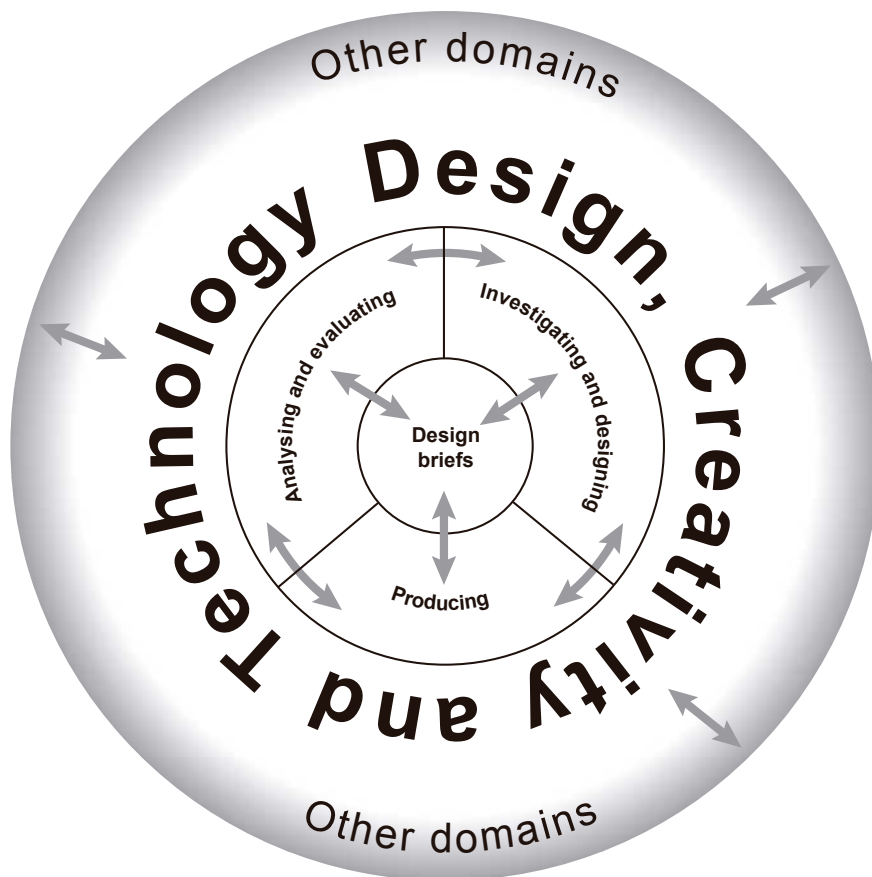


# Approaches to Learning and Teaching – Design, Creativity and Technology

## Design and technology processes and the development of design briefs

Central to Design, Creativity and Technology are design and technology processes. Students work through design and technology processes when they are designing and producing products and systems. This is reflected in the three dimensions that comprise Design, Creativity and Technology. While it is not intended that students will necessarily work through these in a linear way, it is expected that they will work through a range of interrelated processes while addressing problems and challenges posed in design briefs. Therefore, most of the elements within the dimensions should be addressed in a unit of work. The following diagram represents the centrality of design briefs, the interrelated nature of the Design, Creativity and Technology dimensions, and how this domain can be informed by knowledge and skills from other Victorian Essential Learning Standards (VELS) domains.



# Using design briefs in Design Creativity and Technology

## The role of design briefs

Design briefs provide the context and challenge for learning in Design, Creativity and Technology. They identify specifications that students will need to consider in their designs. The format of design briefs can vary as can the amount of information they provide. These will be determined by the level of the students and the nature of the brief.

When the teacher provides a design brief for students, the language and format needs to be appropriate. Given that design briefs are usually provided early in the design and technology process, they need to be relevant, engaging and challenging.

## Who designs them?

In the earlier years, design briefs are likely to be provided by the teacher. However, students can be given opportunities to have input into the brief. For instance, a general theme, challenge or problem may be identified, but students could provide some parameters or specifications. As students become familiar with providing input into and working with design briefs, they should increasingly be given opportunities to develop their own briefs. Teachers can help students develop skills in contributing to design briefs when they pose broad challenges and ask students to identify the users/consumers or a situation that requires the design and development of a product.

For instance:

- Students are asked to design a cake for a birthday party. They identify the consumers of the cake and develop ideas based on this decision.
- Students are asked to design a product that will hold money and some small items. They identify the user of the product and develop designs based on the needs of the end user.
- Students are designing a small piece of furniture that can be used to put cups and glasses on when people are having drinks. They decide where it will be placed (for instance, next to an armchair, beside a desk, in a playroom, in the corner of a room).

## Design brief formats

The format of design briefs can vary significantly, but will need to include a context, challenge, and specifications, which include time available to design, make and evaluate the product.

### *Context*

The context provides the background to the problem or challenge. It can be posed as a story or a scenario. The context is particularly important to engage students and show the relevance of the challenge.

### *Challenge*

The challenge is the problem to be addressed by the students. It is generally open ended to encourage students to consider a range of possibilities in response to the challenge. For instance:

- rather than specifying that students design an alarm, the design brief would challenge students to design a device that will alert someone that an intruder has broken into a property
- rather than specifying that students design a CD holder, students could be asked to design a product that will hold ten CDs (and perhaps other items).

### *Specifications*

The type and number of specifications can vary depending on the level at which students are working. Specifications can relate to many areas, including:

- available materials or components
- available tools and equipment
- suitable processes
- a particular design feature
- where/how the product is to be used
- where it is to be situated
- who it is for.

Specifications can be categorised as:

- aspects of a brief that are considerations (flexible aspects)
- aspects of a design brief that are constraints (inflexible aspects).

These terms would generally be used once students are familiar with using design briefs.

### *Time*

Students should know how long they have to complete the product. This could indicate whether the product development will be short or extended.

# Approaches to Learning and Teaching – Design, Creativity and Technology

## Sample design brief for Design, Creativity and Technology with links to other domains

### Level 3

#### The water story

##### Context

There has been a great deal of discussion about water lately. We don't seem to be getting enough rain and our water resources are low. Many people are not aware of the problems created by not having enough water and don't know how to save water.

##### Challenge

Your class has been asked to design a big pop-up book that will tell people something about saving water. You will work in small groups to design two pages for the book:

- one page to tell people something about water
- one page to tell people one way that they can save water.

##### Specifications

To make your pages you can use:

- different sorts of paper and cardboard
- different fabrics
- toothpicks and pop sticks
- glue and scissors.

You can ask your teacher about using other materials.

#### Possible links with other domains

##### The Humanities

Students find out about water as a resource. Where does it come from? What do we use it for? What impact can lack of water have on the environment?

##### Communication

Students develop ideas to address a design brief. They communicate ideas visually and orally to others.

##### English

Students create text that is suitable for the pages in their book. They identify some of the key words and phrases from information they have learnt about water.

##### The Arts

Students explore techniques for effectively presenting information, considering different materials and media.

##### Interpersonal development

Students work as a team to determine which information they think should be included on the pages of their book. They identify and share them with the whole class so that the class can determine what each group will include on their pages, to minimise repetition of ideas.

##### Civics and Citizenship

Students consider the water needs of people and impact of a lack of water on the local environment and community.

# Sample design brief for Design, Creativity and Technology with links to other domains

## Level 4

### The Great Grabber

**Context**

Many people find it difficult to lean over and pick things up. Older people can find it difficult to bend; some people aren't able to get out of a chair or bed for some time. How do they pick things up from the floor, or a table that is a little distance away?

**Challenge**

Your task is to design a device with a mechanism that will allow people to reach and pick up something that is a metre away.

**Specifications**

Your Great Grabber needs:

- a mechanism of some sort
- to include at least two materials
- to be comfortable to hold
- to be cheap to produce.

### *Possible links with other domains*

#### **Science**

Students analyse how different mechanisms work to create different types of movement.

#### **Mathematics**

Students measure and calculate the minimum distances that need to be covered. They list the quantity of materials required, and prepare a costing list for the product.

#### **Civics and Citizenship**

Students visit an aged care facility and identify some of the things that people might want to reach, but have difficulty doing so.

They interview an elderly or disabled person to find out what sort of device would be most useful.

#### **Personal Learning**

Students plan the production method they will use, including the time they think each main production process will take.

They plan strategies to ensure that they can complete tasks on time, even if they encounter some problems.

#### **Thinking Processes**

Students generate and test a range of ideas to address the design brief. They reflect on the processes that they undertook in order to complete tasks and consider possible changes that they could have made to improve the processes.

#### **Communication**

Ideas are communicated visually and orally. Students develop questions to ask an elderly or disabled person and note their responses.

# Sample design brief for Design, Creativity and Technology with links to other domains

## Level 5

### Cool containers

#### Context

There are lots of different containers on the market, but many of them are boring and are designed for the general public rather than specific users.

#### Challenge

Aren't you sick of losing very important items in the bottom of your school bag? Well, now is the time to solve the problem. You are to design a container to hold these very important items. Before you start the task you need to identify the items to be held in the container.

#### Specifications

The container needs to:

- safely contain the items
- be designed to allow loose items to be easily found in your bag
- use more than one material
- be decorated in some way
- reflect something about your personality.

### Possible links with other domains

#### Communication

Students communicate in a range of ways, including developing a series of rough sketches, a three-dimensional representation of their final idea, a mock-up and a final product.

They describe to their peers how it reflects something about them.

#### Thinking Processes

Students incorporate creativity into their designs through the inclusion of a decorative element that reflects something personal and helps to identify their bag. They reflect on and describe processes undertaken.

#### The Arts

Students explore different decorative techniques that could be used to enhance their chosen materials. They experiment with a range of techniques to determine the most suitable one for their design.

#### Mathematics

Students develop a scale drawing of their design. They list the number of pieces needed to make the container and the size of each piece. They then calculate the quantity of materials needed.

#### The Humanities – History

Students research a particular type of small container. They find examples of containers used over time and annotate these to show the design features and materials. They organise these into chronological order and explain what might have influenced the designs at the time.

# Sample design brief for Design, Creativity and Technology with links to other domains

## Level 6

### Gourmet gifts

#### Context

There has been an increasing demand for gourmet foods, along with a vast increase in the range and types of gourmet foods commercially available.

#### Challenge

You have been asked to design an Australian gift for tourists. The gift must be a food item with an Australian theme and be packaged in a novel way.

#### Specifications

The gift is to be no larger than 10 x 10 x 10 cm. The food item needs to be able to be kept for several weeks.

Considerations:

- What sort of food items would be appropriate and can be safely kept without deterioration for several weeks?
- Will the food be savoury or sweet?
- How will it incorporate an Australian theme?
- What sort of packaging might be novel?

### Possible links with other domains

#### Health and Physical Education

Students investigate the types of food items that can be preserved for some time and/or which ingredient can be added to preserve foods.

They find out about the processes they would need to follow to ensure that the food is packaged hygienically.

#### The Arts

Students explore a range of types of suitable packaging techniques, including shape and materials. They explore methods for decorating packages.

#### ICT

Students research on the Internet some or all of the following:

- packaging techniques
- existing gifts for tourists
- Australiana.

They experiment with software that might be suitable to produce their package. They explore options (font, colour) that they could incorporate into their packaging design by considering the needs of their audience.

#### Interpersonal development

Students work in small groups to explore Australiana themes. They research in a range of ways and pool information about what tourists regard as typically Australian, or what represents Australia.

They develop and conduct a survey to evaluate the effectiveness of their design ideas.

#### LOTE

Students explore at least one potential tourist market with a focus on people whose first language is not English. They find out which items might appeal to that market, and whether any food items would be inappropriate or unappealing. They identify words that could be incorporated into the gift or package.