Stage 5 Design and Technology

Unit 1: Graphic design

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
5.1.1 5.3.1 5.3.2 5.6.3	**The concepts of design, p. 19** • nature and definitions of design, technology and appropriate technology		Introduction to course.
	• purposes and concept of design and technology	• identify the purpose of design across a number of focus areas of design	• Discuss syllabus focus areas with examples of the purpose of design in each selected area. • Activity focused on needs and opportunity approach to design and problem solving as a common theme.
	• interdisciplinary nature of design which draws on disciplines such as mathematics, sciences, fine art and humanities	• analyse a case study that demonstrates the interdisciplinary nature of design • outline, reflect and apply collaborative methods when developing a design solution	• Case study on a building development and the need for architects, engineers, town planners and managers to work collaboratively to create effective solutions for communities. Or aircraft development and its need for engineers to develop flight dynamics, engine performance, control and/or military systems to satisfy government or commercial expectations, e.g. Lockheed/Martin F38 (X38).
	Identification of needs and opportunities, p. 21 • design considerations	• establish and document the requirements and design considerations for the design project	• Introduction to project through discussion and evaluation. • Students negotiate an area for development and research in depth the needs of the end user. • Class brainstorm list of items for consideration including available resources including materials, tools and techniques.
	Factors affecting a holistic approach to design and production, p. 20 • design purpose and setting factors • human, technical and environmental factors	• describe factors affecting the design and production of design ideas and solutions from selected focus areas of design • apply a holistic approach by considering the factors affecting design and production in a design project	• Introduce examples of designed solutions to students for the purposes of modelling the importance of design through a holistic approach. • Students investigate factors that influence design, including elements and principles of design (line, shape, size, colour, texture, tone; repetition, graduation, rhythm, radiation, harmony, contrast, dominance, proportion, balance, unity) and report on human technical and environmental factors specific to the example.

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
	Creative and innovative idea-generation, p. 21 • brainstorming • concept sketches and maps • observation • research	• use idea-generation techniques when developing creative design ideas • use research and information when generating creative design ideas	• Create a graphic design, which can be applied to an object, e.g. wall hanging, T-shirt, handbag. • Students begin the process of idea generation by brainstorming to provide direction, sketching, observation and collaboration. The complexity and level of innovation of the designed solution should increase as students research and explore new ideas and solutions.
	Research and exploration • access information and data	• use electronic communication tools to research information • research appropriate materials, processes and production methods for the design project	• Students research and examine a range of graphic designs from a range of mediums to assist in the development of the designed solution. • Students research materials, tools and techniques used in the development of designed solutions from the graphics focus area of design including apparel producers (Mambo, logos), TV commercials, magazine advertisements, billboards, news backdrops.
	Communication and presentation techniques, p. 22 • written • visual • digital	• apply appropriate communication techniques when documenting and presenting design ideas and solutions • use ICT applications for presentation of documentation	• Students write a report on a selected graphic design and/or designer of graphics and consider the factors influencing design including elements and principles, effect and impact on society, and ethical and responsible design. Specifically students should discuss the important role of graphic design (images) in conveying messages, either subtle or obvious.
	Realisation of design ideas using technologies including: • tools and equipment • materials • techniques, p. 23	• select and use tools and equipment when designing and producing each project • select and use a variety of appropriate techniques when designing and producing each design project	• Students produce the design solution and work safely and efficiently using the selected materials, tools and techniques appropriate to the design project.
	Evaluating, p. 23 • the impact of resource selection	• document and evaluate decisions made throughout the design process using specified criteria for success • self-assess and peer-assess designed solutions	• Evaluate and reflect on design process and product, using oral, written or peer assessment. • Reflection on design process: students to discuss what they have achieved during the development of the solution and consider how the stages of the design process have assisted in completing the project. • Literacy: Report/Evaluate

Unit 2: Digital media

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
5.1.1 5.4.1 5.6.1 5.5.1 5.2.1			• Students to produce a video. It can be school related, e.g. faculty advertisement, school promotion, weekly school achievements, news and advertisement of activities including summary of sport and sports person of the week, health and social issues, student performances across the school.
	Research and exploration, p. 21 • access information and data	• identify and summarise information from a range of sources for the design project • research appropriate materials, processes and production methods for the design project	• Students introduced to digital cameras and their uses, which include technical and artistic considerations (angles, short and long shots, tight editing, settings, backgrounds). • Students experiment with tools and techniques and document what they have learnt for future reference.
5.3.1	**The concepts of design,** p. 19 • interrelationship of design with technology	• analyse a designed solution and identify how it was affected by the technologies and tools used in its development	• Discuss editing techniques using camera, hardware and software. • Students to use available technology to experiment with technologies.
	The work of past and current designers across a range of settings, p. 24 • commercial • industrial	• examine and describe the work of past and current designers across a range of settings and from a range of focus areas of design	• Supporting the teaching of tools and techniques, students complete reflective learning activity. Introduce various examples of mediums including shorts from evening news, Tropfest, music clips, and movies to discuss the 'image tells story' paradigm, and the benefits of minimising footage. Highlight the fact that daily news is packed with information. • Students complete report on outcomes of reflective learning. • Class activity to analyse images to determine suitability of video including usefulness and accuracy of footage and technical and artistic considerations.
	Creativity and problem-solving techniques used by designers, p. 24 • needs and opportunities analysis • collaboration • research and exploration	• identify creativity and problem solving techniques used by designers in their work	• Reintroduce factors influencing design and discuss their importance for video production. Students should look at examples to reinforce understanding and application. • Discuss the process of managing and developing movies through storyboarding and scripting. • Students formulate overall plan for the realisation of the video.

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
	Management, p. 22 • project management strategies when implementing and evaluating a process of design	• manage materials, tools and techniques when developing the design project • evaluate the role of project management when developing the design project	• Group activity on the management issues facing film houses including cost, time and technology. • Investigate studios and industry organisations to find information. • Management of project: allocation of group work, group dynamics and collaboration.
	Enterprising activity, p. 24	• define and describe enterprising activity • initiate and manage action to successful completion in response to needs and opportunities when developing design projects	• Introduce the concept of enterprising activity. • Students to work in groups to brainstorm the actions needed to successfully develop and implement video production. • Students use Internet to research methods of developing movies. • Students present proposal to class to determine suitability of solution to the proposed need and opportunity. • Students evaluate presentation to determine appropriateness.
	Ethical and responsible design, p. 25	• discuss issues relating to ethical and responsible design	• Ethical and responsible design: students to discuss importance of including images that are suitable for school audience and issues such as privacy and child protection should be highlighted.
	Realisation of design ideas using technologies including • tools and equipment • materials • techniques, p. 23	• select and use a variety of appropriate techniques when designing and producing each design project	• Students provided with movie camera to produce a 5-minute video. Encourage students to collect images as if they have minimal editing facilities, i.e. collect only useful footage.
	Preferred futures, p. 25	• identify visions for preferred futures in design and technology • analyse some exemplary designed solutions and predict directions in selected focus areas	• Case study 1: special effects for preferred futures, innovation and impact of technology. Especially given high expectations for special effects is high. What was acceptable is unacceptable now. Link movies with similar story and highlight technological development: Terminator… Morphing, simulation, animation, real/animated. Students could look at development of technology overtime through different genre including *Hulk, Matrix, Star wars, Raiders of the lost ark, Godzilla* (model vs. computer generated).

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
	Impact of technologies, p. 25 • individual • society • environment	• Evaluate and explain the impact of past current and emerging technologies on the individual, society and the environment	• Case study 2: Traditional storytelling through Aboriginal Torres Straight Islander examples. Research traditional cultural ancestry, beliefs and values and discuss importance of dance, rock art, painting, and storytelling. • Discuss impact of technology on traditional Aboriginal culture and expression. • Introduce the work of past Aboriginal designers and how the nature of their work has changed. Specifically discuss music, art and commercial opportunities. • Students complete report on their findings.

Unit 3: Interactive CD/DVD

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
5.1.1 5.1.2 5.4.1 5.5.1 5.6.1 5.6.2 5.6.3 5.3.2 5.4.1			• Introduce project and associated activities. Students to develop an interactive CD, which is informative. The project can be focused on student interest or activity for teaching and learning, e.g. environmental, animal welfare or social issues. • Students build on prior knowledge by transferring the skills developed in previous projects to this project. Students could produce a short promotional CD (mini CD or electronic business card) on safety in schools. Areas of focus could include Kitchen, Computer room, business Admin, PE facilities and workshops.
	Factors affecting a holistic approach to design and production • design purpose and setting factors • human, technical and environmental factors	• analyse and report on the factors that affect the decisions taken in the development of design ideas and solutions • apply a holistic approach by considering the factors affecting design and production in a design project	• Case study/activity: visit web sites that are interactive and demonstrate important principles such as layout, site mapping, image formats, information sequencing. Use principles to develop student understanding of effective development practices. • Promotional CDs such as DET- VET information, TAFE promotional and BOS standard and syllabus packages can be used to support the learning process. • Students research other products including software set-up (Run) programs and interactive educational products.
	Preferred futures, p. 25	• identify what is achievable given the constraints of our current thinking, available technology and resources	• Case study on preferred futures: students research and investigate electronic books compared with traditional books, processing and storage capacities, sustainability, materials and technologies that develop and improve storage and retrieval (Floppy drives, CD/DVD, Zip, USB flash cards, removable hard drives, etc.) Importance of storage capacities and file formats should be discussed.

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
	Enterprising activity, p. 24 **Marketing strategies**, p. 23	• recognise enterprising activity as related to designers and their work within a focus area of design • develop, present and justify a marketing strategy for the designed solution using multimedia presentation software	• Enterprising activity: students market the interactive CD/DVD as an educational product. Students produce a web site or electronic business card (mini CD) as the marketing product. • Supporting the product will be an oral presentation that explains their marketing strategies. Students to use multimedia presentation software to enhance communication. Students should inform the audience of their final solution.
	Management • project management strategies when implementing and evaluating a process of design • safe work practices and safe environments **Realisation of design ideas using technologies** • tools and equipment • materials • techniques	• prepare and implement time and action plans in design projects • manage materials, tools and techniques when developing the design project • identify a range of tools and equipment, materials and techniques and calculate requirements for each design project	• Students use skills and knowledge gained in designing and producing graphics and movies to develop videos, stills, graphics, text and music/sound for the interactive CD/DVD. Students complete extensive management planning documentation including action charts, storyboarding and tree structure/hierarchy diagrams to demonstrate project planning skills and to provide a framework for evaluating the implementation of the project. • The project management action charts can be completed in the form of a Gantt chart with time lines and deadlines, budget estimates, resource lists and requirements, personnel. • Included with project management will be an activity that highlights the importance of OHS in the workplace but particularly around the development of software solutions, e.g. seating, layout, lighting, ergonomics and anthropometrics for screen layout and design.

Outcomes	Learn about:	Learn to:	Teaching and learning strategies
		• select and use tools and equipment when designing and producing each project • select and use a variety of appropriate techniques when designing and producing each design project	• Students should be encouraged to use a variety of software to produce innovative solutions. Where possible, students should animate aspects of the design to enhance visuals and interaction and incorporate slide shows, stills and videos to show a variety of skills. • To improve the implementation of their design, students should use storyboarding to present the layout of text, images, video and features of each page and hierarchy diagrams for the layout and sequencing. • Students are encouraged to use a variety of techniques developed from previous projects to customise and individualise their designs.