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| Subject Title: Digital Technologies Year level: 10  Learning Area: Information Technology Semester: 1 Lessons per week: 3 x 50 mins | | | | | | |
| **Subject Description**  Students learn computational thinking and programming skills. They do this by learning how to decompose problems, recognise patterns, and create algorithms to solve problems using flow charts and pseudocode. Students also learn how to program games in Flash using ActionScript 3.0, working collaboratively to design, create, and evaluate a solution. Networking is also covered, where students look at the role of networks and how they manage, control and secure the movement of and access to data. | | | | | | |
| **AC Achievement Standard**  By the end of Year 10, students explain the control and management of networked digital systems and the security implications of the interaction between hardware, software and users. They explain simple data compression, and why content data are separated from presentation.  Students plan and manage digital projects using an iterative approach. They define and decompose complex problems in terms of functional and non-functional requirements. Students design and evaluate user experiences and algorithms. They design and implement modular programs, including an object-oriented program, using algorithms and data structures involving modular functions that reflect the relationships of real-world data and data entities. They take account of privacy and security requirements when selecting and validating data. Students test and predict results and implement digital solutions. They evaluate information systems and their solutions in terms of risk, sustainability and potential for innovation and enterprise. They share and collaborate online, establishing protocols for the use, transmission and maintenance of data and projects. | | | | | | |
| **KEY: Australian Curriculum Capabilities**: [Literacy](http://www.australiancurriculum.edu.au/GeneralCapabilities/Literacy)  Numeracy  ICT  Critical and Creative Thinking  Personal and Social  Ethical Understanding [Intercultural Understanding](http://www.australiancurriculum.edu.au/GeneralCapabilities/Intercultural-understanding)  **Australian Curriculum Cross-Curricular Priorities:** ATSIH**:** Aboriginal & Torres Strait Islander Histories; AAEA: Asia & Australia’s Engagement with Asia; S: Sustainability | | | | | | |
| **Biblical World View Questions / Big Picture Thinking** *(IDEAS T&L Vision Statement related key words – more discussion to come on this)* | | | | | | |
| **Scope & Sequence Content** | | | | | **Assessment Tasks & Weighting** | **Key Resources** |
| **Term** | **Week** | **Topic** | **Content Descriptions** | **Elaborations** |
| 1 | 1 – 4 | Computational Thinking | Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases (ACTDIP040) | * Decomposition * Pattern Recognition * Abstraction (flow charts) * Algorithms (pseudocode) | Folio: Tasks Sheets for Folio – 5%  Folio: Computational Thinking Test – 20% |  |
| 5-6 | Flash ActionScript 3.0 |  | Flash Environment  Introduction to ActionScript 3.0  Comments, trace(), stop()  Variables, creating, defining, using | Folio: Code Book (Term 1, Week 5 – Term 2, Week 6) - 5% | Worksheets:  1 Flash Environment  2 Creating a Movie Clip  3 Creating a Button  4 Intro to ActionScript 3.0  5 Variables |
| 7 | Flash ActionScript 3.0 | Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041) | Coding Buttons  Accepting Input and displaying it |  | Worksheets:  6 Coding Buttons  7 Accepting & Displaying Input |
| 8 | Flash ActionScript 3.0 |  | * Keyboard Movement (IF statements) * Hit Detection * Keeping Score |  | Worksheets:  8 Moving Objects via Keyboard  9 Detecting Collisions  10 Keeping Score |
| 9 | Flash ActionScript 3.0 |  | Adding / Removing Movie Clips |  | Worksheets:  11 Removing Objects from Stage |
|  | 10 | Flash ActionScript 3.0 | Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics (ACTDIP039)  Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases (ACTDIP040)  Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041) | Choose Your Own Adventure Game Assignment |  |  |
| **Term 2** | 1-2 | Flash ActionScript 3.0 | Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics (ACTDIP039)  Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases (ACTDIP040)  Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041) | Choose Your Own Adventure Game Assignment | Skills Task: Choose Your Own Adventure Game Assignment  – 25% |  |
| 3 | Flash ActionScript 3.0 | Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041) | * Mouse Movement * Adding Sound |  |  |
| 4 – 6 | Flash ActionScript 3.0 | Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics (ACTDIP039)  Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases (ACTDIP040)  Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language (ACTDIP041)  Plan and manage projects using an iterative and collaborative approach, identifying risks and considering safety and sustainability (ACTDIP044) | Collaboration Assignment | Skills Task: Collaboration Assignment – 25% |  |
| 7-9 | Networking | Investigate the role of hardware and software in managing, controlling and securing the movement of and access to data in networked digital systems (ACTDIK034) | Operating Systems   * What they are * What they do * examples   Hands On   * setting up an OS * modifying an OS for users * modifying hardware/software components   Data Encryption | Folio: Comparisons of Two Operating Systems – 20% |  |