

Keeping valuables safe



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

Purpose

From an early age, students learn simple ways of managing and safely storing their special objects and valuables in containers, jewellery boxes, moneyboxes and wallets. In this module, students investigate the features and functions of devices for keeping valuables safe and design and create ways to store their own valuables.

Overview

The following table provides an overview of the activities in this module and the way in which these are organised into orientating, enhancing and synthesising phases.

Orientating	Enhancing	Synthesising
<p>Explore the concept of 'valuables' from personal and other perspectives.</p> <p>Introduce the concept of money.</p> <p>Investigate ways of keeping money safe.</p> <p>Represent design ideas.</p> <p>Investigate what other people value.</p> <p>Report on and compare what other people value.</p> <p>Investigate ways to keep valuables safe.</p>	<p>Gather ideas and generate designs.</p> <p>Model design ideas.</p> <p>Test and select materials.</p> <p>Work with tools and equipment.</p> <p>Create products from designs.</p>	<p>Test the functionality of products.</p> <p>Evaluate products and express opinions about products.</p>

Core learning outcomes

	This module focuses on the following core learning outcomes from the <i>Years 1 to 10 Technology Syllabus</i> :
<i>Technology Practice</i>	<p>TP 1.1 Students gather knowledge, ideas and data from familiar environments and consider how they will use this information to meet design challenges.</p> <p>TP 2.1 Students organise knowledge, ideas and data about how needs and wants might be met and use this information when meeting design challenges.</p> <p>TP 1.2 Students generate design ideas and communicate these through experimentation, play and pictures.</p> <p>TP 2.2 Students generate design ideas, acknowledge the design ideas of others and communicate their design ideas using annotated drawings that identify basic design features.</p> <p>TP 1.3 Students make products that are meaningful to them, and describe their production procedures.</p> <p>TP 2.3 Students identify, sequence and follow production procedures to make products of their own design.</p> <p>TP 1.4 Students express thoughts and opinions to evaluate their own and others' design ideas and products.</p> <p>TP 2.4 Students consider initial design ideas with final products and give reasons for similarities and differences.</p>
<i>Materials</i>	<p>MAT 1.1 Students identify characteristics of materials and explain how materials are used in everyday products.</p> <p>MAT 2.1 Students match the characteristics of materials to design requirements.</p> <p>MAT 1.2 Students explore equipment and techniques when joining and combining materials for meaningful purposes.</p> <p>MAT 2.2 Students select and use suitable equipment and techniques for manipulating and processing materials.</p>
<i>Systems</i>	<p>SYS 1.1 Students identify familiar systems and describe how these are used in everyday life.</p> <p>SYS 2.1 Students identify and describe the order of components in familiar systems.</p> <p>SYS 1.2 Students sequence steps to develop simple systems to carry out familiar tasks.</p> <p>SYS 2.2 Students combine components to assemble systems in order to meet their needs and the needs of others.</p>

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 module

The activities in this module are designed to provide opportunities for students to demonstrate Level 1 and 2 learning outcomes from the Technology Practice, Materials and Systems strands. These activities can also provide opportunities for students to develop and demonstrate the related learning outcomes at other levels. In order to do this, teachers will need to develop additional sets of anticipated evidence derived from the related learning outcomes at different levels. They may also need to modify aspects of the activities.

This module includes a variety of sequenced activities requiring varying amounts of time. Teachers can modify the design challenges and related activities depending on the local contexts, particular needs and prior knowledge of students and the availability of materials and resources.

Advice to teachers

Advice regarding setting up Technology spaces in the classroom and keeping Technology project folios is provided in activities A and B.

Resources

Students' creativity in demonstrating core learning outcomes in this module should not be limited by the range and scope of resources and equipment provided by the teacher. A variety of resources should be collected over time and should be safely stored and made available to students as required. Students might require assistance to use some items of equipment.

Evaluation of a unit of work

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

- teaching strategies and activities planned or selected to allow students to demonstrate the core learning outcomes
- future learning opportunities for students who have not yet demonstrated the core learning outcomes and to challenge and extend those students who have 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

Activities from this module can be used as part of an integrated unit that makes links to other key learning areas. When incorporating this module into an integrated unit of work, teachers can select activities that provide opportunities for students to demonstrate learning outcomes from other key learning areas and identify anticipated evidence of students' demonstrations of these learning outcomes. However, it is important that the integrity of the processes and concepts within key learning areas is maintained.

This module has links to strands from the following key learning areas:

- Health and Physical Education
- Mathematics
- Science
- Studies of Society and Environment.

Contributions to the cross-curricular priorities

This module contributes to students' development of the cross-curricular priorities:

- **literacy**, as students develop and use terminology to describe locks, alarms and other devices for keeping valuables safe and materials and equipment used to make these devices
- **numeracy**, as students develop and use concepts related to money, shapes and measurement
- **lifeskills**, as students develop and use skills related to self-management, establishing and maintaining relationships and cooperation
- **a futures perspective**, as students envisage and evaluate options when designing devices for keeping valuables safe.

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. The following points indicate how various activities in this module might contribute towards the development of these attributes.

Knowledgeable person with deep understanding

- recognises and uses containers, locks and alarms for keeping valuables safe
- understands the nature of materials used to make products for keeping valuables safe.

Complex thinker

- evaluates the suitability of materials for particular purposes
- recognises cause-and-effect relationships in simple lock and alarm systems.

Active investigator

- investigates and evaluates a range of ways of keeping valuables safe
- tests the suitability of materials for particular purposes.

Responsive creator

- uses imagination and originality in meeting design challenges
- envisions and generates a range of potential solutions.

Effective communicator

- interviews older people about things they value and how to keep them safe
- presents design ideas using oral or written descriptions, drawings or roleplay.

Participant in an interdependent world

- works in pairs or small groups to evaluate materials and products and devise and construct ways of keeping valuables safe.

Reflective and self-directed learner

- uses strategies such as roleplay and constructing models to clarify design ideas
- displays self-motivation and perseverance when completing tasks.

Assessment strategies

The assessment opportunities outlined are examples of how to assess students' demonstrations of the identified learning outcomes. As often as possible, negotiate assessment with students and support a variety of ways of demonstrating the learning outcomes. Reflect with students on evidence gathered when making judgments about their demonstrations of learning outcomes. Some students may require more time and/or other contexts in which to demonstrate these learning outcomes. Other modules may provide such time and/or contexts.

Suggestions for gathering information about student learning are provided in the activities section of this module. The table below provides descriptions of anticipated evidence that teachers might gather to support their judgments about students' demonstrations of learning outcomes and suggests sources of evidence. The table is neither exhaustive nor mandatory. Once sufficient evidence has been collected, judgments can be made about students' demonstrations of learning outcomes.

Core learning outcomes	Anticipated evidence	Sources of evidence
TP 1.1 Students gather knowledge, ideas and data from familiar environments and consider how they will use this information to meet design challenges.	Report on conversations with family and friends about how people keep valuables safe. Collect pictures of a range of 'valuables' and describe how to keep them safe. Handle a range of devices for keeping 'valuables' safe and compare the effectiveness of particular features. Describe how moneyboxes, locks, safes and/or security devices work. Explain the use of particular materials to make specific devices. Experiment with materials to determine their characteristics.	Observations of students' participation in activities and discussions. Presentations about: <ul style="list-style-type: none"> • how devices work • their design ideas. Technology project folios.
TP 2.1 Students organise knowledge, ideas and data about how needs and wants might be met and use this information when meeting design challenges.	Record the results of their investigations in their Technology project folios. Annotate their designs with references to knowledge and ideas from their investigations.	
TP 1.2 Students generate design ideas and communicate these through experimentation, play and pictures.	Draw, describe or model their ideas for containers or devices. Roleplay how to use devices. Describe how their device will keep 'valuables' safe.	Observations of students describing or modelling their design ideas during play. Drawings or descriptions in Technology project folios.
TP 2.2 Students generate design ideas, acknowledge the design ideas of others and communicate their design ideas using annotated drawings that identify basic design features.	Generate design ideas. Respond to ideas of others. Communicate designs using annotated drawings that identify basic features. List, draw or describe the materials needed to produce their design.	Models of designs. Conferences with students about their designs.
TP 1.3 Students make products that are meaningful to them, and describe their production procedures.	Explain how they will make their container or device. Make their device, independently or with assistance.	Drawings/descriptions of production processes in Technology project folios. Students' products.
TP 2.3 Students identify, sequence and follow production procedures to make products of their own design.	Describe intended production procedures for producing their designs.	

Core learning outcomes	Anticipated evidence	Sources of evidence
TP 1.4 Students express thoughts and opinions to evaluate their own and others' design ideas and products.	Explain how their design ideas changed as they made their device. Express their opinions about the aesthetic appeal and functionality of their own and others' design ideas and products.	Interviews with students about their products. Students' presentations. Observation of participation in discussions about their and others' products.
TP 2.4 Students consider initial design ideas with final products and give reasons for similarities and differences.	Describe how their products or models differ from their original design. Provide reasons for differences between products and models and original designs.	Annotations in Technology project folios.
MAT 1.1 Students identify characteristics of materials and explain how materials are used in everyday products.	Identify common materials and how they are used — for example metal for locks and keys, plastic, wood or metal for moneyboxes. Identify the characteristics of material that make them suitable for constructing specific products.	Observation of students' participation in group and class discussions about materials. Technology project folios.
MAT 2.1 Students match the characteristics of materials to design requirements.	Select materials that meet their design requirements.	
MAT 1.2 Students explore equipment and techniques when joining and combining materials for meaningful purposes.	Use simple equipment and techniques to cut, join and combine familiar materials to construct their devices for keeping valuables safe.	Observation of students while they work with materials. Technology project folios and students' products.
MAT 2.2 Students select and use suitable equipment and techniques for manipulating and processing materials.	Select suitable equipment and techniques to manipulate materials.	
SYS 1.1 Students identify familiar systems and describe how these are used in everyday life.	Describe how mechanical moneyboxes, locks and alarms work.	Diagrams of how systems operate. Models of security systems or other systems for keeping valuables safe.
SYS 2.1 Students identify and describe the order of components in familiar systems.	Students sequence or draw or describe the sequence of components in familiar systems.	
SYS 1.2 Students sequence steps to develop simple systems to carry out familiar tasks.	Demonstrate that they can work mechanical moneyboxes, locks or alarms.	Observations of students working with simple systems.
SYS 2.2 Students combine components to assemble systems in order to meet their needs and the needs of others.	Assemble components in models of their systems for keeping valuables safe.	Diagrams of how systems operate. Models of security systems or other systems for keeping valuables safe.

Background information

Terminology

In this module students have opportunities to become familiar with and use the following terminology:

alarm	investigate	safe
cloth	jewellery	security
coins	lever	slot
currency	lock (combination)	technology
design challenge	model	tinkering table
durability	money	valuables
fabric	moneyboxes	velcro
flexibility	padlock	wallet
functionality	plastic	wood
handling collection	project folio	
hinge	purse	

School authority policies

Teachers need to be aware of and observe school authority policies that may be relevant to this module.

Safety policies will be of particular relevance to some of the activities that follow. It is essential that teacher demonstrations and student activities are conducted according to procedures developed through appropriate risk assessments at the school.

In this module, teachers may need to consider safety issues relating to students working with simple tools and equipment while testing materials and creating products.

Equity considerations

This module provides opportunities for students to increase their understanding and appreciation of equity and diversity within a supportive environment. It includes activities that encourage students to:

- be involved in discussions with older people about what they value from the past
- work individually and in groups to envision and create devices for keeping valuables safe and support one another in their efforts
- value diversity of ability, opinion, experience, language and cultural beliefs
- become empowered to communicate freely during discussions and group work
- negotiate and accept changes to designs.

It is important that these equity considerations inform decisions making about teaching strategies, classroom organisation and assessment.

Some students with disabilities may need assistance with some activities. Advice should be sought from their support teachers.

Activities

Orientating activities

*Focus,
Activities A–4*

Preparing to ‘work technologically’ by setting up the classroom and introducing Technology project folios.

*Teaching
considerations*

When ‘working technologically’, students need easy access to workspaces, materials and equipment. They also need to understand the guidelines and constraints associated with the use of materials and equipment. Activities A and B might take place over a number of days. Depending upon the size and configuration of the classroom, an alternative area may need to be used for the following activities.

Resources

Pens, cardboard and paper for recording students’ ideas.
Plans of the classroom (one per child and a larger class version).

Activity A

*Prepare to ‘work
technologically’
— manage
workspaces,
resources and
equipment*

Links to SOSE:

SRP 1.1

Students identify how elements in their environment meet their needs and wants.

1. Explain that Technology activities involve designing and making things using a range of materials and equipment. Describe examples and relate these to activities students might have undertaken at home or school in the past.
2. With the students’ help, plan and set up class Technology area/s. Explain what sort of activities the students might be engaged in and that spaces might be needed for:
 - storing recyclable and reusable materials in a ‘materials centre’ or ‘store’
 - displaying students’ designs and products
 - setting up a ‘tinkering table’ and a ‘handling collection’ table
 - working on designs and products — for example, in a ‘construction corner’ equipped with tools and materials.
3. Talk about the sort of workspaces students would like, the equipment they might want to use and the materials they might need.
4. Explain the terms ‘handling collection’ and ‘tinkering table’ and the purpose of these spaces.
5. Experiment with ideas for different classroom layouts. Ask students to adapt a plan of the classroom to show how they would like to incorporate Technology spaces. Encourage the students to share their ideas. As a class, negotiate where to locate each Technology space. Record these decisions on the class version of the plan.
6. Communicate the class intentions to parents/carers and ask for donations of materials and equipment.
7. Discuss and negotiate systems for storing material and equipment, ordering materials and borrowing equipment. Ask students to make items such as charts and labels for negotiated systems.

*Teaching
considerations*

Technology project folios are useful sources of assessment information for teachers. Students also find them useful. Recording their ideas can help students to clarify their designs. The folio also provides students with a reference for reflecting on designs and production processes. Keeping a useful Technology project folio requires planning and guidance.

Resources

Examples of completed Technology project folios.
A scrapbook for each student to use as a Technology project folio.

Activity B

Prepare to 'work technologically' — introduce Technology project folios

Focus

Teaching considerations

Resources

1. Show examples of Technology project folios created by other students. Explain to students that the folio provides an opportunity for them to record their ideas about, and the progress of, their designs and products for future reference. A new Technology project folio should be started for each design challenge or set of design challenges. Students should keep draft and completed materials in their folios.

2. Provide each student with a scrapbook to use as a Technology project folio.

3. During the following activities, model the use of Technology project folios.

The following orientating activities introduce the concepts of 'valuables' and 'money'.

Students' knowledge of, and prior experiences with, the concept of 'valuables' will differ. Some may have several devices for keeping valuables safe at home and will be able to describe how these are used in different contexts and for different purposes. Collect a range of literature that could be used to introduce the concept of 'valuables', including *Jack and the Bean Stalk*. To adapt this module for use with older students, teachers might use *Finders Keepers* by Emily Rodda.

These activities have links to English and Mathematics. Students might like to set up a class shop to further develop mathematics concepts related to money.

Jack and the Bean Stalk or a similar story.

Pens, cardboard and paper for making class charts or books.

Cardboard coins or play money for demonstrating or testing devices.

Technology project folios, pens, paper and other materials to record students' design ideas.

Activity 1

Explore the concept of 'valuables' from personal and other perspectives
Technology Practice (Investigation, Ideation)

Links to English

1. Explain that this unit of work is about what people value and how to keep valuables safe.

2. Model the concept of valuables by describing things that you value. Create a concept map for your valuables. Point out that 'valuables' are different for everyone — that it involves personal preferences. Discuss what different people value.

3. Read *Jack and the Bean Stalk*. Invite the students to bring in different versions of the story.

4. Help students to find words in the story that are used to describe things that are valuable and record the words on a chart for future reference.

5. Ask students to draw or use collage to depict the things that Jack, his mother and the giant thought were valuable.

6. Discuss as a class group:

- How did the giant keep his valuables safe?
- What could the giant have done to protect his valuables from Jack?
- What things do other people value?
- What do people value, other than things?

7. In pairs, discuss ways that Jack might keep his new wealth safe:

Would he use different methods to the giant? Why or why not?

8. Ask the students what they think is valuable and how they keep their valuables safe. Act as scribe to create a class concept map about their valuables and ways of keeping them safe. Display it in the classroom.

9. Explain they will be exploring and designing ways to keep valuables safe. Ask students to create a title page in their Technology project folio and collect and paste in illustrations of devices for keeping valuables safe.

<p>Activity 2</p> <p><i>Introduce the concept of money</i></p> <p><i>Technology Practice (Investigation)</i></p> <p>Links to Mathematics</p> <p><i>Focus</i></p> <p><i>Resources</i></p>	<ol style="list-style-type: none"> 1. Ask the students what Jack's mother might have expected him to receive in exchange for the cow. 2. Discuss the purpose of money. 3. Record students' contributions on a chart or in a class information booklet. 4. Ask the students what they know about keeping money safe. Discuss how money is stored at home and in shops and banks. Discuss security measures and warnings that might be found in shops and banks. Add this information to the chart/class information booklet. 5. Ask students to collect pictures to illustrate the chart/booklet and to contribute to a handling collection of devices for keeping money safe. <p>Students investigate devices for keeping valuables safe in the following orientating activities.</p> <p>Technology project folios, pens, paper and other materials to record students' design ideas.</p> <p>Cardboard coins or play money for demonstrating or testing devices.</p> <p>Illustrations and a handling collection of moneyboxes, wallets and other devices for keeping valuables safe.</p>
<p>Activity 3</p> <p><i>Investigate ways of keeping money safe</i></p> <p><i>Technology Practice (Investigation), Materials, Systems</i></p>	<ol style="list-style-type: none"> 1. Use examples of moneyboxes and wallets from the handling collection to promote discussion about ways of keeping money safe. Allow time for the students to examine the handling collection. 2. Discuss ways people store money and why. List these on a wall chart. 3. Discuss: <ul style="list-style-type: none"> – who uses moneyboxes/wallets – where they are kept in the house and how they are carried – how they keep money safe – the materials used to make them. 4. As a class group, classify the moneyboxes or wallets in the handling collection according to, for example: <ul style="list-style-type: none"> – shape, size or colour – how they work – materials used in their construction. 5. Create a word bank chart that lists features of the moneyboxes/wallets for future reference. Students can refer to this list when deciding on features to incorporate into their own designs.
<p>Activity 4</p> <p><i>Represent three-dimensional objects</i></p> <p><i>Technology Practice (Ideation), Materials, Systems</i></p> <p>Links to Mathematics</p>	<ol style="list-style-type: none"> 1. Select one moneybox or wallet. Ask students to look at it from a variety of angles, and to compare each of its surfaces to common shapes. 2. Demonstrate ways of illustrating the device. Demonstrate how surfaces can be traced or how silhouettes can be created and traced using an overhead projector. Draw and label the side, top, back and front views. Label features or components of the design — locks, zips, slots, Velcro tabs. 3. Discuss the factors that might have affected the design of the object, including the size and weight of notes or coins. 4. Discuss the materials used to produce the object and why they might have been chosen — for example, because of their appearance, cost, durability or flexibility. Annotate your drawing. 5. Ask the students to select their favourite moneybox/wallet from the handling collection, and draw a picture that uses arrows to illustrate how it is used. 6. Discuss each student's drawings with them and help them to annotate their drawings with information about the object and the materials used to make it. 7. Display the drawings in the classroom for a time, and then ask students to add them to their Technology project folios.
<p><i>Assessment</i></p>	<p>Sources of evidence could include:</p> <ul style="list-style-type: none"> • observations of students' participation in discussions • descriptions or drawings depicting how devices for keeping valuables safe are used.

<i>Focus, Activities 5–7</i>	The following orientating activities focus on gathering information about what people value, investigating the characteristics of materials used to create devices keeping valuables safe, and generating their own designs.
<i>Teaching considerations</i>	Not all things that people value are tangible. During their interview, students may find that intangible things valued by older people include friendships, integrity, health or memories. Some students might choose to explore ways of keeping intangibles safe.
<i>Resources</i>	Technology project folios and pens, paper and other materials to record students' design ideas. Cardboard coins or play money for demonstrating or testing devices. A 'tinkering table' of devices for keeping valuables safe, including albums, moneyboxes, wallets, cash boxes, locks and keys, alarms, jewellery boxes.

Activity 5	<ol style="list-style-type: none"> 1. Ask students to interview older people (family members, neighbours and friends) to find out: <ul style="list-style-type: none"> – what they value from the past and why – how they keep their valuables safe. 2. Ask students to report on their interviews and how valuables are kept safe. 3. Discuss whether it is possible to keep all things we value safe. 4. Ask students to collect pictures of valuables and ways of keeping them safe — for example, albums, jewellery boxes, safes, moneyboxes, locks, alarms, display boxes, frames, shelves and display cabinets. 5. Ask students to contribute containers or devices for keeping valuables safe to the class 'tinkering table'.
<i>Investigate what other people value</i> <i>Technology Practice (Investigation)</i> Links to SOSE: TCC1.5 Students identify what older people value from the past. SRP1.1 Students identify how elements in their environment meet their needs and wants	

Activity 6	<ol style="list-style-type: none"> 1. Ask students to describe, roleplay or illustrate ways of keeping valuables safe. 2. Ask students to contribute to a concept map of what other people value and compare it to the class concept map created in Activity 1. 3. Discuss: <ul style="list-style-type: none"> – Does everyone value the same things? (Consider what parents, grandparents, teenagers and friends might value.) – Does everyone use the same ways of keeping valuables safe? – What was the most unusual way of keeping valuables safe? Easiest? Most complicated?
<i>Report on and compare what other people value</i> <i>Technology Practice (Investigation)</i>	

Activity 7	<ol style="list-style-type: none"> 1. Ask pairs of students to use items on the 'tinkering table' to investigate a range of ways of keeping valuables safe. Consider: <ul style="list-style-type: none"> – the size and shape of valuables and the devices that are usually used to keep them safe – the materials usually used to create such devices – where the devices are usually kept or how they are usually carried – how they are usually used or maintained. 2. Encourage students to use photographs, magazine pictures, drawings and descriptions to record information about the devices in their Technology project folios. 3. Ask students to report on their investigations to the class using photographs, illustrations, diagrams or roleplay to support their descriptions.
<i>Investigate ways to keep valuables safe</i> <i>Technology Practice (Investigation)</i>	

<i>Assessment</i>	Sources of evidence could include: <ul style="list-style-type: none"> • observations of students' participation in discussions • descriptions and drawings in Technology project folios or roleplays depicting how devices for keeping valuables safe are used.
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Enhancing activities

Focus During the enhancing activities students design and create a product (device or system) for keeping a chosen valuable safe.

Design challenge

Design and make/model a device or system for keeping valuables safe.

Teaching considerations

Students who choose to investigate, design and make/model alarms or locking devices might provide evidence of their demonstration of learning outcomes from the Systems strand. Organise parents/carers or a teacher aide to assist with these activities. 'Buddies' from Years 6 or 7 could also be involved.

Activities on pages 7 and 25–27 of the Science sourcebook module *The Nature and uses of materials* could be adapted or used in conjunction with the following activities. Activities and worksheets in the Studies of Society and Environment sourcebook module *Ready, set, go: Rights and responsibilities* could be used to prepare students for group work.

Resources

A 'tinkering table' of devices for keeping valuables safe.

Technology project folios and chart materials for recording design ideas.

Materials for modelling designs — clay, plasticine, playdough or classroom construction sets.

A range of materials including fabrics, cardboard, paper, glue, wool, string, staplers, scissors, paint and brushes and recyclable and reusable materials.

Activity 8

*Gather ideas and generate designs
Technology
(Investigation, Ideation), Materials*

1. Encourage students to discuss in groups the things they value and how they keep them safe. Ask them to choose something that people value and devise a way to keep it safe.
2. Provide time for students to explore devices on the 'tinkering table' and to examine and experiment with a range of materials.
3. Ask students to discuss and draw two or more design ideas in their Technology project folio. Students might prefer to model their design before, or instead of, drawing it. 1. Photographs of models should be included in their folios.
4. Make a class list of the materials that might be useful for making students' designs. Use the class list as the basis for a note to families requesting items for the class 'store' or 'materials centre'.
5. Ask students to select one of their design ideas and discuss how it keeps valuables safe. Encourage students to make their own list of materials they would like to use when making their design.

Activity 9

*Model design ideas
Technology Practice
(Ideation), Production*

1. Encourage students to use clay, plasticine, playdough or classroom construction materials to model their design ideas. Explain that the modelling process can help designers think about the features of their product.
2. Discuss students' design ideas and ask them to share their ideas with others. Students may choose to construct this design, revise it or create a new design.

Activity 10

*Test and select materials
Technology Practice
(Investigation, Ideation), Materials*

Links to Science:

NPM 1.1 Students describe observable properties of familiar materials, including solids and liquids.

NPM 1.2 Students group materials on the basis of properties (including solubility, texture and hardness).

1. Provide samples of wood, metal, cardboard, fabric and plastic in a range of sizes, shapes and thicknesses. Discuss, measure and compare the samples, ensuring that students have the terminology needed to describe them. Record useful vocabulary in a class list.
2. Discuss the meaning of the words 'flexible' and 'durable'. Discuss whether these qualities are desirable in their design and why. What other qualities would be desirable in their design?
3. Discuss how the various materials can be tested for flexibility and durability.
4. Devise a test with the class and use it to test a number of materials.
5. Ask students to select a range of materials that they think would be useful for making their design and to draw or list them in their Technology project folio.
6. Invite groups of students to test and record the flexibility and durability of the samples. For example, students could test each sample, place the samples in order from least flexible to most flexible and then draw the samples in that order and label their list.
7. Ask students to record the materials that appear to be most appropriate for their design in their Technology project folios.

Activity 11

Work with tools and equipment

Materials

Links to HPE:

PH 1.3 Students decide which people and things make environments and activities safe.

1. Provide a range of tools for working with wood, metal, cardboard and plastic. Ask students to name the tools and describe how they can be used.
2. Ask students to identify tools that they might need assistance to use. Discuss safety issues related to the use of particular tools.
3. Negotiate class guidelines for working with and caring for tools.
4. Ask students to select the tools they might use to make their device and to draw or list their selection in their Technology project folio.

Activity 12

Create products from designs

Technology Practice (Production, Evaluation), Materials

Links to Science:

NPM 1.3

Students look for alternative ways that familiar materials can be used.

NPM2.3

Students explain why common materials are used in particular situations.

1. Create a class roster for using the Technology area, making sure each group is allocated daily sessions. This activity will require several sessions.
 2. Encourage students to trial various materials for their design.
 3. Meet with each student to discuss their chosen design.
 4. Encourage students to refer to their designs as they develop their products.
 5. Provide time at the end of each session for students to record their thoughts and actions in their Technology project folio. Encourage students to use this time to plan what they might need for the next session. Set up a stock list in the Technology area and ask students to add what they need for the following session. The teacher or a classroom helper can act as scribe for the stock list.
 6. Interview students individually or in small groups. Help them to annotate their Technology project folios with information from the interview. Discuss:
 - What is the purpose of your product?
 - What did you find easy to do? What did you find difficult to do?
 - What materials did you use? Why?
 - What did you learn about the materials and equipment you used?
 - What else would you like to try?
 - How is your product used?
 - How is the final product different from your original ideas? Why?
- Encourage students to think about how the functionality of their design could be tested.

Assessment

Sources of evidence could include:

- observations of students interacting with items from the 'tinkering table'
- observations of students testing materials and working on designs
- Technology project folios
- discussions and interviews about design ideas and progress in making their product (device or system for keeping valuables safe).

Synthesising activities

Focus,
Activities
13 & 14

During the synthesising activities, students test and evaluate their devices for keeping valuable safe.

Resources

Students' products (devices or systems).

Chart material.

Valuables for testing the products.

Technology project folios.

Teaching
considerations

In the following activities, the teacher supports the students to evaluate the functionality of their products by leading discussion, modelling a test for a particular product, and working with students (individually or in small groups) to help them devise tests and evaluate their products. It might not be possible to test all designs. Students can evaluate their designs by discussing scenarios for using the products, predicting the outcomes, and illustrating these in their Technology project folios.

Activity 13

Test the
functionality of
products

Technology
Practice
(Evaluation)

1. Explain that the purpose of this activity is to evaluate the functionality of their designs — how well the device or system keeps the valuable safe.
2. Ask students to suggest scenarios in which their products might not keep the valuable safe. Will a photograph fade if the frame is left in the sunlight? Will the money fall out if a moneybox is tipped upside down? Will the camera be damaged if the camera case is submersed in water?
3. Select one device or system. Discuss:
 - What does this device or system keep safe?
 - Why does this valuable need to be kept safe?
 - How does the device or system keep the valuable safe?
 - How can we test how effective the device or system is?
4. Devise a simple test in consultation with the class. Work through this test with the class and record the results on the board or a chart.
5. Work with students (individually or in small groups) to evaluate their products. Help students to record their evaluations in their Technology project folios.

Activity 14

Evaluate
products and
express
opinions about
products

Technology
Practice
(Evaluation)

1. Ask students to display their completed products in the Technology area.
2. Provide opportunities for the students to present their products to the class. Encourage students to explain how they are used, why particular materials were chosen, and describe what they like about their product and what they might like to change and why. Ask students to describe and discuss what went well and the challenges they met in making their products and what they have learnt about particular materials and equipment.
3. Invite members of the class to make supportive comments about each product.
4. Students could conduct a 'product expo' and invite parents or other classes to view their products and ask questions.

Assessment

Sources of evidence could include:

- observations of students' participation in group and class activities
- final products
- Technology project folios or other records of progress.

Acknowledgment and support materials

Acknowledgment

Grateful acknowledgment is made to Jennifer Fyffe — teacher, Good News Lutheran Primary School, for granting permissions to use copyright material and for assistance in preparing this module.

Print

Chadwick, E. 1992, *Money Box*, Collins Primary Technology Series, Collins Educational, London.

Queensland School Curriculum Council 2002, *Ready, set, go: Rights and responsibilities*, Studies of Society and Environment sourcebook module, Brisbane.

Queensland School Curriculum Council 2000, *The nature and uses of materials*, Science sourcebook module, Brisbane.

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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