

## Introduction to Design, Creativity and Technology

The domain of Design, Creativity and Technology (DCT) emphasises engagement in designing, creating and evaluating processes, products and technological systems using a range of materials as a way of developing creativity and innovation. Creativity in this domain can be described as applying imagination and lateral and critical thinking throughout design and development processes. Innovation is an outcome of the broad exploration of ideas, use of materials/ingredients, and technical processes that can occur when individuals are involved in investigating, designing, producing, analysing and evaluating their own and others' products and/or systems.

Design is a vital step in transforming ideas into creative, practical and commercial realities by optimising the value of products and systems. Designing and its application involve planning and organising production, and evaluating products in a real context. Contexts may relate to; for example, what we grow, eat, wear, build, make, our health and safety, and how we travel and spend our leisure time. Designers consider problems, needs, wants and opportunities and respond to them by developing a range of ideas, which are developed into utilitarian products or systems.

Development of capability in this domain includes the ability to use, manage, assess and understand design, creativity, technology, and their relationship to innovation. In more detail, this involves students:

- posing problems and actively identifying needs, wants, opportunities and areas for improvement
- gathering information and building knowledge about the nature of needs, wants, opportunities and areas for improvement and the best routes to take towards designing a solution
- developing and using design and technology skills, knowledge and processes, including proposing, experimenting, learning from results and synthesising, to create new and/or improved products and/or systems
- using tools, equipment, materials/ingredients and systems components safely and creatively to make quality products and/or systems
- understanding that design, creativity and technology leads to innovation
- assessing the outcomes of design and technology processes, and the resulting products and technological systems in relation to environmental, social and economic factors.

This domain involves experiential, practical and applied knowledge as well as theoretical understanding. It requires students to be autonomous and creative problem-solvers, as individuals and as members of a team. Students combine an understanding of design, functionality, aesthetics, social, cultural, economic and

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environmental issues, and industrial practices with practical skills. As they do so, they reflect on and evaluate past and present design and technology, its uses and effects.

The DCT domain focuses on development of students' skills in managing and manipulating materials and resources using a range of tools, equipment and machines to make, produce or grow functional physical products or systems. These materials and resources include food, wood, metal, timber, plastics, textiles, ceramics, plants and soil/growing media and components such as wheels and axles, pulleys and belts, gears, switches, lights, motors, connecting wires, batteries and printed circuits boards.

### Structure of the Design, Creativity and Technology domain

The DCT domain uses an eleven level structure to both reflect the design of the Australian Curriculum and to provide a consistent structure across all the AusVELS domains.

Each level includes a learning focus statement and from Level 3 a set of standards are introduced, organised by dimension. A glossary is included which provides definitions of underlined terms.

### Learning focus

Learning focus statements are written for each level. These outline the learning that students need to focus on if they are to progress in the domain and achieve the standards at the levels where they apply. They suggest appropriate learning experiences from which teachers can draw to develop relevant teaching and learning activities.

### Standards

Standards define what students should know and be able to do at different levels and are written for each dimension. In DCT standards for assessing and reporting on student achievement are introduced from Level 3.

### Dimensions

Standards in the Design, Creativity and Technology domain are organised in three dimensions:

- *Investigating and designing*
- *Producing*
- *Analysing and evaluating.*

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Activities associated with the three dimensions are linked and may be applied sequentially, where students move directly from investigating to designing, producing and evaluating. Or alternatively, students may move between the dimensions as they solve a problem. For example, to assist their decision making while designing a product or system, students may evaluate the potential impact on the environment of the intended use of materials/ingredients, components or processes required to make the product or system. Additionally, after evaluating a product they have made, students may return to the *Investigating and designing* and *Producing* dimensions to improve the product. In this way, students may work in a non-sequential manner through the dimensions in this domain. In order for students to demonstrate knowledge, skills and behaviours in this domain a 'design and make' project-based learning approach must be taken, that focuses on meeting the problem, need/s or requirements defined in a design brief.

## Investigating and designing

In the *Investigating and designing* dimension, students identify ideas, problems, needs, wants and opportunities. A design brief can be a starting point or it can be developed to clearly define the idea, problem, need, want or opportunity and requirements for a solution. Students undertake research and investigation to identify the human, material, equipment, and/or energy resources available to meet the idea, problem, need, want or opportunity.

Students combine practical and design skills with knowledge, skills and behaviours from other domains to select and record creative methods of generating and depicting design possibilities and options. They devise a plan to outline the processes involved in making a product, and select and justify the option that best meets the requirements of the design brief.

## Producing

The *Producing* dimension involves students in the management of the production phase and includes the appropriate selection and safe manipulation and use of tools, equipment, materials/ingredients and components to carry out processes appropriate to the materials/ingredients or assembly of systems components to produce a quality product or technological system.

Students explore, share and use both traditional and more innovative techniques. They reflect upon their progress and alter plans as appropriate. Progress and changes to plans are reflected upon and altered as appropriate.

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## Analysing and evaluating

In the *Analysing and evaluating* dimension, students compare the outcomes of design and production activities with earlier design work and planned intentions. Following the application of testing, improvements, modifications and alternative approaches are considered.

This dimension also involves students in describing, analysing and evaluating the impact and value of both their own and others' technological products, technological systems, processes and innovations (past, present and predicted future) on the individual, society and culture, the environment and the economy. This includes consideration of sustainability issues.

## Additional Information

Teachers are to be encouraged to use a wide range of learning technologies both personally and professionally to demonstrate shared understandings of the effective application of design, creativity and technology.

1. All teachers will be encouraged to participate in appropriate and related P.D.
2. All teachers will provide input and ideas into an annual budget prior to its submission to the Resources sub-committee of School Council.

## Evaluation

- This Policy and Program will be reviewed as part of the school's three year review cycle.