Stage 5 Design and Technology

Overview of Year 9 (100 hours)

Focus area of design: Packaging	**Design project:** Easter egg package	**Length of time:** 10 weeks
Unit description Easter eggs are bought, eaten, gifted and exchanged during Easter. The packaging for these egg-shaped chocolates is designed to attract potential buyers. It is also designed to protect the chocolate from being squashed. Function is a vital element in the study of packaging. The basic functions of packaging are: containment, protection, communication and identification, utility and performance. Students are to study different types of Easter egg packaging using the listed functions and design their own package. The final design idea to be made using appropriate materials, e.g. cardboard complete with all the required details.	**Outcomes** A student: 5.1.1 analyses and applies a range of design concepts and processes 5.1.2 applies and justifies an appropriate process of design when developing design ideas and solutions 5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions 5.5.1 uses appropriate techniques when communicating design ideas and solutions to a range of audiences.	
Resources Samples of packaging ***www.incpen.org/***		

Focus area of design: Interior	**Design project:** Cutlery organiser	**Length of time:** 14 weeks

Unit description

The main aim of this unit is to develop students' designing skills and to teach them about designing for clients.

In this unit, students tackle a design and make a cutlery organiser for a kitchen cabinet manufacturer. They are to develop a system that could be used for a range of drawer sizes made by the company. It should be easily removed for cleaning and carry the manufacturer's label. Students could also develop an alternative to the organiser that fits in a drawer.

Students gain the knowledge, skills and understanding they need to carry out the activity successfully through product evaluation activities and practical tasks.

The following content related to the focus area of design: *Furniture* will inform their design activities. Students will:

- explore batch production, including how to develop a basic design that can be varied or personalised to suit the client
- use manufacturing aids, e.g. jigs, tools and templates, to help with mass production
- learn that making identical parts in a batch can be cost effective and ensure dimensional stability.

There are also opportunities for students to:

- use ICT to help design and make single items and small batches
- justify their decisions about their materials and methods of working them
- research marketing and how to make a profit from a design.

Outcomes

A student:

5.1.1 analyses and applies arrange of design concepts and processes
5.2.1 evaluates and explains the impact of past, current and emerging technologies on the individual, society and environments
5.3.1 analyses the work and responsibilities of designers and the factors affecting their work
5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions
5.5.1 uses appropriate techniques when communicating design ideas and solutions to a range of audiences
5.6.3 selects and uses a range of technologies competently in the development and management of quality design solutions.

Resources

Examples or photographs and pictures of organisers, racks, drawer dividers, and other related products.
Product evaluation sheets or activities to evaluate each product.
Web sites:
www.howstuffworks.com
www.dtonline.org

Focus area of design: Engineering	**Design project:** Fold it up	**Length of time:** 16 weeks

Unit description

In this unit students will design and make a structure that *folds up*. They will identify a need for a folding structure, select the materials they need according to the characteristics, and match them with appropriate manufacturing processes. The optimum use of materials can be achieved through understanding their working characteristics, production processes, environmental and social issues, costs and aesthetics.

Students will apply their knowledge and understanding of the properties of materials when designing. The following content from the focus area of design: *Engineering* will inform their design activities. Students will:

- learn that the properties of materials will determine their selection
- select materials and match them with appropriate production processes
- experiment with the working properties of materials, e.g. heat treatment
- examine the diversity of one product and how they influence lifestyles
- consider how to minimise environmental damage, use materials wisely, and consider possibilities of reuse and recycling issues
- conduct tests using qualitative and quantitative methods
- research contemporary materials
- consider structural designs to withstand loads
- re-design products to distribute the forces of tension, compression and shear, evenly throughout the product.

Students gain the knowledge, skills and understanding they need for this unit through product evaluation activities and practical tasks.

Outcomes

A student:

5.3.1 analyses the work and responsibilities of designers and the factors affecting their work
5.3.2 evaluates designed solutions that consider preferred futures, principles of appropriate technology and ethical and responsible design.
5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions
5.5.1 uses appropriate techniques when communicating design ideas and solutions to a wide range of audiences
5.6.1 selects and applies management strategies when developing design solutions
5.6.2 applies risk management practices and works safely in developing quality design solutions
5.6.3 selects and uses and range of technologies competently in the development and management of quality design solutions.

Resources:

Atkinson, S. and Mockford, C. (1991) *Product Design*, Oxford University Press, Oxford.
Bradley, C., Bradley, K., Dawson-Davis, L. and Harris, N. (1996) *Design and Technology*, Oxford University Press, Melbourne.
Fritz, A. (1994) *Designworks: Design and Technology 7–10*, McGraw Hill, Sydney.
Glover, N. (1992) *Design and Technology: A student text for years 7 and 8,* Social Science Press, NSW.
Hauffe, T. (1998) *Design: A Concise History,* Lawrence King Press, Italy.
Mackenzie, D. (1997) *Green Design: Design for the environment*, Lawrence King Press, Hong Kong.
McMahon, M. and Raphael, J. (2001) *Instant Lessons in Design and Technology*, Emerald City Books, Australia.
Nuffield Design and Technology (1998) *Product Design*, Longman, Essex.
Panousieris, Robin (1993) *Technology in Action: A program for Junior Secondary Students*, Heinemann, Melbourne.

www.practicalsubjects.com
http://amsd-www.larc.nasa.gov/amsd/materials.html