This document has been created directly from the Victorian Essential Learning Standards - http://vels.vcaa.vic.edu.au/essential/interdisciplinary/ict/index.html

INTERDISCIPLINARY LEARNING STRAND

The Interdisciplinary Learning strand identifies a range of knowledge, skills and behaviours which cross disciplinary boundaries and are essential to ensuring students are prepared as active learners and problem-solvers for success at school and beyond. This strand focuses on ways of thinking, communicating, conceiving and realising ideas and information. It assists students to develop the capacity to design, create and evaluate processes as a way of developing creativity and innovation.

The domains of Interdisciplinary Learning strand are:

- Communication;
- Design, Creativity and Technology;
- Information and Communication Technology;
- Thinking Processes.

DOMAIN: Information and Communication Technology

Information and Communication Technology (ICT) is the hardware and software that enables data to be digitally processed, stored and communicated. ICT can be used to access, process, manage and present information; model and control events; construct new understanding; and communicate with others.

The knowledge, skills and behaviours identified for this domain enable students to:

- Develop new thinking and learning skills that produce creative and innovative insights;
- Develop more productive ways of working and solving problems individually and collaboratively;
- Create information products that demonstrate their understanding of concepts, issues, relationships and processes;
- Express themselves in contemporary and socially relevant ways;
- Communicate locally and globally to solve problems and to share knowledge;
- Understand the implications of the use of ICT and their social and ethical responsibilities as users of ICT.

Information and Communication Technology as a domain focuses on providing students with the tools to transform their learning and to enrich their learning environment.

DIMENSION: ICT for Visualising Thinking
In ICT for Visualising Thinking students use ICT tools to assist their thinking processes and reflect on the thinking strategies they use to develop understandings, in a rich and flexible learner-centred environment. Students use linguistic and non-linguistic representations to help structure their thinking process and assist in constructing knowledge. They use ICT to record their decisions and actions when solving problems, and monitor the changes in their thinking and evaluate their own and others' thinking strategies.
DIMENSION: ICT for Creating
The ICT for Creating focuses on students using ICT tools for creating solutions to problems and information products. Through the selection of applications and appropriate equipment, techniques and processes, students learn to process data and information, to create solutions for problems that demonstrates their knowledge and understandings of concepts, issues, relationships and processes related to all areas of the curriculum. Students learn to manage their files and folders and plan and monitor the progress of tasks. Students examine the ethical and legal implications of using ICT in the home, school and workplace. They evaluate and reflect on the usefulness of ICT for solving different types of problems in various situations.
DIMENSION: ICT for Communicating
The ICT for Communicating dimension focuses on students using ICT to present ideas and communicate understandings to a range of known and unknown audiences, and support knowledge-building among teams. Students locate information from a range of online and multimedia resources to support their own learning. They use ICT to support interaction and collaboration with others to integrate prior knowledge with new understandings. Students explore the protocols of receiving, transferring and publishing ideas and information needed to promote communication that respects intended audiences.

LEARNING FOCUS				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
• Learn the safe use of ICT tools (electrical connections • Sitting upright (correct posture) • Storage devices such as disks and memory sticks • Becoming familiar with common icons on the desktop • Correct terms for ICT equipment • Hand-eye between mouse/pad and screen • Work with different types of data (text, numbers, images) • Navigate through multimedia resources (literacy and numeracy) • Compare examples of ICT equipment at home • Investigate purpose of ICT symbols and icons • Work towards Level 2 standards	• Acquire new knowledge and skills in all areas of the curriculum • Create and present information in meaningful ways • Using multimedia resources, students think critically about the resources and how they help them learn • Use ICT tools for visualizing their thinking • Learn to organise and classify information and ideas and present appropriately • Cutting and pasting, dropping and dragging, colour coding, sequencing events, identify examples that illustrate key ideas • Improve presentation of text and images – bolding, centring, changing case • Identify audiences through different information products • Understand the importance of accuracy of information and facts • Collect first hand data and input into spreadsheet – manipulate data, colour code, present as graph • Make summary statements about data • Working in a network environment, students develop a filing system protocol, to locate and navigate through folders. • Explore contemporary ways of communicating – email, sms, blogs etc.	• Develop skills in using ICT for problem solving, expressing ideas and presenting information to different audiences • Explore a range of ICT tools, techniques for visualizing thinking, graphic organizers • Use tools to assist in sequencing, and identifying relationships between ideas, facts and concepts • Saving and retrieval of files – to add to like ideas • Reflect on the usefulness of ICT • Compare the purpose and structure of information in different media (print, on screen, moving robot) • Process data with text, image, sound to create information products (invitations, short stories, presentations, animations, title pages) • Students use manual and electronic (spell check) techniques to identify errors and make corrections • Students work collaboratively to develop their ICT skills • Use appropriate posture and typing technique to minimize injury to back, neck and wrist • File organisation – organizing and classifying folders with headings. Compare systems with other students • Password protect with networks • Use ICT to communicate – email, IMs • Seeking new information using keywords and search strings • Determine the value of resources by developing criteria. Use these criteria to evaluate own products	• Apply known ICT tools to make links between old and new knowledge through visualizing thinking • Begin to use new tools (ICT controlled models, a programming language, Microworlds, spreadsheets, domain specific modeling) to represent cause and effect relationships, patterns and processes. • Learn to use tools such as databases and graphic organizers to analyse data and information. • Students reflect on the use of ICT tools, comparing their learning between ICT and books • Compare virtual worlds with reality • Students use ICT to produce information products that demonstrate their knowledge and skills across all curriculums • Use ICT to assist problem solving – 2D designs, flow charts • Students explore software functions that promote efficiency and effectiveness – 'find and replace' function • Develop skills in using 3D tools for problem solving, how 3D provides more effective paths to solutions – brainstorm use of these 3D tools • Use ICT to control events in predetermined ways – models, robots, virtual environments, or sensors. • Use design tools – layout diagrams, annotated drawings, storyboards - to document solutions • Use ICT presentation conventions – test products against accepted ICT evaluation criteria • Develop a digital portfolio – evaluate, select and organise files that showcase their learning • File management procedures – back up to alternative storage device (Memory Stick) • Use ergonomic practices to maintain physical health - exercise • Begin to work in collaborative global environments • Use electronic media to communicate – consider methods of sharing information with wider	• use a variety of ICT tools and techniques to assist with filtering, classifying, representing, describing and organising ideas, concepts and issues • rule-using software, databases and spreadsheets, to filter and classify data and information • Students use peripherals (dataloggers) to input data for sensing, monitoring, measuring • Students become skilled in judging the capabilities and limitations of ICT tools and techniques • Use ICT tools to trace the decisions made and actions taken when problem solving (symbols, charts, images, sound, text) • Students reflect on the effectiveness of using this thinking process maps and retrieve relevant ones to guide future applications • Students become efficient users of ICT planning collaborative projects creating information products and solving problems • Using software such as word processors and spreadsheets (techniques such as tables and shading), develop project plans that sequence tasks, estimate timelines, and record task responsibilities. Monitor and record progress of team members through sharing of electronic files. • Students use the operating system to manage their desktop and organise their files in a way that suits their individual learning style • Learn to save and retrieve compressed files • Learn the characteristics of different file formats (.jpeg, .gif and .avi) • Students develop their knowledge about the characteristics of data (text, sound, numbers, images (moving and still)) to create information products • Information products – essays, animated slide shows, websites, brochures, cartoons • Design products, influenced by accepted ICT presentation conventions

			audience – follow protocols • Using attachments and uploading documents to the internet • Using search engines and refine questions to locate information on the Internet • Assessing the integrity of the information – reliability of web host, accuracy of information	• Develop criteria to evaluate the effectiveness of each presentation style (meeting audience/user needs, communicating message effectively) • Students participate in ongoing evaluation of products to improve their efficiency and effectiveness (testing functionality of parts, correcting errors, editing to clarify message) • Students apply their knowledge of data characteristics to solve problems (calculating time in space travel using spreadsheet rather than word processor) • Students explore the distinction between legal and illegal use of ICT. Create products that complies with ICT Intellectual Property Law (ie. Copyright) • Students develop and manage their digital bank of evidence (electronic portfolio) to display to audiences (teachers, parents, potential employers) and demonstrate learning progress in all areas of the curriculum • Select appropriate search engines and use complex search strings (Boolean) to locate information • Evaluate the credibility, accuracy, reliability and comprehensiveness of information (from Internet and other sources) • Organise and store gathered information for easy retrieval (favourites) • Access online elearning tools to develop their knowledge in all areas of the curriculum • Use email functions to manage their inbox • Access appropriate websites and online forums (blogs, chat rooms) to locate information and share ideas • Students use appropriate protocols to respect others and protect their personal safety in an online environment • Students publish their work on the Internet after it has been tested and evaluated.

STANDARDS					
	Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
ICT for Visualising Thinking	Standards introduced at Level 2. Learning Focus provides advice on working towards achieving the standards of Level 2.	*At Level 2 there is one standard only –* ***Information and Communication Technology.*** • Students manipulate text, images and numeric data • Create simple information products for specific audiences • Make simple changes to improve the appearance of their information product • Retrieve files and save new files using a system that is meaningful for them • Compose electronic messages to known recipients and send successfully • With assistance, students use ICT to locate and retrieve relevant information from a variety of sources.	• Students use ICT tools to list ideas, order them logically and identify relationships • Retrieve their saved visualizing thinking strategies and edit and use in new, but similar, situations • Explain how these visualizing thinking strategies can be used for different problems or situations	• Students apply ICT tools and techniques to represent and explore patterns, processes, and cause-and-effect relationships • Students use ICT to organise and analyse concepts, issues and ideas, that allow relationships to be identified and inferences to be made. • Students review their stored thinking strategies, to identify similarities and differences in their thinking patterns. • Students document in their bank of digital evidence how their visualizing thinking strategies help them to understand concepts and relationships	• Students select and apply ICT tools and editing functions that support the filtering, classifying, representing, describing and organizing of concepts, issues and ideas • Students use rule using software to assist with problem solving and decision making • Students retrieve and modifying successful approaches to visualizing thinking in new situations • Students explain which features of the new situation influenced their choice of ICT tool and techniques. • Students use a range of data types, sound, still and moving image, to record decisions made and actions taken during problem solving • Students evaluate the strengths and weaknesses of their decisions and actions in given situations and identify new understandings developed.
ICT for Creating			• Students organise their files into folders in a way that is meaningful for them • Students explain the purpose of passwords for accessing files stored on the network • They follow simple plans and use tools and a range of data types to create information products designed to inform, persuade, educate or entertain a specific audience • Create information products to assist in problem solving in all areas of the curriculum • With minimal assistance, students use ICT tools to capture and save images • Use simple editing functions to manipulate images.	• Students safely and independently use a range of skills, procedures and equipment and functions to process different data types • Students use a range of skills, procedures and equipment and functions to produce accurate and suitably formatted products for a range of purposes and audiences. • Students use design tools to represent solutions produced and the layout of information products • Students select relevant techniques to minimize the time taken to process data • Students apply conventions and techniques that improve	• Students independently use operating systems to manage their desktop workspace • Students organise their folders logically • Students appropriately name and locate these folders to share with others • Students apply techniques to manage large files appropriately • Students prepare designs of the structure and layout of information products, the evaluation criteria and the plans for managing collaborative projects • Students independently apply a range of processing skills, functions and equipment to solve problems • Students create products

			• Make ongoing modifications to correct spelling and rectifying simple formatting errors. • Evaluate final information products and describe how well it meets its purpose • Students make adjustments and apply techniques to their equipment to make it ergonomically sound.	the appearance of finished products • Students modify products on an ongoing basis to improve meaning • Students judge their products against agreed criteria • Students create and maintain a logically structured bank of digital evidenced of their learning • Students password protect and back up important files • Students develop a file naming system that allows easy retrieval	with minimal functional, typographical, formatting and readability errors • Students monitor project plans and record reasons for adjusting them • Students apply criteria to evaluate the extent to which the product meets user needs and complies with Intellectual Property Law • Students use ICT in a safe, efficient and effective manner • Students maintain their digital evidence to ensure it is up-to-date, easy to navigate, complies with ICT presentation conventions and demonstrates a range of ICT skills and knowledge.
ICT for Communicating			• Students initiate and compose emails to known and unknown recipients • Where appropriate, students send replies to emails • Students create folders in their mailbox to organise the storage of email messages they wish to retain • They locate information on the Intranet • They use recommended search engines with limited key words to locate information on websites • They develop and apply simple criteria to evaluate the value of located information.	• Students use email, websites and question facilities to acquire or share information with their peers, and known or unknown experts • Students successfully attach files and apply appropriate protocols for sending and receiving electronic information • Students successfully upload work to a protected public online space • Students use recommended search engines and refine their search strategies to locate relevant information quickly • Students evaluate the integrity of located information based on accuracy and reliability of web host.	• Students select appropriate search engines to locate information on websites • Students use complex search strategies to refine their searches • Students judge integrity of located information based on credibility, accuracy, reliability and comprehensiveness • Students share their ideas through blogs, websites or other public forums • Students share their ideas using correct formatting, comply with ICT conventions and demonstrate an awareness of characteristics linked with products meeting their purpose • Students organise their email mailbox and maintain it • Students evaluate the merits of contemporary communication tools taking into account security, ease of use, speed of communication and impact on individuals