

Exploring IST: Option 4 – Digital Media

Outcomes

At the end of this topic a student should be able to:

- 5.2.1 describe and apply problem-solving processes when creating solutions
- 5.2.2 design, produce and evaluate appropriate solutions to a range of challenging problems
- 5.2.3 critically analyse decision-making processes in a range of information and software solutions
- 5.3.2 acquire and manipulate data and information in an ethical manner
- 5.5.1 apply collaborative work practices to complete tasks

Unless stated otherwise, all references to pages, exercises, figure, tables, etc. refer to the *Exploring Information & Software Technology Fourth Edition* textbook.

Answers to all textbook exercises and chapter reviews are contained on the *Exploring Information and Software Technology Fourth Edition Teacher CD-ROM*.

For links to useful websites, please see the *Exploring Information and Software Technology Fourth Edition* teacher website.

A useful glossary of terms is contained at the back of the textbook.

Students learn about*	Students learn to*	Additional learning activities	Resources	Assessment/Projects
<p>Digital media</p> <ul style="list-style-type: none"> • characteristics • examples • related issues (core) 	<ul style="list-style-type: none"> • identify digital media • recognise a range of issues associated with digital media (core) • use a range of communication techniques (core) 	<ul style="list-style-type: none"> • Research and list characteristics of digital media • Discuss problems of piracy with digital media • Compare and contrast a range of digital products, e.g. cameras, video cameras, TVs, microwaves, refrigerators etc. • Complete Exercise 5.1 (includes case study of digital cameras) 	<ul style="list-style-type: none"> • Textbook pages 131–3 • Teacher CD-ROM: Case study 5.2 	<p>Chapter review, pages 162–63</p> <p>Completion of classroom and/or homework activities</p> <p>Portfolio of student work including examples of all major digital media types</p>
<p>The purpose of digital media such as</p> <ul style="list-style-type: none"> • e-music • digital newspaper • interactive TV • games 	<ul style="list-style-type: none"> • define digital media • assess the effectiveness of a range of digital media products 	<ul style="list-style-type: none"> • Research a range of internet sites incorporating digital media including music, newspapers, magazines and games • Investigate and report on Gary Kasparov and Deep Blue • Complete Exercise 5.2 	<ul style="list-style-type: none"> • Textbook pages 133–36 • Glossary of terms, pages 324–32 • Table 5.1: Types of games 	<p><i>Try this</i> (practical exercise), page 141</p> <p><i>Think about this</i>, page 131: Write a report based on the classroom discussion of copyright</p>
<p>Types of digital media products such as</p> <ul style="list-style-type: none"> • desktop publishing magazine, newspaper • graphical design • audio sequences • musical compositions • animation sequences • video production 	<ul style="list-style-type: none"> • describe a range of digital media • select and use appropriate file formats for the digital media product 	<ul style="list-style-type: none"> • Use a paint and a draw program to create simple images – compare the processes and output • Team exercise – generate a simple one page newspaper on a subject of student choice • Extend the above newspaper into electronic form to include music, audio, animation and/or video • Complete exercises 5.3, 5.4, 5.5 	<ul style="list-style-type: none"> • Textbook pages 137–44 • Table 5.2: Products • Table 5.3: Graphical products • Table 5.4: Audio sequences 	<p>Project 1: Digital media database, page 164–66</p> <p>Project 2: Digital media design, pages 166–68</p>
<p>Data storage & function</p> <ul style="list-style-type: none"> • Sequential & direct access (core) • Secondary storage media (core) 	<ul style="list-style-type: none"> • identify and use data in the context of this option (core) • identify different methods used to store digital data • recognise a range of secondary storage media 	<ul style="list-style-type: none"> • Save a selection of digital media to different storage devices • Research the current storage capacity of different devices 	<p>Textbook pages 144–45</p> <p>Figures 5.23, 5.24: Data access methods</p> <p>Table 5.5: Secondary storage media</p>	<p>Teacher CD-ROM:</p> <ul style="list-style-type: none"> • Chapter 5 test • Chapter 5 additional chapter review • Project 5

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<p>Data types for digital media products such as</p> <ul style="list-style-type: none"> computer resources: data (core) used in specific digital media products 	<ul style="list-style-type: none"> identify and use data in the context of this option (core) recognise and select data types used in digital media products describe how data types combine to produce and enhance a digital media product 	<ul style="list-style-type: none"> Design and produce samples of a range of data types using Table 5.6 Combine a selection of the above data types into a simple word processed format 	<p>Textbook pages 145–47 Table 5.6: Common file formats</p>	<p>Student self-assessment Student CD-ROM Chapter 5 interactive tests:</p> <ul style="list-style-type: none"> Multiple choice Short answer Drop down Terms Cloze
<p>Manipulation techniques such as</p> <ul style="list-style-type: none"> cropping, rendering, special effects, time coding, sampling morphing, tweening 	<ul style="list-style-type: none"> manipulate data types for specific digital media products 	<ul style="list-style-type: none"> Use appropriate software to manipulate images, sound and/or audio Quiz of terms related to manipulation of digital images Complete Exercise 5.6 	<ul style="list-style-type: none"> Textbook pages 147–50 Table 5.7: Manipulation techniques Glossary of terms, pages 324–32 	
<p>Digitisation process of data types such as</p> <ul style="list-style-type: none"> frame grabbing scanning bit mapping optical character recognition (OCR) 	<ul style="list-style-type: none"> explain the digitisation process for a selected data type digitise selected data types using appropriate hardware 	<ul style="list-style-type: none"> Use a scanner to convert paper images to digital form Use OCR software to digitise text-format and correct errors Discuss problems with the digitisation process Complete Exercise 5.7 	<ul style="list-style-type: none"> Textbook pages 150–54 Table 5.8: Digitisation problems 	
<p>Factors affecting file size</p> <ul style="list-style-type: none"> memory size processing speed colour palette compression sampling rate frames per second 	<ul style="list-style-type: none"> discuss factors that affect file size describe factors affecting file size and observe the effects on the digital media 	<ul style="list-style-type: none"> Use compression software to reduce the file size of a range of different data types and compare the results Compare file size in colour with same image in b & w Compare file size of video and audio using a range of different sampling rates and fps 	<ul style="list-style-type: none"> Textbook pages 154–58 Table 5.9: Compression techniques Table 5.10: Audio storage Table 5.11: Video file sizes 	

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Display and distribution <ul style="list-style-type: none"> considerations including mode of delivery and intended audience 	<ul style="list-style-type: none"> examine display and distribution considerations for the digital media product select and deliver the digital media product for a targeted audience 	<ul style="list-style-type: none"> Discuss methods used in display and distribution of various data types Compare bandwidth and resolution Brainstorm different display methods for different audiences Complete Exercise 5.8 Teacher CD-ROM: Chapter 5 Crossword 	Textbook pages 158–60 Table 5.12: Methods used Teacher CD-ROM: Case study 5.1	
Project development <ul style="list-style-type: none"> design produce and evaluate computer solutions (core) processes and techniques 	<ul style="list-style-type: none"> generate ideas using a range of methods (core) design, produce and evaluate a simple project for a real-world application either separately for this option, or integrated with other options 	<ul style="list-style-type: none"> Team project using jigsaw approach to divide a large problem into smaller sections for solution Project design and production 	<ul style="list-style-type: none"> Textbook pages 164–68: Projects 1 and 2 Table 5.13: Evaluation Figure 1.2 and other sections of Chapter 1, pages 1–13 	
Additional Content <ul style="list-style-type: none"> evaluation of digital media products 	<ul style="list-style-type: none"> critically analyse a range of digital media products based on identified evaluation criteria 	<ul style="list-style-type: none"> Use Table 5.13 to evaluate a selection of digital media products Teacher CD-ROM: Chapter 5 Word search 	<ul style="list-style-type: none"> Textbook pages 160–61 Table 5.13: Criteria for digital media evaluation 	

* From the NSW Board of Studies syllabus, June 2003.