brainstormed ways of enhancing the environment of the children's ward

This ideation produced the following:

- wall murals
  - painted scenes
  - painted scenes with movable, interactive pieces
  - ceramic tiles depicting a scene
- wall hangings
- mobiles.

The students investigated each suggestion by taking into account the following:

- wall area
- hanging space
- materials
- theme or subject matter
- aspects of appropriateness — for example, aesthetic, cultural, economic, functional
- management
  - managing the project, health and safety issues, working collaboratively, managing resources, constraints — for example, time
- impact that may result from various projects — for example, hanging mobiles interfering with access to patients.

Once the range of issues had been discussed, the students decided to make murals. They produced three variations:

- an interactive mural where unpainted sections allowed for hospitalised children to add their own features using chalk or water soluble pens so that the scenes could be erased and reused
- a mural painted on metal sheeting, accompanied by magnetised metal animals, coral and other components so the hospitalised children could alter scenes
- a mural with cut-out jigsaw shapes in the form of a puzzle.

The students formed groups and negotiated for their choice of mural. They chose a reef scene as a theme for the murals.

Teaching considerations

In order to understand the setting where the murals would be mounted, it was necessary for the students to make an excursion to the children's ward. During this visit, the students took measurements for the production of a floor plan.

Activities

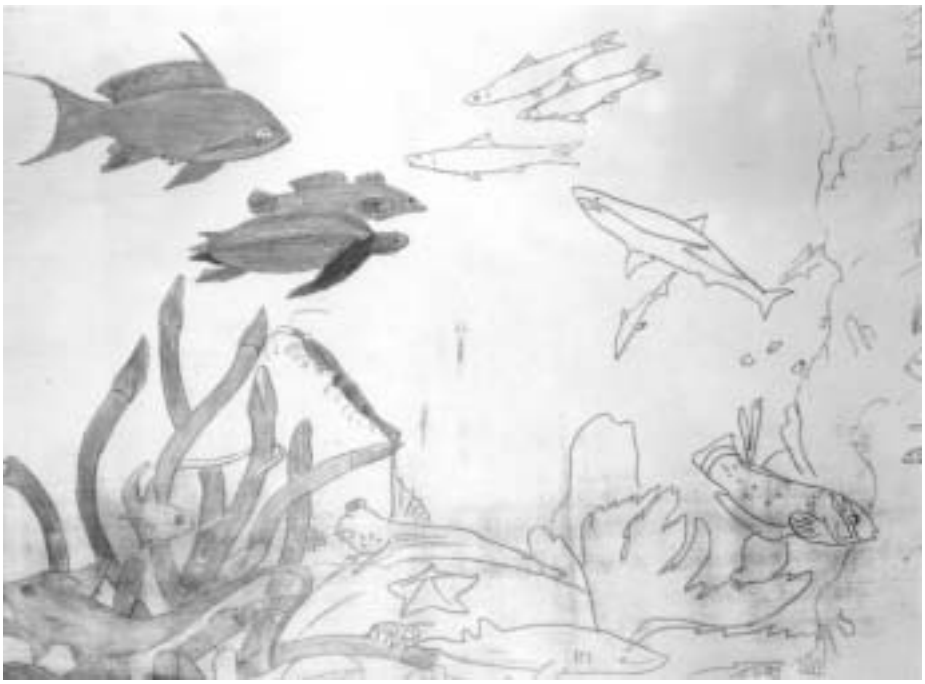
Preliminary sketches were made of the reef scene for each mural.

Students investigated sheet sizes of timber, plywood and metal at the local hardware store. They also investigated aspects of functionality, including decisions about methods of priming the sheeting and the types of paints that would provide a durable surface for the finished product.

Students realised that they needed to consider some issues of appropriateness in the production of the murals. For example, it would not have been appropriate for groups of students to be working in the ward because of the potential noise and the possible reaction of patients to paint fumes. Students devised a production plan for the drawing and painting of the scenes on the boards at school. The completed articles could then be transported to the hospital and installed at a time that suited the hospital.

Consultation took place with painters to obtain information about how the surfaces of the board and sheet metal needed to be primed and undercoated for the mural.

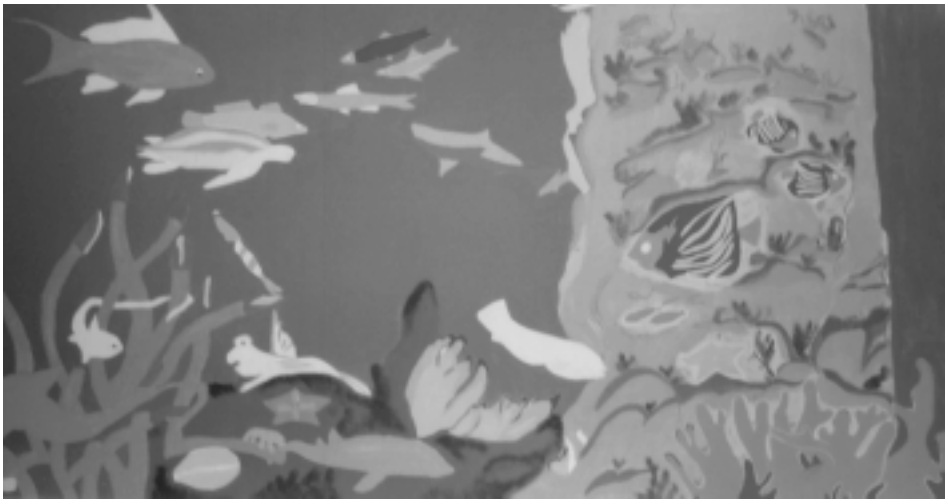
An example of a sketch for a mural



Earlier designs were modified. Students constantly evaluated their work and made modifications to elements of design, layout and colour. Students transferred the reef scene from the sketch paper to the much larger wallboards or metal sheets by using an overhead projector. Consideration was also given to the way in which the completed murals were to be mounted on walls.

Groups completed their murals and recorded their actions in their Technology project folios.

Samples of murals prepared on boards for mounting on the wall in the hospital ward



Assessment	Sources of evidence included: • formal methods devised by students for surveys • observations of students' participation • records of observations, ideas, designs and production processes in Technology project folios.

Culminating activities

Focus

This phase involved students in the installation of the murals in the hospital and a celebration of the occasion.

Activities

Students consulted with the hospital staff to negotiate a time to install the murals. The students also liaised with maintenance staff at the hospital as holes needed to be drilled in the wall. Consideration was given to the installation height to enable children to interact with the murals.

To complete the project, students celebrated the occasion with a formal ceremony. Written invitations were prepared, a spokesperson selected and speeches prepared.

Murals installed in the children's ward

Assessment

Sources of evidence could include:

- quality of the finished products
- student organisation of official ceremony
- Technology project folio.

Acknowledgement and support materials

Acknowledgment

Acknowledgement is made of the work of Sue McLennan and Lisa Van Eyk.

Support materials

Queensland Department of Education 1997, *Teaching Technology Case Studies*, Brisbane. This case study is based on work previously described in *Teaching Technology — Case Studies*.

This sourcebook module should be read in conjunction with the following Queensland Studies Authority materials:

Years 1 to 10 Technology Syllabus

Years 1 to 10 Technology Sourcebook Guidelines

Technology Initial In-service Materials

Technology CD-ROM

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Queensland Studies Authority, PO Box 307, Spring Hill Q 4004 Australia
Phone: (07) 3864 0299. **Fax**: (07) 3221 2553
Website: www.qsa.qld.edu.au **Email**: office@qsa.qld.edu.au