Stage 5 Information and Software Technology

Year 9 project 1: Our virtual world: The Internet and web site development

Component one involves students investigating the historical context and subsequent development of the Internet and identifying key developments. They will then engage in the critical analysis and evaluation of web sites. Students compare and contrast a series of web sites against a given scaffold, using the DET *Web Quest* project.

The Internet and web site development

Students learn about:	**Students learn to:**	**Teaching and learning activities**
The Internet **Historical perspective of the Internet** **Intranet** **Uses of the Internet such as** • email • research • chatting • messaging • access to information via search engines **Internet software** such as: • browser software • authoring software	• define and describe the Internet • identify and discuss key historical events for the Internet by developing a timeline • examine the features of a school or other intranet • compare and contrast an intranet with the Internet • email a file to a set location • describe email etiquette • research using the Internet for a given task • assess the use of the Internet for communication in a variety of situations • use search engines to undertake Internet research • discuss the advantages and limitations of search engines • describe and use a range of Internet software packages	• Students view selected extracts from *Nerds 2.0.1 A History of the Internet* by Bob Cringely. Subsequent class discussion and notes identify – most crucial developments – influential people – key terms • Teacher introduces *Student booklet* and gives a detailed overview of content. • Students will utilize knowledge and comprehension skills to lay a foundation for the acquisition of knowledge in the areas of: – pioneers of the Internet – the Internet as a network of networks – Internet protocols – Internet access options – Internet addressing – email – mailing lists – Telnet and ftp – the WWW – browsing the WWW – netiquette – hacking and electronic trespass

Students learn about:	Students learn to:	Teaching and learning activities
Types of protocols such as: • transmission control protocol/Internet protocol (TCP/IP) • hypertext transfer protocol (http) • simple mail transfer protocol (smtp) • file transfer protocol (FTP) **World Wide Web (www)** • information medium for the dissemination of information • interactive medium **Control of access to information on the web** such as: • cookies • security content • proxies • firewalls • virus protection.	• identify the types of protocols used over the Internet and describe their purpose • discuss the purpose of the World Wide Web • examine the features and strategies used in the design of a range of web sites • critically analyse the effectiveness of a web site to convey its message • identify and discuss settings for web browsers as well as settings for information access and the protection of data	• Activities relating to the acquisition of information will include: – class activity involving Internet timeline development – practical activities concerning email, chat and Internet access – group research on Internet protocols and addressing – using search/browsing tools on the WWW – netiquette – computer security – *PowerPoint* presentations: • *Inside the Internet and the web* • *From Internet to information infastructure* • *Computer and security risks* from Beekman*, Computer confluence*

Software		

Software systems
• the purpose of a software system
Types and examples of software
• system including
  – operating
  – utility
• application including
  – customised
	• define and describe a software system
	• explain the purpose of a software system
	• distinguish between types of software
	• select and justify the use of software for a given situation
	• compare and contrast the features of packages, including relationships to other packages
	• list the features of software packages appropriate to particular users and a range of tasks
		• Teacher introduces students to web site design through the DET Curriculum Support Project: *Internet Scavenger Hunt*. http://www.curriculumsupport.nsw.edu.au/learningtechnologies/index.cfm?u=2&i=11
		• Students form groups to investigate sites. Jigsaw strategy utilised for group work. Analysis and evaluation skills to be demonstrated by students. Final summary sheets to be collected and appraised by teacher.
		Assessment for component 1:
		Web site analysis
		Each student is allocated a unique web address. Using acquired knowledge of web page features, students are required to critically analyse the features of the given site. Work is to be submitted as a word-processed report based upon given scaffold.

Factors affecting hardware requirements such as • central processing unit (CPU) speed • demands on memory • communication and peripheral devices **Interface design** • the function of the user interface • interactivity with the user • communication with application and operating systems	• discuss how software packages affect hardware requirements • calculate memory requirements for specific purposes • explain the function of the user interface • compare and contrast types of user interfaces	
Features and elements of a graphical user interface (GUI) such as: • consistency of elements • functionality • navigation • radio buttons, list boxes • borders and white space • instructions to the user • inclusive design factors.	• explain the features and elements of GUI in a range of applications • design, produce and manipulate features of GUI • establish the criteria for the evaluation of GUI • evaluate the effectiveness of GUI features and elements for a specific purpose	

Component two addresses the challenge faced by local councils in maintaining a positive profile for our local community. Whilst councils have taken on board digital media to disseminate council information, they are calling for ideas on ways to promote the community in an upbeat light. Information and Software Technology students will develop a proposal to promote their community using a web site medium. The proposal will include:

- a fully working and documented prototype of the students web site
- documentation outlining all project management.

The Internet and web site development

Students learn about:	Students learn to:	Teaching and learning activities:
Web site development • home page (index page) • web site **Features of a web site** such as • address • GUI design • graphics • links (hot words, hot spots) • tables **Project development** • processes and techniques	• identify a homepage within a site • investigate a web site and identify the features • use a variety of features when designing and building a web site • develop a web site for a particular task or purpose • design, produce and evaluate a simple project for a real-world application either separately for this option, or integrated with other options	Note: local councils include Rockdale, Kogarah, Hurstville and Canterbury. • Teacher introduces assessment activity and initiates discussion on positive aspects of the local community that could be used as a focus for promotion. Responses are noted and collated. The assessment criteria are made very clear to students. **Assessment for component 2:** *Web site development* In groups, students discuss responses and conduct research to decide the aspect of their community that will become the focus for their web site.

Design, produce, evaluate		
Students learn about:	**Students learn to:**	**Teaching and learning activities:**
Defining and analysing the problem • identification of need or problem to be solved • factors that impact on problem solving: – technical, such as hardware – operational – financial – ethical **Designing possible solutions using techniques**, such as • concept mapping • brainstorming • observation • research • prototyping • input/processes/output table • storyboarding **Producing solutions** • producing the solution	• identify the need or problem to be solved • analyse the problem and a range of possible solutions • identify and analyse the factors that may impact on the solution • generate ideas using a range of methods • apply set criteria to choose the most appropriate software solution • develop a storyboard of ideas and/or solutions • use electronic communication to research data and information relevant to solutions • summarise research data when generating creative solutions • model possible solutions using a range of methods • evaluate the suitability of solutions by testing and experimenting • examine, evaluate and modify existing solutions • develop and implement the stages involved in the completion of a solution	• Using the *Scavenger Hunt* summary sheet students begin to plan the basic requirements for their site and the sourcing of appropriate materials. Once the summary and storyboarding are complete all paperwork is to be submitted for teacher consideration. Practical work can not commence until *component one* completed satisfactorily. **Assessment for component 2 cont.:** Teacher introduces students to the basics of web production, specifically noting: – site structure and naming – efficient navigation – linking graphics – recap on presentation – regular testing and evaluation. • Students will be given a *web production* booklet as a reference throughout the project. • Utilising logbooks and production documentation, students work collaboratively to produce web site and documentation.

Students learn about:	Students learn to:	Teaching and learning activities:
Evaluation criteria • functionality of solution • quality of information such as – accuracy – relevance – integrity – timeliness • ethics • environment **Methods of evaluation** • individual • groups such as peer, end user, specific target group	• apply set criteria to choose the most appropriate solution • establish criteria for the evaluation of solutions • evaluate solutions using established criteria • use feedback evaluation in order to modify solutions • reflect upon and document feedback	**Assessment for learning activity 2 cont.:** At the completion of the task students reflect on work, evaluating quality of product and process. They will also undertake a comparative study of initial work submitted for feedback to note any substantial changes and reasons why. Submitted to teacher in the form of an evaluation report.
Management • planning • resources such as – time – finances – people **Communication techniques including** • verbal • written • graphical and visual **Collaboration and group work** • criteria for group formation such as expertise and group dynamics • roles and responsibilities of group members • effective collaboration strategies	• apply management plans and techniques • document decision-making and problem-solving in the development of solutions • outline a range of communication techniques appropriate to the solution • communicate ideas, processes and solutions to a targeted audience • identify and negotiate roles and responsibilities of group members • establish and use strategies for effective collaboration • outline and reflect on the benefits/advantages of collaboration during group work • evaluate individual and group contributions to the project • apply collaborative work practices when developing solutions	

Component three comprises a research task examining the multitude of issues rising from the development of Internet technology. Students choose a topic from a series and conduct an investigation into the legal and industrial implications arising from its development. Students will create a short presentation outlining the main points.

Past, current and emerging technologies

Students learn about:	Students learn to:	Teaching and learning activities
• the impact of past, current and emerging information and software technologies on the individual and society including different cultural groups such as Aboriginal and Indigenous • environmental considerations such as: – disposal of obsolete technologies – recycling	• explore and discuss current information and software technologies relevant to the option • identify a variety of past, current and emerging information and software technologies • evaluate the appropriateness of current and emerging information and software technology for specific purposes • assess the effects of past, current and emerging information and software technologies on the individual, society and the environment in the context of the chosen options	**Assessment for component 3:** *Internet issues* Students are given a different article relating to one or more of the following issues: – disposal of obsolete technologies – recycling – copyright and/or licensing – piracy – intellectual property – security and protection including viruses – legislation such as Anti-discrimination – Equal Employment Opportunity, Occupational Health and Safety – rights and responsibilities of users of information and software technologies – ergonomic principles and industry standards

Issues		
Legal issues such as • copyright and/or licensing • piracy • intellectual property • security and protection including viruses • legislation such as Anti-discrimination, Equal Employment Opportunity, Occupational Health and Safety	• examine legal issues as they apply to the development of information and software technology solutions	Students are then required to research these issues and make a presentation to the class on how these issues relate to their particular article.
Industrial issues such as • rights and responsibilities of users of information and software technologies • ergonomic principles and industry standards	• identify rights and responsibilities of users of Information and Software Technologies • identify ergonomic principles and industry standards • recognise ergonomically unsound practices	