

The Tasmanian Curriculum

Vocational and Applied Learning

K – 10 syllabus and support materials



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Overview

What is Vocational and Applied Learning?

Vocational and Applied Learning (VAL) prepares young people with the skills and dispositions they require to participate in life, education and work beyond the school environment. Vocational and Applied Learning gives students 'real-life' challenges in problem-solving, futures planning, design and innovation, and teaches them critical skills, techniques and procedures for learning, life and work. Student learning is authenticated through an array of purposeful experiences within and outside the classroom. These include: guest speakers, excursions, exchanges, industry visits, mentoring, shadowing, internships, team projects, research and development, manufacturing, community based learning, service learning, project-based learning and enterprise learning.

The Vocational and Applied Learning syllabus supports learning that is:

- Design based – students develop an awareness of design principles and elements from creating their own work and interpreting the work of others
- Aesthetics based – students learn through their senses and learn to control elements such as texture, shape, space, colour, flavour, aroma, light, sound and scale to create desired effects
- Problem based – students develop imaginative solutions to problems or issues
- Technology based – students understand the relationships between materials, systems and processes
- Production based – student learning is hands-on, tactile, manipulative and active
- Decision based – students have choices about what they learn, make choices within their learning and set personal goals for life and learning
- Project based – students work individually and in teams to complete tasks and create products
- Reality based – students work in authentic 'real world' learning environments
- Community based – students access learning opportunities within their immediate communities
- Transferable – student demonstrate their skills and understandings across a wide range of contexts

In broad terms, the VAL curriculum draws from areas of learning that are commodity or service based and places these within both vocational and applied learning contexts. These areas of learning include:

- Digital Media – computer aided design, animation, publishing, recording, games design, software development...
- Powered Technology – automotive, robotics, solar cars, CO2 cars, human powered vehicles, alternative energies, small engines...
- Resistant Materials – wood, metals, plastics, glass...
- Natural and Synthetic Fibres
- Foods
- Agriculture - aquaculture, horticulture, viticulture, forestry, land and water management...
- Business, enterprise and financial literacy
- Programs and Events – tourism, hospitality, sport and recreation, entertainment, marketing, community service, languages, voluntary participation...
- Combinations of the above e.g. computer aided manufacturing, upholstered furniture, jewellery, food styling, food production, languages and technology, landscape design....

Why study Vocational and Applied Learning?

The obvious rationale for the study of Vocational and Applied Learning is that the very purpose of schooling is to prepare students with the skills and concepts they need in order to negotiate and enjoy their life beyond school. For schools and their communities, other significant benefits include:

- From an early age students begin to identify their strengths and interests, they are encouraged to make positive learning choices and supported to plan their transition from learning into work
- The VAL curriculum area allows teachers to develop strategies that are inclusive of all learning styles, thus catering for all students and, ultimately, engaging a greater number of students across a range of subject areas
- Vocational and Applied Learning provides a curriculum design structure that supports and enriches all curriculum areas within the Tasmanian Curriculum, including thinking
- This learning supports the long term vision of a 'knowledge economy'- the development of a creative, innovative, enterprising and highly skilled Tasmanian workforce

Typically, students engage in Vocational and Applied Learning for reasons including:

- They enjoy active learning, working with their hands and making utilitarian items
- They recognise that an appreciation of designed products enhances their quality of life
- They are developing skills and understandings that are fundamental to living a full and productive life
- They are given an opportunity to test their skills and understandings in real life scenarios e.g. catering and hospitality, construction, budgeting, consumer studies, enterprise...
- They are on a pathway into a trade or equivalent vocation
- They are on a pathway into a University degree for a related profession – engineer, architect, designer, teacher, entrepreneur, systems analyst, scientist...

The current global political and economic environment, together with the latest information and research about how students learn, requires a large focus on teaching for creativity and innovation in Tasmanian schools. In order to be competitive with their global counterparts it is essential that young Tasmanians are supported to find employment in contemporary and emerging industries that are suited to their skills, strengths and interests. Young Tasmanians need a range of diverse skills that will be adaptable to a number of work and learning contexts including self-initiated small business enterprises. The skills and dispositions needed for people to be active, engaged and productive participants in life and work include:

- Production skills and dispositions
- Conceptual skills and dispositions
- Project skills and dispositions
- Work skills and dispositions

The Vocational and Applied Learning curriculum provides teachers and students with multiple learning opportunities through which such skills and dispositions can be identified, developed, assessed and reported upon.

Further study and lifelong learning

Vocational and Applied Learning experiences are designed to equip students with skills, habits and dispositions that will help sustain them for life. Successful students of Vocational and Applied Learning are characterised by their ability to be:

- Team workers
- Independent inquirers
- Self-managers
- Reflective learners
- Effective participators
- Knowledgeable consumers
- Creative thinkers

In designing their futures, students further develop important skills and concepts that include: an understanding of the market place, goal setting, decision-making, problem solving, planning, prioritising, sequencing and reflection. This process encourages students to make well informed decisions about learning both within and beyond formal schooling.

Study of Vocational and Applied Learning during the compulsory years of schooling prepares students for further study in many senior secondary subjects. These subjects include: Applied Technology, Manufacturing, Design Graphics, Automotive Technology, Electronics, Catering, Design in Metal, Design in Wood, Food and Nutrition, Textiles and Fashion Design, Computer Graphics and Design, VET specific courses and Enterprise-related subjects.

Through the *Tasmania Tomorrow* reforms students are offered three distinct choices for further study:

- The Tasmanian Academy
- The Tasmanian Polytechnic
- Training Tasmania

The *Tasmanian Academy* offers the full range of subjects needed to finish the Tasmanian Certificate of Education (TCE) in Years 11 and 12 and complete the pre-tertiary subjects required to enter University.

The *Tasmanian Polytechnic* offers courses across a range of areas including: Multimedia, Business, Building Surveying, Automotive, Computing, Retail, Events Management, Community Service, Child Care, Engineering, Food and Nutrition, Hospitality and Catering.

Training Tasmania will focus on skills development of apprentices, trainees and others already in the workplace, in line with their employer's needs.

National and state priorities

The Federal Government's *Trade Training in Schools* program is designed to assist in improving access, quality and relevance of trade training in schools and also to increase retention rates in the senior secondary years of education and help meet the future skill needs of Australia. Both the Adelaide Declaration on Schooling (1999) and the movement towards a national curriculum strongly endorse a focus on Vocational and Applied Learning.

Vocational and Applied Learning also supports the Tasmanian government's *Tasmanian Workforce Development Plan*. This curriculum area focuses upon the skills and attributes that young people will need in order to be work-ready and deal with the complexities of contemporary workplaces.

Programs that support the *Guaranteeing Futures* legislation offer older students a range of structured learning opportunities, including industry partnerships, which are designed to enhance their understanding of the vocational landscape within their communities and beyond

Values, purposes and goals in the Tasmanian Curriculum

Extensive community consultation has led to values, purposes and goals that provide a firm foundation for providing Tasmanian students with a quality education. How schools enact these is guided by dialogue between the school and its community. They will be seen in the school's curriculum programs, philosophy, classrooms and relationships. Vocational and Applied learning programs provide a sound basis for developing the values, purposes and goals of the Tasmanian Curriculum.

Values

Values guide decisions about curriculum and support students, teachers, parents, carers and the community. The shared values are:

- connectedness - developing a sense of community through friendship, care, compassion, cooperation, acceptance, belonging and sharing
- resilience - developing self-confidence and self-respect, optimism, perseverance and wellbeing
- achievement - attaining success, pursuing excellence and being proud of personal achievement
- creativity - valuing original ideas and demonstrating enterprise and innovation
- integrity - acting honestly, ethically, and consistently
- responsibility - accepting individual and collective responsibility and contributing to sustainable community development
- equity - developing tolerance, respecting difference and encouraging diversity

Purposes

The shared purposes are that all Tasmanian students are learning to:

- learn
- live full, healthy lives
- relate, participate and care
- act ethically
- create purposeful futures, and
- think, know and understand

Goals

The shared goals for Tasmanian students are that they:

- are able to reason, question, make decisions and solve complex problems
- are able to create, communicate and convey ideas clearly and confidently
- have a positive vision for themselves and their future
- are well prepared to participate actively in our democratic community and as global citizens, and
- can understand science and technology and make thoughtful decisions about their application.

Structure of the Vocational and Applied Learning curriculum

The Vocational and Applied Learning curriculum features four distinct strands:

- Innovation and Design
- Systems and Processes
- Applications and Solutions
- Futures Planning

Drawn from the four strands are some common Skills and Dispositions. An audit of student Skills and Dispositions provides teachers with an additional reference to support the planning, teaching, assessing and reporting of this curriculum area.

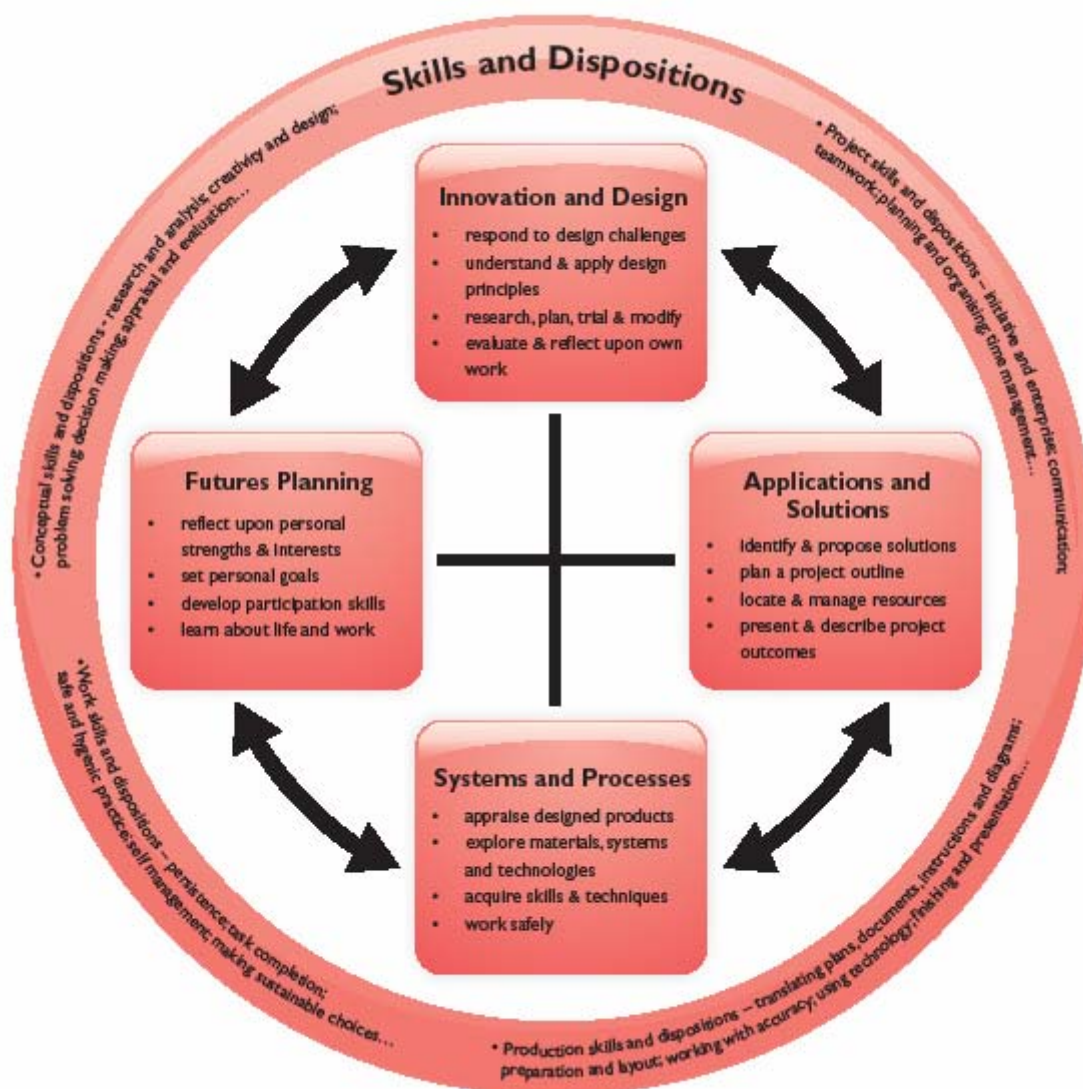


Diagram 1: A Holistic Overview of Vocational and Applied Learning

The strands are designed to be interconnecting elements that enable a range of learning opportunities to be developed and delivered. The continuum between Innovation and Design and Systems and Processes recognises that a student's understanding of materials, systems, techniques, skills and processes underpins their ability to imagine and create a personal response to a design challenge. The continuum between Futures Planning and Applications and Solutions recognises that student learning is contextual and transferable to 'real-life' scenarios across a number of community and vocational settings.

Through each of the strands the curriculum emphasises:

- Personal inquiry
- The process of design
- The incremental development of skills
- The acquisition of thinking skills
- The importance of planning and goal setting
- Communication and teamwork
- Reflection and evaluation

Strands

The content, processes and skills of the Vocational and Applied Learning curriculum are organised into four strands. These strands are interrelated and contain significant areas of overlap. It is not intended that the strands be taught separately. Together, the four strands provide teachers and students with considerable scope for the development of quality learning opportunities and contexts.

1. Innovation and Design

The cognitive dimension of Innovation and Design assists students in developing important design, planning, problem solving and decision making skills. It requires students to be imaginative, creative and innovative in applying their technical understanding to design solutions.

The following common definitions for Imagination, Creativity and Innovation provide a useful framework for understanding this strand:

- Imagination – the ability to form mental images of things or events
- Creativity – the process of developing ideas that are original and are of value
- Innovation – the process of implementing new ideas

Learning opportunities allow students to pursue their own solutions within an explicit, well developed brief. Learning is scaffolded and students become familiar with the design process across a range of contexts by conceptualising project and product outcomes, implementing a backwards design process, undertaking research and putting in place logical steps towards the realisation of project aims.

Performance criteria for this strand include:

- Respond to design challenges
- Understand and apply design principles
- Research, plan, trial and modify
- Evaluate and reflect upon own work

2. Systems and Processes

The technical learning dimension of Systems and Processes requires a working knowledge of materials, equipment, systems, structures and procedures. Students learn through making, by reflecting upon their own developing skills and by appraising the designed works of others. Students learn the 'rules' that govern the safe and effective fabrication of designed products including technical skills, correct use of equipment, product data, safety procedures and maintenance schedules.

Performance criteria for this strand include:

- Appraise designed products
- Explore materials, systems and technologies
- Acquire skills and techniques
- Work safely

3. Applications and Solutions

Applied learning programs allow for skills, knowledge and understandings to be transferred into authentic or 'real-life' contexts. These learning opportunities are typically project-based or product oriented, involve some form of community learning, include outside experts as advisors, facilitators or mentors and are celebrated publicly in professional contexts.

In his presentation on personalised learning, British educator David Hargreaves promotes learning as The Project (in contrast to The Lesson) and cites the following principles:

- Task is big and authentic – a real problem to solve
- Task is co-constructed by teacher and student
- Task has clear, worthwhile outcomes
- Task challenges and develops competences
- Task takes some time to complete
- Task involves some time out of school
- Completion depends on teamwork
- Completion depends on adult help and advice
- Completion demands high levels of feedback
- Success is celebrated

Hargreaves, D., Customisation: Five Lessons from the Business World, Power-point presentation, Hobart 2005

In the Applications and Solutions strand learning is marked by a high degree of negotiation, risk taking and decision making. Teachers, teacher assistants, and others, work with students to arrive at solutions to real life tasks. Tasks are designed to allow maximum input from students. Whilst the intent of the program is well defined and learning experiences are structured deliberately and appropriately, the final look and feel of the actual learning outcome is far from pre-determined and teachers very much learn alongside their students.

Performance criteria for this strand include:

- Identify and propose solutions
- Plan a project outline
- Locate and manage resources
- Present and describe project outcomes

4. Futures Planning

Vocational learning experiences provide students with opportunities to develop personal goals, identify their strengths and capabilities, and understand and experience the world of life, work and further study.

The development of participation skills that are transferable to all aspects of work, life and learning is central to this strand. Core participation skills that students in Vocational and Applied Learning contexts develop include:

- Communication
- Learning
- Teamwork
- Initiative and Enterprise
- Self-management
- Planning and Organisation
- Leadership

- Decision-making
- Problem solving
- Global thinking
- Technology
- Acting Ethically

These generic skills are evident in all areas of learning and can be demonstrated in a range of contexts including home, friendships, relationships, leisure and recreation, school, community and workplace. Industry groups and academic institutions have identified such skills as being fundamental to successful participation beyond the formal schooling years. Students are, from their earliest years of schooling, encouraged to reflect upon and identify their personal strengths and interests. The documentation and authentication of their achievements, interests and experiences becomes more formal in the later years of schooling when students construct personal portfolios for presentation to prospective employers or places of further learning. Student understanding of the world of work is enhanced by an experience which replicates the day to day realities of participating in paid work. Many senior students avail themselves of the opportunity to participate in dedicated vocational learning programs to further their understanding of a particular career or pathway. A personalised approach ensures that each student undertakes a range of experiences and learning opportunities that are unique to their particular aspirations and needs.

Performance criteria for this strand include:

- Reflect upon personal strengths and interests
- Set personal goals
- Develop participation skills
- Learn about life and work

Skills and Dispositions

Important evidence of learning is provided by the skills and dispositions students develop and demonstrate throughout the years of compulsory schooling. The skills and dispositions that will assist young people in establishing their careers and achieving their aspirations through into their years of young adulthood include:

- Conceptual skills and dispositions - research and analysis; creativity and design; problem-solving; decision making; appraisal and evaluation...
- Production skills and dispositions – translating plans, documents, instructions and diagrams; preparation and layout; working with accuracy; using technology; finishing and presentation...
- Project skills and dispositions – initiative and enterprise; communication; teamwork; planning and organising; time management...
- Work skills and dispositions – persistence; task completion; safe and hygienic practice; self management; making sustainable choices...

Assessing Vocational and Applied Learning strands

It is expected that all students will engage in a balanced program, experiencing learning across the four strands of the Vocational and Applied Learning curriculum. For assessment purposes, students will need to provide strong evidence for at least two criteria from each strand. An audit of skills and dispositions, appropriate to each standard, gives teachers further evidence by which they can assess student attainment in this curriculum area.

Designing learning opportunities

The four VAL strands can be used, in various combinations, to generate a myriad of learning opportunities, for example:

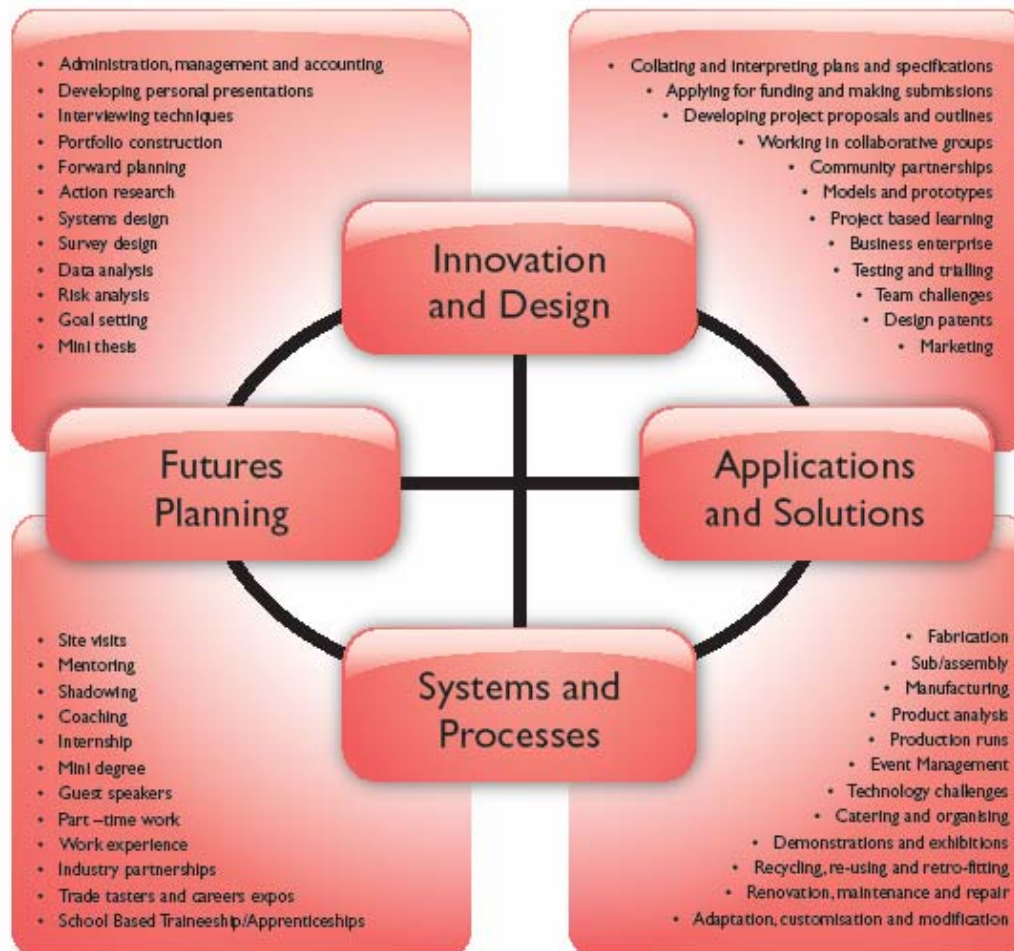


Diagram 2: The Relationship between the VAL Strands and Learning Opportunities

The four VAL strands can be used in combination to design valid, challenging and engaging learning opportunities for students. The four strands act as catalysts to ensure that planning is both holistic and contextual. General principles that apply to the design of Vocational and Applied Learning opportunities include:

- Depth – is the learning of sufficient *depth* to fully engage all participants?
- Purpose – what is the *value* of the learning and has this been made explicit to students?
- Context – how has the learning been made *relevant* to the lives of the students?
- Application/selection – have students registered a strong *desire* to participate?
- Participation – do the students *actively* participate in the learning or are they observers?
- Supervision – is there a *sufficient ratio* of adults to students to undertake the task?
- Recognition – will students receive adequate *acknowledgment* for their participation and attainment e.g. a certificate or qualification?
- Pathway – does the learning have *clear and explicit links* to a potential career pathway or lifelong interest?

Student learning is personalised and takes place through a range of contexts that can be negotiated by the student and teacher, including:

- A combination of technology based assignments, practical tasks and problem solving challenges
- The opportunity to work individually or within a team context
- One-to-one support from a teacher, facilitator or mentor
- Work-related experience based on individual needs
- A focused inquiry within a subject area either as an intensive project or as an exploration of a related career pathway

Teachers extend and challenge the capacity of their students with strategies that allow students to:

- Receive direct instruction and demonstration
- Combine practical and technological skills with creative thinking to design and make products and systems that meet human needs now and into the future
- Use current and emerging technologies
- Work to solve or anticipate realistic problems
- Work within their communities locally and globally
- Develop an appreciation for aesthetics (own and others')
- Develop intercultural understanding (own and others')
- Develop technical understanding
- Become familiar with industry standard practices
- Study, solve and take action on environmental issues

Teachers design effective Vocational and Applied Learning programs that:

- Aid transition from Year 6 to Year 7
- Aid transition from Year 10 onwards
- Help students develop literacy, numeracy, thinking and ICT skills
- Are focused (focused practical tasks)
- Are open (e.g. design and make assignments)
- Involve designing as well as making
- Encourage product analysis and appraisal
- Start at various points in the design process
- Take account of gender and disability issues in relation to task design

Adapted from D&T Practice, Issue 1, 2008, the Design and Technology Association, United Kingdom www.data.org.uk

Vocational and Applied Learning curriculum content

The following pages are designed to provide teachers with possible content focus for each strand of the Vocational and Applied Learning Curriculum.

Innovation and Design

Key focus areas	Suggested content focus
Ideas	<ul style="list-style-type: none"> • Methods for generating new ideas • Modifying and refining designs • Selecting and justifying design options • Identifying materials, information and systems to meet design requirements • Identifying equipment and techniques
Creativity	<ul style="list-style-type: none"> • Imagining new possibilities • Using retro and re-invention • Synthesising ideas or concepts • Visualisation - backwards planning • Exploring and experimenting with ideas, materials, technologies and techniques
Innovation	<ul style="list-style-type: none"> • Identifying needs, wants and opportunities • Improvisation • Capitalising on opportunities • Assistive technologies - extending human capabilities and catering for special needs • Identifying commercial potential • Developing solutions • Developing prototypes • Copyright, patents, intellectual property
Design	<ul style="list-style-type: none"> • Relationships between form and function • Understanding and applying design principles and elements • Design history - movements and styles • Aesthetic, environmental, technical, economic, ethical and social impacts of design • Working to an open-ended design brief • Evaluating design ideas, processes and products • Identifying design requirements • Identifying design constraints • Finding the most appropriate solution(s)
Aesthetics	<ul style="list-style-type: none"> • Abstracting or stylising design ideas • Quality of life, lifestyle, personal taste and identity • Use of design principles and elements e.g. colour, light, structure, texture, proportion, scale, stability, dynamic, organic, rectilinear, horizontal, vertical, triangulation and a/symmetry • Appealing to all of the senses – sight, touch, smell, taste and sound
Functionality	<ul style="list-style-type: none"> • Purpose and practicality • Strength, comfort, affordability and durability • One-off or mass marketing • Age-specific or generic • Ergonomic design
Communication	<ul style="list-style-type: none"> • Understanding of audience and end user of product • Use of symbol and/or narrative elements • Communication of ideas – presentation and exhibition • Sequencing of information • Developing a technical vocabulary • Pictures, sketches and annotated drawings • Plans, scale drawings, models, ICT programs and spreadsheets • Design proposals and specifications • Models and prototypes • Cultural transmission • Packaging, marketing and advertising
Critique/appraisal	<ul style="list-style-type: none"> • Analysing existing products and solutions • Evaluating the function, value and appearance of designed products • Evaluating the context in which products are used and the needs of users • Exploring the impact of technological advances • Diagnosing a malfunctioning product or system • The positive and negative attributes of designed products • Quality in products, processes and systems • Describing how some products are designed to appeal to certain groups and not others

Systems and Processes

Key focus areas Suggested content focus

Making	<ul style="list-style-type: none"> • Fabrication, construction and assembling • Techniques for manipulating materials • Techniques for combining materials • Techniques for processing materials e.g. melting, baking, boiling, glazing, cooling, moulding, pulping and separating • The use of tools and equipment • Working to a pre-determined standard
Materials	<ul style="list-style-type: none"> • Types of materials – natural or processed • Properties of materials e.g. absorbency, density, hardness, magnetism, reactivity, solubility, strength, transparency and aesthetics • Attributes of materials that can change without affecting their properties e.g. mass, size, shape and volume • Testing materials to determine their characteristics • Relationship of materials characteristics to their performance • Relationship between characteristics and their selection and use in products • Suitability of materials for specific purposes • Traditional and non-traditional uses of materials
Production	<ul style="list-style-type: none"> • Manufacturing technology – automation and standardisation • Tools, materials and methods used in manufacturing • Production sequence e.g. sourcing, gathering, selecting, layout, shaping, smoothing, forming, separating, combining, freezing, treating, assembly and finishing techniques • Selecting and sequencing components • Assembling and/or combining components • Programming • Scheduling – awareness of seasonality • Branding and labelling e.g. organic, fair trade, ingredients and additives • Marketing • Disassembling and dismantling • Improving, refining, modifying, fine tuning, and making variations • Reading and interpreting plans and drawings • Custom, just-in-time and flexible manufacturing techniques
Characteristics and functions of systems	<ul style="list-style-type: none"> • Identifiable components – physical and human • Simple and complex systems • Inputs, processes and outputs • Structures, purposeful organisations and functions • Types of systems e.g. electronic, human, hydraulic, pneumatic, chemical or physical • Application and operation of various systems • Understanding layout • Cause and effect relationships • Relationships between inputs, processes and outputs • Relationships between people and systems • Reliability
Systems management	<ul style="list-style-type: none"> • Monitoring systems • Maintaining systems • Analysing and evaluating systems • Controlling systems • Gathering and using feedback • Testing and trialling, using variations • Diagnosing and fault finding, analysing and correcting systems failure • Control mechanisms
Technological impacts	<ul style="list-style-type: none"> • The role of technology in people's lives • The history of technological innovation • Disability, gender and cultural issues • The impacts of automation and computer controlled processing • Sustainable futures - social, legal, ethical and environmental issues • Interdisciplinary nature of technological activities • Dependence on technological developments
Safety	<ul style="list-style-type: none"> • Workplace health and safety issues • Hygiene and preparation • Storage and maintenance of materials, tools and equipment • Personal safety - safety at home, at school, community and in the environment • Protective clothing and use of safety equipment • Choice, use and care of tools, equipment and chemicals • Maintaining a clean and safe work area • Team safety - following group rules

Applications and Solutions

Key focus areas Suggested content focus

Problem Solving	<ul style="list-style-type: none"> • Creative and lateral thinking e.g. brainstorm, PMI, MAS and mind maps • Assessing wants and needs • Identifying possible solutions • Assessing implications – personal, social, economical, cultural, ethical and technological • Trialling and implementing solutions
Research and development	<ul style="list-style-type: none"> • Market research • Product analysis • Product range • Technological change and development • Production processes • Technical superiority • Prototype development and testing • Intellectual property, copyrights, trademarks, patents, references and attribution
Sustainability	<ul style="list-style-type: none"> • Environmental, economic and social considerations • Values and ethics • Governance and decision making processes • Forward thinking, projections and forecasts • Flexibility and adaptability • Historical evidence and remedies • Implications for future generations • Working resourcefully • Obsolescence and redundancy – shelf life, currency, fads and fashions • Quality assurance • Practicality
Business	<ul style="list-style-type: none"> • Distribution of goods and services • Profit and loss • Free enterprise • Global market economy • Supply and demand • Ordering and storing • Waste management • Business and corporate ethics • Resource extraction and transformation • Single ownership, corporations, companies and partnerships • Hi-tech, sunrise industries, boutique industries
Enterprise	<ul style="list-style-type: none"> • Developing a commercial product or project including research and development • Implementing management systems • Market research – satisfying customer need • Responsibility to employees, community and the environment • Consumer rights • Organisational diagrams and flowcharts • Quality control, inventory, audits and trials • Working in teams • Allocating roles and resources • Retail • Financial Literacy • Evaluation and auditing
Teamwork	<ul style="list-style-type: none"> • Leadership – autocratic teams/democratic teams • Coaching, peer mentoring/tutoring • Identifying group norms • Developing team dynamics • Collaboration and co-operation • Working independently and interdependently • Using competition for positive effect • Roles, rules and responsibilities • Pursuing individual and team goals
Project management	<ul style="list-style-type: none"> • Steps and procedures • Decision making • Planning • Control and evaluation • Financial budgeting • Schedule of resources • Human resources • Project management software and technologies

Gathering and organising knowledge, ideas and data	<ul style="list-style-type: none"> • Consulting – questionnaires, surveys, interviews • Exploring, examining • Researching • Observing, scanning • Experimenting, testing • Recording • Selecting, sorting and comparing • Interpreting, inferring and concluding • Identifying alternatives and variations • Validating choices • Challenging ideas • Verifying accuracy • Establishing relevance
Evaluation	<ul style="list-style-type: none"> • Expressing thoughts and opinions • Gaining feedback from others • Testing and judging effectiveness in real-life contexts • Analysing the market place • Comparing initial designs and final products • Applying pre-determined standards to finished product or project

Futures Planning

Key focus areas

Suggested content focus

Identity	<ul style="list-style-type: none"> • Knowledge of self and self efficacy • Culture – tradition, heritage, popular culture and sub-culture • Personal aesthetics • The influence of indigeneity, gender, language, ethnicity, spirituality and sexuality • Values and beliefs • Relationships, family, peers and friendships • Skills, strengths and interests • Dependence, independence and interdependence
Planning	<ul style="list-style-type: none"> • Developing a planning cycle • Using planning systems • Undertaking a needs analysis • Developing a proposal or preparing a submission • Preparing a project outline • Reflection and evaluation
Goal setting	<ul style="list-style-type: none"> • Setting short term goals • Framing long term goals • Action planning • Financial planning • Reflecting, monitoring and evaluating • Identifying resources – human (intellectual and social), financial, and organisational
Futures	<ul style="list-style-type: none"> • Pathway planning • Mentoring • Anticipating future technologies • Developing transferable skills • Forecasting employment trends • Industry experiences • Economic modelling
Self Management	<ul style="list-style-type: none"> • Health and wellbeing • Developing resilience • Making decisions and choices • Managing time, people and resources • Developing an internal locus of control • Personal planning and goal setting • Keeping organisers, work plans, diaries, journals and calendars
Acting Ethically	<ul style="list-style-type: none"> • Identifying and enacting personal values and beliefs • Exercising judgement • Social justice • Fair trade • Human rights, worker's rights • Understanding rights and responsibilities • Cultural and personal respect • Considering all viewpoints • Observing moral, ethical and legal frameworks • Relating to those in authority and peers

Global Thinking	<ul style="list-style-type: none"> • Understanding globalisation • Responding to the effects of globalisation • Anticipating change • Active citizenship • Importing and exporting goods • Identifying global employment trends • Climate change and other trends and debates • Transferability of skills • Poverty, health and human rights • Sustainable futures
Community	<ul style="list-style-type: none"> • Building social capital • Using networks e.g. social, business, sporting and family • Diversity, trust and reciprocity • Identifying community needs • Creating solutions for local issues
The world of work	<ul style="list-style-type: none"> • Changes in the workforce, new products and production methods • Gender in the workplace • Employer expectation, employability skills and generic graduate attributes • Youth wages and conditions • Different forms of work –e.g. volunteering, part-time work, self-employment, contractors and sub-contractors • Applying for work – resumes, portfolios and interviews • Pathways experiences - internship, shadowing, mentoring, part-time work, industry taster, careers expo, mini-trade, mini-degree, project based learning, entrepreneurship, voluntary work, community events, online learning, challenges, collaborations and competitions • Occupational Health and Safety • Lifelong learning • Future market trends

Skills and Dispositions

Key focus areas Suggested content focus

Production skills and dispositions	<ul style="list-style-type: none"> • Developing manual skills, hand skills, posture and body movement... • Implementing production skills and procedures • Demonstrating finishing skills • Employing safe and hygienic practices • Demonstrating technological literacy
Project skills and dispositions	<ul style="list-style-type: none"> • Communication • Learning • Teamwork, working collaboratively, negotiation • 'Big picture' thinking • Organisation, self-management • Decision-making, goal setting • Acting ethically • Project leadership
Conceptual skills and dispositions	<ul style="list-style-type: none"> • Research and investigation • Analysis, hypothesis, testing and monitoring • Design and abstraction • Error analysis, modifying, sorting, classifying and sequencing • Planning, organising and goal setting and problem-solving • Creativity - envisioning, innovation, aesthetics, projecting and visualising • Critiquing, appraising, reflecting and evaluating • Re-working original design • Entrepreneurship • Project management and evaluation
Work skills and dispositions	<ul style="list-style-type: none"> • Working accurately and to a pre-determined standard • Working individually and in groups and teams • Pride in work, preparation, endeavour, persistence and application • Completing tasks on schedule • Taking responsible risks • Self knowledge, self control and self-discipline • Transferring skills knowledge and understandings to new contexts • Applying past knowledge to new situations • Working independently and interdependently • Following instructions and using initiative • Time management

Literacy	<ul style="list-style-type: none"> • Comprehension - reading technical manuals, data sheets, recipes, patterns and instruction booklets • Interpreting and preparing drawings • Understanding diagrams • Responding to design briefs • Keeping journals and notes • Speaking and listening • Preparing project reports • Presenting and exhibiting final products • Critical literacy, appraisal and evaluation • Incorporating and applying new information
Numeracy	<ul style="list-style-type: none"> • Measurement e.g. scale, proportion, force, stress, strain, strength, thickness, volume, mass, surface area, pressure, resilience, bounce, motion, resistance, acceleration, velocity, reflexion, tension, temperature and spacing • Spatial awareness, shapes and angles • Interpreting, analysing and drawing conclusions from data • Designing structures and systems • Financial literacy – budget, spreadsheets and audits • Preparing graphs, plans and models
Using ICT	<ul style="list-style-type: none"> • Researching, analysing, interpreting, evaluating and presenting information • Planning, reviewing and modifying designs • Communicating ideas with others • Creating interactive systems or products • Programming data, functions and settings • Presenting project details, designs and plans • Documenting project development and personal accomplishments

Teaching Vocational and Applied Learning

Teaching for learning

High quality teaching has a significant impact on student learning and achievement.

The following principles describe some key effective Vocational and Applied Learning practices:

- Student learning is inquiry based
- Student learning is active and experiential
- Student learning is scaffolded
- Student learning is trans-disciplinary and rich
- Student decision making and problem solving is promoted
- Student voice is acknowledged and celebrated
- Backward design is a feature of planning
- Students experience authentic 'real life' outcomes
- Team-building is encouraged
- Teacher and assistant(s) work alongside students to achieve explicit task goals
- Tasks provide an adjunct to other learning contexts
- School community resources are utilised
- Student learning is directly transferable into other settings within and beyond school
- Outside mentors and/or experts are included in the learning experience
- Students develop technical skills as well as interpersonal, communication and thinking skills
- Student work is presented in professional settings and/or contexts
- Teachers facilitate, guide and model the learning process for students

Teaching and learning are more effective when the key focus is on the student at the centre: acquiring the understanding, skills and attributes needed to achieve their individual potential and establishing a commitment to lifelong learning, and developing and fulfilling personal and career pathways.

Personalised learning

Teachers of Vocational and Applied Learning take many opportunities to ensure that student learning is personalised by delivering a program that is flexible enough to support the diverse learning needs of each student within their class.

Learning as a project

Vocational and Applied Learning teachers can offer students a subject-based approach to learning or can frame learning opportunities within a project-based context. Teachers are able to provide a customised program by offering project-based learning opportunities that are tailored to the backgrounds, interests, learning styles and motivation of each student. Such programs provide students with a range of differentiated roles and activities that take part within a larger project framework. Students are able to rotate roles and responsibilities or stay with the task for which they have become proficient. Teachers are able to timetable classes as projects rather than subjects. Student learning can still be assessed against the stages of the Vocational and Applied Learning standards framework.

'Just in time' learning

Vocational and Applied Learning teachers use an interventionist approach to maximise learning opportunities for their students. Within a structured teaching program, teachers ensure that students acquire relevant knowledge and skills as they are needed, or whenever the opportunity arises to reinforce a key concept with an individual or class. 'Just in time' learning is seen as being effective in addressing a learner's needs anywhere and at any time. It ensures an efficiency of content and delivery method as opposed to traditional 'just in case' forms of teaching.

'Just in time' teachers:

- Answer the questions their learners have at the time the learners are in the greatest need
- Assess each situation and determine the best way of supporting the learner's needs
- Provide the learner with only the answers needed to overcome the current problem
- Follow through to see if their solution to the learner's need is working
- Gather feedback from the learner
- Embrace the opportunities presented by contemporary and emerging technology, including information sharing
- Provide active, experiential learning in which students are presented with real-world problems and are challenged to find solutions in context

These forms of learning support accepted Vocational and Applied Learning principles that include:

- Building and maintaining a positive self image
- Interacting positively and effectively with others
- Changing and growing throughout one's life
- Participating in lifelong learning that is supportive of life/work goals
- Locating and effectively using life/work information
- Understanding the relationship between work and society/economy
- Securing/creating and maintaining work
- Making life/work-enhancing decisions
- Maintaining balanced life and work roles
- Understanding the changing nature of life/work
- Understanding, engaging in and managing one's own life/work building process

From the Australian Blueprint for Career Development, Department of Education, Employment and Workplace Relations

Far from being 'learning on the run', 'just in time' learning requires careful planning and design to ensure optimal student engagement. If the learning is made relevant, meaningful and purposeful then students tend to largely 'teach themselves', consulting with the teacher when necessary or appropriate. Authentic learning situations require teamwork, problem-solving skills and the ability to organise and prioritise the tasks needed to complete the project. Students know what is expected of them before beginning their work and learner and teacher share the common goal of producing a high-quality solution to a real problem.

Learning, teaching and assessment principles

The following principles outline key beliefs about the role of learning, teaching and assessment in the Tasmanian Curriculum.

Learning	Teaching	Assessment
... involves making meaning of the world	... develops understanding and the acquisition of knowledge and skills	... focuses on students demonstrating understanding in a range of curriculum areas
... is innate and lifelong	... is based on high expectations and a passion for learning	... is designed to improve learning and achievement
... is a personal process	... recognises individual differences, is inclusive and based on a broad range of teaching strategies	... builds opportunities for students to self-assess and negotiate criteria and assessment tasks
... connects prior knowledge and experiences to new information and contexts	... determines what students know and makes connections to student needs, interests and future possibilities	... information is based on valid processes and directly used to plan effective teaching
... is profoundly influenced by social interactions	... builds purposeful, positive relationships between all those involved in the educational process	... is fair and inclusive of judgements from students, peers, teachers, parents and others
... is affected by emotions	... provides a safe and positive learning environment	... allows for the development of wellbeing of all partners in the learning and teaching process
... is strongly influenced by personal identity and motivation	... builds positive expectations and confidence in the student	... provides timely, accurate and constructive feedback to the student
... depends on meaningful information and experiences	... involves the student in setting goals and connects what is taught to life and further learning	... enables the student to be clear about what is being assessed and how this connects to life and further learning
... is enhanced when students are aware of how thinking and learning occur	... explicitly focuses on thinking skills in all curriculum areas	... encourages students to reflect on their learning and development of thinking skills
... enables students to demonstrate their understandings in new ways	... demonstrates planning and teaching that allows students to transfer their learning to new problems and situations	... explicitly tests students' ability to apply their learning in new contexts

Cross-curricular perspectives

Literacy

Study and participation in Vocational and Applied Learning provides students with many opportunities to develop their literacy skills. Students learn and apply appropriate terminology by using technical concepts and language to think, communicate and participate. Students refer to and research technical manuals, fact sheets, data sheets, drawings, diagrams, templates, recipes, patterns and plans to produce pre-designed products or to develop and enhance their own designs. Students develop presentation skills through the creation of personal portfolios and through the exhibition or demonstration of their achievements to others. Students studying another language can develop vocational skills in tourism, hospitality and event planning as well as linking with other cultures locally, nationally and internationally.

Numeracy

A high level use of numeracy skills is implicit in Vocational and Applied Learning settings. As students deal with the intricacies of 'real world' problems, their ability to calculate, estimate, measure, quantify, budget, order, expend and evaluate is developed. Students engaging in design and innovation tasks will be thinking mathematically to resolve issues such as force, stress, strain, strength, thickness, pressure, resilience, bounce, motion, resistance, acceleration, velocity, reflexion, tension, temperature, spring and thrust. Student designs are based upon mathematical concepts of shape, mass, space, angle, surface area, volume, scale, proportion, rhythm and pattern. Students use graphs, plans and models to both plan and present their ideas and understandings to others.

Thinking

Vocational and Applied Learning fosters the development of students in the key domains of learning:

- Cognitive
- Aesthetic (or affective)
- Physical
- Social
- Technical (or procedural)

Vocational and Applied Learning requires that students are using thinking skills throughout their learning program. Thinking skills evident in Vocational and Applied Learning contexts include: creativity, imagination, design, innovation, problem solving, aesthetics, sorting, classifying, sequencing, analysis, decision-making, planning, projecting, visualising, organising, goal setting, researching, hypothesising, testing, monitoring, critiquing, appraising, reflecting and evaluating. Students use a high degree of metacognition when they are engaged in the manipulation of materials. The conscious coordination of hand and eye, applied to predominantly visual-spatial and kinaesthetic tasks, adds to the rich, multi-modal nature of Vocational and Applied Learning.

Information and Communication Technologies (ICT)

The use of ICT is an essential component of Vocational and Applied Learning. Students use ICT tools to:

- Research, analyse, interpret, evaluate and present information for a range of purposes
- Verify and acknowledge sources of information
- Plan, review, modify and present project details, designs and plans
- Communicate their ideas with others
- Create their own interactive systems or products including new knowledge
- Program data, functions and settings that aid the development of designed products
- Document project development and personal accomplishments

Curriculum planning

Contexts for planning

All areas of the Tasmanian Curriculum are valued and important. Tasmanian students have the opportunity to learn and achieve the highest possible outcomes in a personalised Vocational and Applied Learning curriculum. Through the Student at the Centre plan, schools are empowered to make decisions about the learning needs of their students and develop school scope and sequences that best address their needs and make effective use of resources.

Vocational and Applied Learning curriculum content can be delivered in a variety of ways in primary and secondary schools. Examples of provision include:

- Integrated or transdisciplinary programs in primary and secondary schools
- Discrete subjects or courses such as: Trades and Manufacturing, Culinary Design, Business, Enterprise, Aquaculture, Agriculture, Furniture Design, Robotics, Games Design, Set Design, Costume Design, Design in Wood, Design in Metal, Jewellery, Glass, Plastics, Housing and Design, Textiles, Foods, Fashion, Hospitality, Catering, Multimedia and Graphic Design
- Specific aspects of a Vocational and Applied Learning program delivered by individual teachers
- Teams of teachers working collaboratively
- Partnerships with local industry
- Flexible learning programs such as VET in Schools, Invest, TAPP, Steps and Youthbuild
- Students working with individual mentors
- Vocational and Applied Learning contexts developed within other curriculum areas and the extension of student understandings in specific subject areas e.g. Science, Mathematics - numeracy, English – literacy (including LOTE), Society and History, Health and wellbeing and The Arts.

Delivery of the Vocational and Applied Learning Curriculum is flexible and determined by schools in consultation with their communities but should be guided by adequate coverage of all four strands.

Scope and sequence

A scope and sequence is a curriculum plan describing teaching content and the order in which it is taught. When planning or mapping curriculum in Vocational and Applied Learning, consideration should be given to integrated learning sequences which will allow for coverage of all four strands. Planning or mapping curriculum in this way assists schools and teachers to:

- Help students progress their knowledge, skills and understanding in all areas of Vocational and Applied learning
- Enable students to negotiate and personalise their learning
- Enable students, parents and the community access to the curriculum
- Create yearly plans allowing for negotiated studies across a range of grades
- Build conceptual understanding across grades or classes
- Ensure coverage of all strands
- Avoid repetition of content and make learning contextual and personalised
- Effectively organise time, resources and facilities.

Assessment

Effective assessment

The main purpose of assessment is to improve student learning. Assessment is an ongoing process of gathering and using evidence of student achievement.

Effective assessment enables:

- Students to better understand their progress towards goals and become more knowledgeable and self-directed in their learning
- Teachers to make more informed judgements about student progress and design more effective teaching programs, and
- Parents and carers to better understand and support student learning and achievement.

Effective assessment emphasises

- Assessment *for* learning – teachers using evidence of student progress to inform their teaching
- Assessment *as* learning – students reflecting on and evaluating their progress to inform future learning goals, and
- Assessment *of* learning – teachers using evidence of student learning to make individual and collective judgements on student achievement against specific curriculum goals and standards.

Assessing Vocational and Applied Learning

Vocational and Applied Learning teachers provide a broad range of opportunities for students to show what they know and can do. They enable students to contribute diverse and valid evidence of their learning.

Effective assessment methods include:

- Informal assessment – students and teachers making representative judgements about what they have learned on a regular basis
- Formal assessment tasks – students demonstrating achievement against explicit criteria that are known prior to undertaking a learning task
- Observations or anecdotal records – teachers taking informal notes while working with students
- Checklists – teachers developing a snapshot of student knowledge, skills and understanding
- Portfolios – students building up carefully selected collections of their work over time
- Journals – students documenting their ongoing reflections about their thinking and understanding
- Use of ICT – to help make assessing and reporting more efficient.

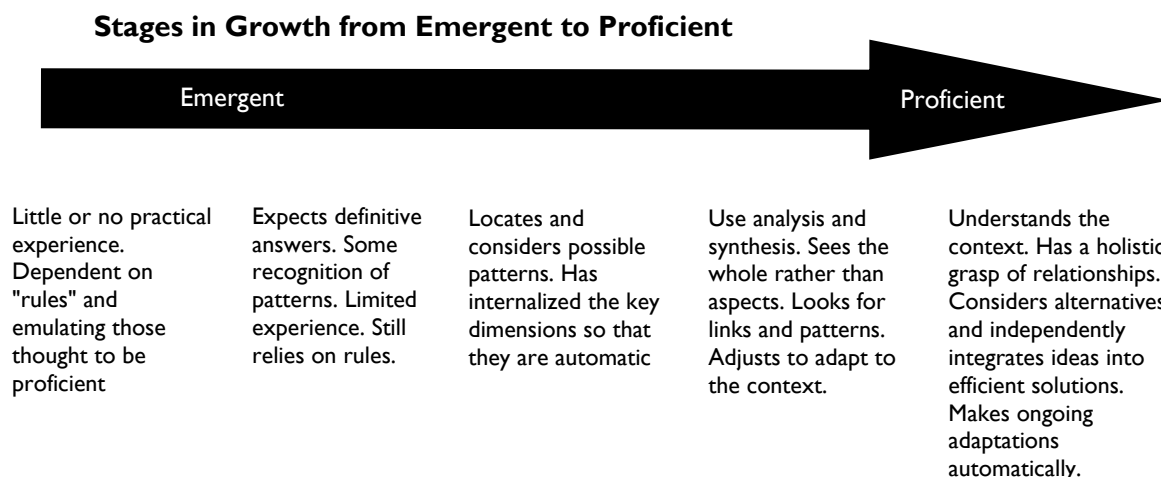
On-balance judgement

Teachers weigh up evidence of student performances on all aspects of the Vocational and Applied Learning curriculum. Evidence is kept of student progress across the four strands: Innovation and Design, Systems and Processes, Applications and Solutions and Futures Planning. A final decision about student achievement is made using an on-balance judgement. An accurate on-balance judgement considers:

- The consistency of student performance over a period of time
- Clear indications of progress from first attempts to current performance
- Demonstration of knowledge, processes and skills in different contexts
- The validity of the assessment task in relation to the intended outcomes
- Whether there is evidence of achievement to assign a standard and stage
- Relative performance on similar tasks by peers
- Teacher reflection and collaboration to increase consistency and validity of judgement.

Changing emphases in planning, teaching and assessing Vocational and Applied Learning

The work of Canadian educator Lorna Earl provides an excellent framework for understanding the development of student skills, knowledge and understandings in stages of growth from emergent to proficient. This model can be used as a guide to the planning, teaching and assessing of Vocational and Applied Learning tasks.



Earl, L. and Katz, S. (2006) Rethinking Assessment with Purpose in Mind., Western and Northern Curriculum Collaborative, Canada

Other indicators that a student is progressing in their levels of understanding and skill development include:

- The *frequency* with which they demonstrate a skill or understanding – rarely, sometimes, often, always
- Increasing levels of *sophistication*—from basic to complex
- Moving from a state of *dependence* to *independence* to *interdependence*
- Task accomplishment – based on a ‘*can do/can’t do*’ framework of competencies

Supporting evidence that can be used to further assess student achievement in Vocational and Applied Learning includes:

- Sketches and drawings of ideas and products
- Anecdotal records such as diaries, journals, notes and plans
- Descriptions and analyses of techniques used
- Evidence of information sources used with justifications for selection
- Recordings of interviews and conversations
- Computer-based, photographic and video records of activities and outcomes
- Summaries of trials and processes used
- Finished products
- Working models and devices including those driven by computer technology
- Collections of designs and finished work including folios
- Documented or verbal appraisal of intended and unintended outcomes
- Design specifications and modifications
- Oral presentations and reports
- Self, peer and teacher assessment
- Personal portfolios

In a differentiated program, opportunities are provided for students already competent in Vocational and Applied Learning subjects to enhance their skills and understandings through extension programs.

Standards and stages

Standards are markers at points along a learning continuum. There are five standards in the Vocational and Applied Learning curriculum that describe the years of schooling from Kindergarten to Year 10. There are fifteen stages of achievement. Each standard describes what students should know, understand and be able to do. The description of each standard assumes that earlier standards have been largely achieved and maintained. There is a descriptor of each standard for each of the strands of the Vocational and Applied Learning curriculum. Learning opportunities are described for each strand at each standard.

Standard	Standard 1			Standard 2			Standard 3			Standard 4			Standard 5		
Stage	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Learning, assessment and year levels

The Tasmanian Curriculum describes the range of learning opportunities for students as they progress from Kindergarten to Year 10.

So that students are challenged to improve their learning, they should be provided with opportunities to learn that are in advance of their expected assessment ratings. Teachers should plan learning opportunities across a range of stages for any year group. Students can take up to a year to consolidate ideas and to demonstrate understanding following the teaching of new concepts or skills. More able students will understand ideas quickly and for others it may take up to two years to reach a similar level of understanding.

Stages and learning opportunities

The table below provides guidance about the range of learning opportunities required within each year group. Few students in each year group will require opportunities to learn that fall outside the range described below.

Year level	Kinder – Prep	Years 1 and 2	Years 3 and 4	Years 5 and 6	Years 7 and 8	Years 9 and 10
Stages	Stages 1 – 4	Stages 3 – 6	Stages 5 – 9	Stages 7 – 11	Stages 9 – 13	Stages 11 – 15

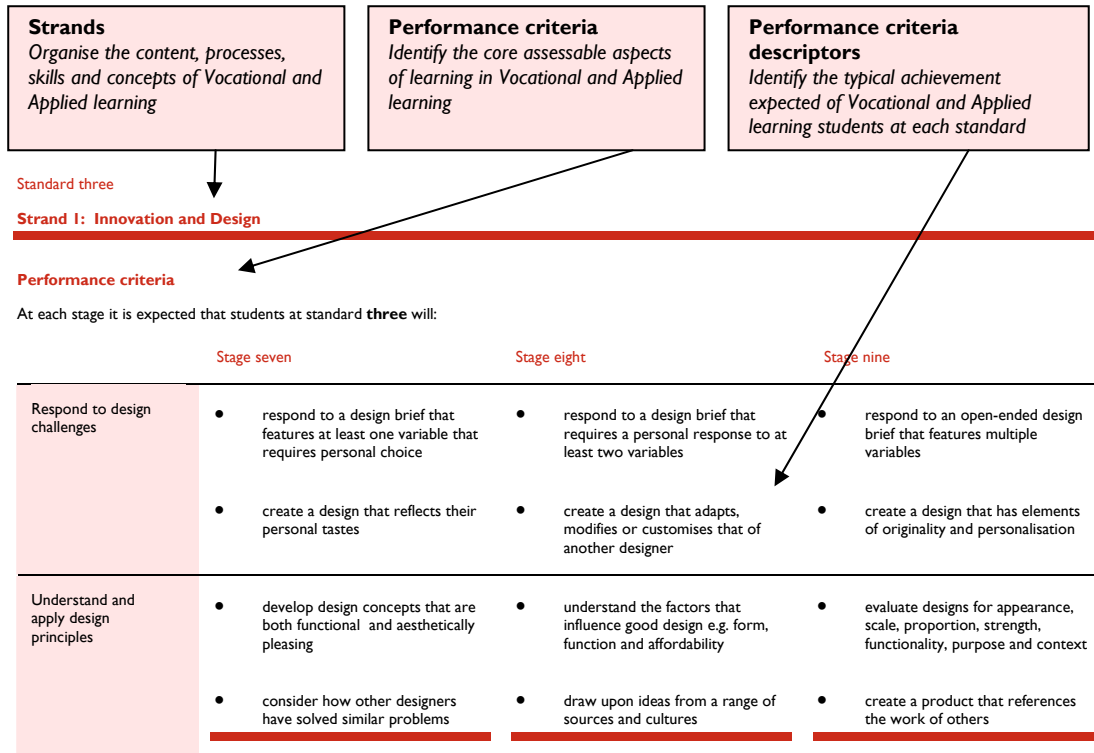
Stages and assessment ratings

An assessment guide containing sample indicators is provided with this syllabus. These are indicators of student achievement and an on-balance judgement must be made about whether student performance is of similar difficulty to the indicators provided. Teacher judgement, supported by moderation, will help define the levels of achievement within each stage.

Year level	Kinder – Prep	Years 1 and 2	Years 3 and 4	Years 5 and 6	Years 7 and 8	Years 9 and 10
Assessment ratings	Assessment and reporting in the primary years is descriptive, using the language of the standards where appropriate				Stages 8 – 12	Stages 10 – 15

Sample learning opportunities, teaching emphases and resources

Vocational and Applied Learning curriculum: Layout and terminology



Sample learning opportunities

- Use a mousetrap to power a vehicle
- Use available software to design their own personal island
- Create a 3D model of personal identity from found objects, toys, blocks, parts...
- Disassemble dolls, clocks, machines and re-assemble to create fantasy humans including costumes and accessories
- Create a 3D model of personal identity from found objects, toys, blocks, parts ...
- Design a water tank that best suits their surroundings

Teaching emphases for standard three

Teaching *Innovation and Design* at standard three may include approaches such as:

- Focusing on the inquiry process – gathering information, posing questions, trialling and evaluating
- Opportunity for students to develop original designs
- Opportunity for students to negotiate and personalise their learning
- Understanding and discussing the purpose behind design
- Explicit teaching of design principles and elements e.g. colour, shape, texture, line, repetition, rhythm, movement, positive and negative space
- Encouraging detailed sketches and plans to describe ideas
- Looking carefully at designed products and the work of significant designers

Teaching emphases
Identify teaching approaches appropriate for each particular strand and standard

Learning opportunities
Describe some examples of learning that enable students to achieve a strand and standard

Vocational and Applied Learning Standard one

Standard one

Students are very much in an *exploratory* stage. They enjoy manipulating and experimenting with materials and their understandings are best developed through active engagement. Students approach their learning with a sense of wonder. Teachers use an inquiry and reflection approach to scaffold student learning and strengthen students' understanding of key concepts. Teachers provide opportunities for students to practise and refine their skills through tasks that extend and build upon their developing levels of technical competence.

Innovation and Design

Students respond to simple design briefs. They use their imagination and curiosity to generate ideas, engage in technological processes and develop design solutions. They use pictures and spoken word responses to explain what they want to do. They have a significant capacity for divergent thinking and are quick to respond to appropriate design ideas and challenges. Many of their ideas are related to fantasy and imagination and they engage in processes of trial and error in giving form to their ideas.

Systems and Processes

Students identify many of the technological applications that exist in their lives. Students are keen to explore and manipulate materials, creating objects or products that are symbolic and representational. They use simple tools such as scissors, brushes, paper, card, boxes and glue. They develop skills for cutting, joining, shaping and colouring and much of their work is approximate. Students are highly dependent upon others to show them how things work or can be used. They learn that it is important to take care with tools, materials and equipment. Students use descriptive language to explain their understanding of simple systems, technologies and processes.

Applications and Solutions

Students typically work on individual project responses, with intervention and support. They demonstrate an understanding that projects have a beginning and an end and that people can work together on projects. They suggest ways in which a product can be made, describe how a project or task can be completed and predict some project outcomes. They are curious, ask many questions and respond to questions and prompts from their teacher.

Futures Planning

Students talk about things they are good at and things they enjoy doing. They describe the different work that people do and discuss roles and jobs that interest them. Students intuitively use a limited range of participatory skills such as communicating, learning, using initiative, problem solving, teamwork and decision-making.

Standard one

Strand I: Innovation and Design

Performance criteria

At each stage it is expected that students at standard **one** will:

	Stage one	Stage two	Stage three
Respond to design challenges	<ul style="list-style-type: none"> make simple and immediate verbal responses to a design task describe their ideas through conversation and simple pictures 	<ul style="list-style-type: none"> describe their design solutions to others make simple drawings, constructions and models of their ideas 	<ul style="list-style-type: none"> describe to others the strengths and limitations of their design ideas describe other ways in which similar problems or challenges can be solved
Understand and apply design principles	<ul style="list-style-type: none"> indicate their preferences for colours and materials using simple language experiment with different materials 	<ul style="list-style-type: none"> make simple design choices about colours, materials and appearances choose materials based on personal preference 	<ul style="list-style-type: none"> explain why they have chosen particular colours and materials begin to understand that different materials have different properties
Research, plan, trial and modify	<ul style="list-style-type: none"> explain what their 'plans' are in simple terms use basic materials to create their design idea engage in creative play to develop ideas and images 	<ul style="list-style-type: none"> understand that people plan to make things for a particular purpose outline plans using drawing, role play, talk, models and demonstrations attach an idea or story to their drawings or designs 	<ul style="list-style-type: none"> understand that planning happens before people make things describe their idea to others using limited technical language to describe equipment and processes use experimentation, play, talk and pictures to develop and refine ideas
Evaluate and reflect upon own work	<ul style="list-style-type: none"> describe the process of making a design using drawings, materials or objects talk about their ideas and feelings in relation to a subject or topic 	<ul style="list-style-type: none"> explain why they have made some design decisions describe their task achievements through expressive language and demonstration 	<ul style="list-style-type: none"> identify what they like and dislike about their designs make simple notes and draw pictures to illustrate their understanding of a task

Sample learning opportunities

- Design, discuss and create a bird house that cats cannot enter
- Create a city from found objects without using manufactured adhesives
- Design and make a farm layout using blocks
- Explore ways to transfer water from one place to another
- Design an appropriate hat for a pet using a variety of materials
- Decorate a peg to make a badge, brooch or fridge magnet
- Create a table ornament or paperweight using found objects
- Use building blocks to construct a building layout
- Set up a construction with a range of equipment (inside and out)
- Design and make a model playground
- Design a car using a range of materials

- Design and make a pizza from healthy ingredients
- Design and build a wall for Humpty Dumpty that he will not fall from
- Design and build a bridge for the Three Billy Goats Gruff or a similar story
- Design and make a musical instrument from found objects
- Make a boat out of plasticine that will float
- Design a placemat to be laminated and used when cooking/eating to reinforce an understanding of table setting
- Draw a label for a new food e.g. 'canned frog'
- Design and choose healthy ingredients for a healthy sandwich/lunchbox
- Create a garden by planting seeds in groupings
- Make potpourri from dried petals

Teaching emphases for standard one

Teaching *Innovation and Design* at standard one may include approaches such as:

- Opportunities for structured and unstructured play using blocks, sticks, straws, painting and drawings
- The use of age appropriate language e.g. build, make and plan
- Reinforcement of design principles and element through questioning e.g. colour, shape and layout
- Using children's books and fairy tales as design starting points e.g. How could Humpty Dumpty get down off the wall without hurting himself?
- Encouraging a lot of drawing with labels
- Creating familiar objects (e.g. musical instruments, toys, cars and buildings) from found objects
- Encouraging students to respond to group discussion with ideas and their own explanations of how things might work
- Thinking strategies that encourage imagination e.g. visualisation, story-telling and brainstorming
- Modelling healthy eating strategies to the parent and school community through 'snack attacks'.

Standard one

Strand 2: Systems and Processes

Performance criteria

At each stage it is expected that students at standard **one** will:

	Stage one	Stage two	Stage three
Appraise the work of others	<ul style="list-style-type: none"> express thoughts and opinions about products designed by others; identify the differences between two similar products define 'technology' using simple terms 	<ul style="list-style-type: none"> demonstrate a preference for one designed product over another and identify the purpose of a particular product describe how technology is used in familiar surroundings 	<ul style="list-style-type: none"> explain how they think a particular design or product works and why a person may have made a product the way they did describe how technology influences their lives
Explore systems, materials and technologies	<ul style="list-style-type: none"> make a personal response to a task using available materials explore and manipulate materials most often through play 	<ul style="list-style-type: none"> make products that are meaningful to them; describe the process they have used take care with equipment and follow directions for specific purposes 	<ul style="list-style-type: none"> find ways to combine and connect materials successfully identify equipment and its proper use
Acquire skills and techniques	<ul style="list-style-type: none"> use basic tools and equipment to complete set tasks use basic skills to make a simple product related to a specific task describe the basic skills they are using 	<ul style="list-style-type: none"> describe the functions of basic tools and equipment use a range of everyday objects and basic tools to successfully make a product develop skills with basic support 	<ul style="list-style-type: none"> use tools and equipment to achieve a particular effect follow with support a procedure using suitable materials, techniques and equipment to make a simple product develop and practise basic skills
Work safely	<ul style="list-style-type: none"> with support begin to understand basic rules for safety and hygiene identify common safety signs, symbols and behaviours; begin to take care with equipment 	<ul style="list-style-type: none"> demonstrate an awareness of the safe and hygienic use of all materials and tools used in class follow directions safely for specific purposes; describe and observe safety rules at home and at school 	<ul style="list-style-type: none"> discuss actions that can be taken when they feel unsafe or uncomfortable talk about safe and unsafe situations as they arise and discuss ways to be safe; explain safety rules to others

Sample learning opportunities

- Perform simple cutting tasks using scissors and different materials – comment on the differences and similarities
- Investigate a number of ways in which materials can be joined
- Investigate simple systems (e.g. paper clip and peg) and talk about which one has the most applications

- Create a collage using exclusively organic or synthetic materials and discuss which adhesives are the most effective
- Make a simple weaving using wool, string and cardboard
- Make bracelets and necklaces using beads, buttons and string
- Make a pirate ship from boxes, sticks and sheets of paper
- Make a lavender wand from lavender stems and ribbon
- Create a puppet from natural materials
- Make sun tea from herbs and flowers (e.g. basil, lavender, mint, oregano, sage and thyme)
- Join off-cuts of wood together to make a small sculpture of people, machines, animals or environments
- Make jewellery from found or collected objects e.g. buttons, beads, nuts, beans, popcorn, lentils, split peas
- Make a simple hinged object using leather or fabric strips
- Make a seed mosaic
- Make a wood mosaic from small pieces of wood
- Make toast and use a simple storyboard to draw the steps that were used
- Make a sign with a name on it for a bedroom door
- Use household materials (e.g. blankets, cartons and furniture) to construct a fort or cubby house
- Visit a dairy to see how milk originates, create a drawing of the farm operation
- Make a healthy lunch
- Make a healthy smoothie
- Sew safely with a big needle
- Promote healthy eating strategies by sharing fruit and encouraging water as a first preference beverage during the school day

Teaching emphases for standard one

Teaching *Systems and Processes* at standard one may include approaches such as:

- Allowing students to use and explore materials and resources such as icy pole sticks, plastic straws, aluminium foil, old gift wrapping paper, cardboard cartons, egg cartons, pipe cleaners, clear plastic piping, foam, milk cartons, beans, popcorn, lentils and split peas
- Student generated descriptions about the quality of materials and how to connect materials
- The development of fine motor skills through the use of simple tools and materials e.g. scissors, glue, paper and paint
- Repetition of age appropriate skills, sequences and routines
- An explicit focus around listening to and following instructions
- The reinforcement of age appropriate hygiene and safety rules and guidelines
- Modelling the correct use of equipment
- Skill based learning around safe use of tools and equipment
- Discussion about resourceful use of materials
- The introduction of cooperative tasks
- Structured and unstructured play.

Standard one

Strand 3: Applications and Solutions

Performance criteria

At each stage it is expected that students at standard **one** will:

	Stage one	Stage two	Stage three
Identify and propose solutions	<ul style="list-style-type: none"> identify and define an everyday 'problem' related to them, using simple terms respond to simple puzzles, challenges and problems and suggest possible solutions 	<ul style="list-style-type: none"> describe different ways to solve a personally significant problem propose and test a preferred solution to an identified problem 	<ul style="list-style-type: none"> evaluate an everyday problem, describing difficulties and challenges combine a variety of materials to create a simple solution to a project and describe why they have chosen their preferred solution
Plan a project outline	<ul style="list-style-type: none"> describe the kinds of activities they will be doing in response to a task with direction complete tasks to the best of their ability and understanding understand the concept of taking turns 	<ul style="list-style-type: none"> describe how a project or task might be completed follow instructions to complete set tasks with direction share responsibilities with others in small group work 	<ul style="list-style-type: none"> begin to understand that projects have a start, a middle and an end work from a given idea to undertake a project or task understand that people in groups often undertake different roles
Locate and manage resources	<ul style="list-style-type: none"> talk about the things they will use in order to complete a set task or challenge engage in cooperative play use language and actions to explain ideas for projects or activities 	<ul style="list-style-type: none"> begin to use materials and equipment resourcefully share materials and equipment with others transfer their ideas through graphic representation and simple texts 	<ul style="list-style-type: none"> remember where things are kept and take responsibility for the equipment and resources they use with support work cooperatively in pairs and groups on set tasks locate familiar texts and use these as suitable references
Present and describe project outcomes	<ul style="list-style-type: none"> communicate information about things they have achieved describe what they enjoyed about participating in set tasks or activities 	<ul style="list-style-type: none"> talk about the things they are doing, the things they need to do and things they have done describe what they have achieved or learned 	<ul style="list-style-type: none"> articulate how they think things work or how they should be done explain their achievements and understandings using descriptive language

Sample learning opportunities

- Discuss ways to stop drink bottles leaking
- Find a new way to keep shoes on without using laces
- Examine types of fasteners e.g. pegs, Velcro and zips and find or develop a new fastener
- Find the best place for a plant to grow in the classroom
- Make connections between particular foods and their health benefits
- Plan a town that will house, educate and feed the class
- Create a rain hat that will keep a person's head dry
- Design and make a piece of playground equipment to play on
- Make and decorate a musical instrument that a simple tune can be played on
- Plan a family meal
- Build houses for Three Little Pigs
- Make a boat that will float
- Build a tower using 10 blocks
- Find the best equipment (e.g. straws, plastic pipe or wire) to blow the biggest bubble
- Develop a new product for the canteen menu
- Suggest alternatives for classroom décor
- Find out how food is transported to the school canteen
- Find out what the best/least selling items are in the school canteen
- Plan a game, perform a song or a rhyme that has its origins in another culture

Teaching emphases for standard one

Teaching *Applications and Solutions* at standard one may include approaches such as:

- Introducing students to games, puzzles, challenges and problems
- Using group discussion to get shared perspectives on a problem or challenge
- Using Lego sets, wooden blocks and construction kits to build structures
- Encouraging students to trial ideas and describe the results
- Simple inquiry tasks based on questioning and reflection
- Making connections to students' understanding of their community and world at large
- Opportunities for students to negotiate and personalise their learning
- The use of divergent thinking strategies that encourage prediction, speculation and imagination e.g. 'What if...' questions
- Cooperative play, task sharing and group activities.

Standard one

Strand 4: Futures Planning

Performance criteria

At each stage it is expected that students at standard **one** will:

	Stage one	Stage two	Stage three
Reflect upon personal strengths and interests	<ul style="list-style-type: none"> describe their actions and achievements in very simple terms talk about things they enjoy doing 	<ul style="list-style-type: none"> remark positively when they think they have done something well describe situations where they are responsible for themselves 	<ul style="list-style-type: none"> state what they are good at or enjoy doing with support reflect upon their achievements by selecting and evaluating their own work for display
Set personal goals	<ul style="list-style-type: none"> describe what they would like to do talk about things they look forward to name things they need to do to complete a task or activity 	<ul style="list-style-type: none"> use imagination, fantasy and role play to project themselves into different tasks and roles make short term plans show commitment to the completion of tasks 	<ul style="list-style-type: none"> know that they can make choices about what they can do and with support develop aspirations around these choices demonstrate an interest in particular jobs or roles understand the concept of 'in the future'
Develop participation skills	<ul style="list-style-type: none"> name attributes they like about themselves identify that people often work together; participate in group activities, games, songs... 	<ul style="list-style-type: none"> describe the skills they see people using to help themselves and others participate readily in individual activities and begin to contribute to group tasks 	<ul style="list-style-type: none"> see the worth for self and others of participating in tasks and activities carry out previously learnt tasks without direction and identify situations where people need to be responsible for themselves
Learn about life and work	<ul style="list-style-type: none"> identify the different roles that people have or jobs people do demonstrate an awareness of their immediate community: family, friends, school and neighbourhood 	<ul style="list-style-type: none"> demonstrate their understanding of different jobs and roles through play, activity, mime, movement, sound and talk show an interest in finding out about people in their community and the roles they undertake 	<ul style="list-style-type: none"> observe other people at work and mimic some of their behaviours; model some of their own actions on what they have seen others do explain the connections between people in their community and describe the importance of what they do

Sample learning opportunities

- Invite parents, grandparents or local community members to talk about their paid or unpaid jobs
- Visit community facilities (e.g. fire station, hospital, police station, bakery) to find out what happens there as part of the daily routine
- Set up the home corner as a hospital, doctor's office or shop for role play
- Discuss and draw what it is that they think their parents or carers do for work
- Make personal statements about possible career pathways e.g. "I want to be a fire fighter because they save people."
- Talk about preferred foods
- Respond to simple questions about feeling healthy or well
- Role play with costumes various vocations
- Make a 'me book'
- Create a mind map of their world
- Create a drawing of the jobs they do around the house
- Make a drawing of what they want to do when they are older
- Visit a local fruit and vegetable shop and reinforce understandings about healthy eating and where produce comes from
- Visit the airport, investigate planes, fire engines, arrivals and departures and draw or make a list of people who work there
- Identify local experts in the school (e.g. the canteen manager, the school nurse, the grounds person, the school executive officer) and find out about their work and how this makes a healthy community for everyone

Teaching emphases for standard one

Teaching *Futures Planning* at standard one may include approaches such as:

- Engagement in a number of activities that emphasise different roles
- Using big books to look at diverse roles and characters in stories
- Exploring a range of paid and unpaid 'jobs' through structured and unstructured play
- Listening and speaking opportunities
- A focus on self, family, school and community
- A focus on building productive relationships with a range of people
- Maximising opportunities that assist students in developing a positive self concept
- Explicit modelling of appropriate relationships, communication and behaviours
- Identifying things that they enjoy doing or are good at
- Identify different tasks of people e.g. roles, jobs, producers, sellers, consumers, creators, artists and food stylists.

Skills and Dispositions Audit - Standard one

Conceptual Skills

Research and analysis	Responds to their world using very immediate language and images	
Creativity and design	Works intuitively to create highly original responses to set tasks	
Problem solving	Suggests many possible solutions to a problem or challenge	
Decision making	Makes simple choices based upon personal preferences	
Appraisal and evaluation	Identifies personal likes and dislikes	

Production Skills

Translating plans, documents, instructions and diagrams	Works within the teacher's instructions, following the rules and procedures given	
Preparation and layout	Uses materials supplied by the teacher and works intuitively through a project from start to finish	
Working with accuracy	Learns to control materials and equipment to achieve a desired effect	
Using technology	Explores and uses simple technologies: tools, equipment and materials	
Finishing and presentation	Works until the project or task satisfies their initial expectations	

Project Skills

Initiative and enterprise	Demonstrates enthusiasm for class challenges and works towards completing set tasks	
Communication	Communicates with others describing their ideas, needs and wants	
Teamwork	Works in teams with guidance, structure and support	
Planning and organising	Completes simple tasks that require a minimum number of steps	
Time management	Responds positively to time based requests e.g. "work quickly", "slow down", "pack up" or "get ready"	

Work Skills

Persistence	Works within the tasks that are set by others	
Task completion	Understands basic task requirements and works towards achieving them	
Safe and hygienic practice	Follows directions for working safely and hygienically	
Self management	Willingly participates in tasks and activities, accepting support and guidance from others	
Making sustainable choices	Uses materials carefully, helping to avoid wastage	

Vocational and Applied Learning Standard two

Standard two

Students demonstrate an *emerging* awareness of how products are made. They are beginning to discern differences between materials, systems and processes and can articulate their understandings using some basic terminology. Teachers guide the learning process by providing students with structured tasks that allow students to have some control over design decisions and the selection of materials.

Innovation and Design

Students understand that their ideas can be shaped and adapted to suit a particular design brief or challenge. Through a process of planning, modifying and refining, students learn more purposeful approaches to design and production tasks. Students use models, labels, sketches, verbal responses and drawings to describe their ideas to others. They can describe the qualities and values of various design elements and begin to use these in a deliberate way. Students understand that there may be more than one valid response to a particular design challenge and develop strategies for selecting and justifying a preferred solution.

Systems and Processes

Students identify and select materials appropriate to the task they are undertaking. They describe the different properties of materials and learn to successfully combine different products and ingredients. Students use basic tools and equipment to separate, assemble and combine everyday materials, ingredients and system components. Students identify the parts of simple systems and investigate how they work together. They design and build products that have a few steps in sequence. They understand the need to work safely and with a degree of accuracy and reflect purposefully when they have created a product that meets their initial expectations.

Applications and Solutions

Students use a range of strategies to generate possible solutions. They identify projects as being a series of steps and learn to develop basic project outlines. Students can describe the materials and resources that are needed in order to complete their project. They begin to work in small groups on collaborative tasks, sharing roles and responsibilities. Students recognise the need for structure in their work and carry out tasks independently when required. They present their project outcomes in a variety of ways.

Futures Planning

Students reflect upon a growing sense of who they are and can describe some of their significant accomplishments either at school or at home. They develop learning interests based upon their identified strengths, preferences and abilities. They set simple goals and can identify areas that may require improvement. Students speculate about what roles they might pursue as adults and connect aspects of their learning with what people do in 'real life'. They start to develop work habits and routines and learn the rules and procedures of working within a group, understanding that there are different roles within teams. Students have an emerging sense of community and can describe key roles that people undertake within their communities.

Standard two

Strand I: Innovation and Design

Performance criteria

At each stage it is expected that students at standard **two** will:

	Stage four	Stage five	Stage six
Respond to design challenges	<ul style="list-style-type: none"> use their understanding of familiar designed products to create their own personal design gather knowledge, ideas and data from familiar environments to meet design challenges 	<ul style="list-style-type: none"> respond to a design challenge in an original way and talk about the strengths and limitations of their designs investigate alternative design options and make a decision based upon the choices available 	<ul style="list-style-type: none"> refine their design based on identified strengths and limitations begin to understand that there are many valid solutions to any given design problem or challenge
Understand and apply design principles	<ul style="list-style-type: none"> describe in their own words the key values of simple design elements e.g. colour, shape, scale, texture, proportion, movement, strength, structure and space understand the characteristics of the materials and technologies being used 	<ul style="list-style-type: none"> recognise and describe the difference between simple design elements e.g. colour, shape, scale, texture, proportion, movement, strength, structure and space select materials based on simple design considerations e.g. appearance, strength and functionality 	<ul style="list-style-type: none"> describe the impact, purpose and meaning of their design choices in simple terms e.g. the colour blue makes things seem cool explain why they have chosen particular materials and design elements in their work
Research, plan, trial and modify	<ul style="list-style-type: none"> pose questions and make predictions and observations before and during investigations label drawings and diagrams appropriately create a design response that reflects their ideas and basic understanding of materials 	<ul style="list-style-type: none"> devise simple tasks and experiments to test design ideas present one preferred solution to a problem or challenge use failed solutions to inform future designs 	<ul style="list-style-type: none"> reconsider their design ideas and make modifications based upon observations review, reflect upon and adapt their plans recognise that design solutions may meet a range of different needs
Evaluate and reflect upon own work	<ul style="list-style-type: none"> describe the design or problem solving process they have used e.g. selection of materials, decisions made and how their design or solution works recognise that a diary is for personal thoughts and that a journal is used to support a creative process 	<ul style="list-style-type: none"> describe how they resolved a problem and the difficulties they encountered discern between a diary and a journal and use either appropriately 	<ul style="list-style-type: none"> evaluate the extent to which their project outcomes met initial expectations use a journal to support the development of an idea, jotting down ideas and references for further reflection

Sample learning opportunities

- Research, design and make a prototype for a school flag
- Design and create a piece of functional luggage that tells a story about the owner
- Design a heraldic shield based around a personal or family monogram
- Create a comfortable cushion or headrest for a specific occasion
- Design a fashionable hat for the Melbourne Cup or another event
- Create a plan for a luxury home for a small domestic animal e.g. dog/cat/pigeon/rat/ferret
- Fabricate a pair of fantasy spectacles
- Create a diorama about the past, present or future
- Design and make a calendar from found objects
- Construct wind chimes using found objects e.g. tin, wood and shells
- Make a bread basket from recycled wire products
- Decorate a bird bath using glass mosaics
- Draw a map with key, scale and directions
- Design, make and decorate biscuits using icing, marshmallow, lollies...
- Create a class mandala from natural materials that describes the world in which they live
- Create a fictional pop-up book using cardboard slots and hinges
- Prepare a tasty and healthy lunch or snack
- Design a pull along toy
- Design a pair of slippers that Cinderella could wear
- Explore storage containers in different cultures – how and what is made to carry food items?
- Explore celebrations in other cultures e.g. who celebrates, ‘what’ is celebrated and how is this carried out throughout the world?
- Research inventions and new products that have changed children’s lives, play and expectations
- Visit the Queen Victoria Museum and Art Gallery and view the *Sporting Life in Tasmania* exhibition. View how uniforms, equipment, trophies, banners and shields are made and design and make similar items for an imaginary sports team

Teaching emphases for standard two

Teaching *Innovation and Design* at standard two may include approaches such as:

- Opportunities for structured and unstructured play using a range of construction toys
- Using visual plans to give interpretation of space, scale, dimension and layout
- Discussing basic requirements and expectations of a design project
- Encouraging students to understand that there is usually more than one answer or solution to a design challenge
- Looking at the work of famous designers
- Organising excursions and gallery visits
- Introducing guest speakers such as architects, chefs, clothes designers, inventors and engineers
- Developing technical vocabulary to label materials and equipment
- Making word lists that describe techniques and processes being used e.g. joining, combining, folding, stitching, connecting, mixing, blending, chopping or juicing
- Encouraging perception and observation through drawing
- Making explicit simple design elements and principles e.g. colour, line, shape, movement and scale
- Making connections between plans and projects
- Exploring and using a range of materials.

Standard two

Strand 2: Systems and Processes

Performance criteria

At each stage it is expected that students at standard **two** will:

	Stage four	Stage five	Stage six
Appraise the work of others	<ul style="list-style-type: none"> describe and discuss the design and construction of a familiar product or environment talk about the role of technology in education, the family and community 	<ul style="list-style-type: none"> describe the effectiveness of a designed product make suggestions as to how products and designs could be improved 	<ul style="list-style-type: none"> discuss why specific products have been designed the way they have identify positive and negative impacts of technology
Explore materials, systems and technologies	<ul style="list-style-type: none"> investigate systems for fastening, joining, shaping and combining materials follow instructions carefully to complete a set process 	<ul style="list-style-type: none"> explore simple systems and gain an understanding of what a system is practise and repeat familiar processes 	<ul style="list-style-type: none"> identify similarities and differences between familiar systems use known processes to complete new products
Acquire skills and techniques	<ul style="list-style-type: none"> become familiar with the correct use of simple tools and processes use a sequence of basic skills to plan and make a product related to a specific task take care in completing their task or product to a satisfactory standard 	<ul style="list-style-type: none"> remember how to use tools and processes the next time they use them identify the skills required to support the accurate completion of tasks or projects monitor and make changes to the skills and techniques they are using 	<ul style="list-style-type: none"> describe the basic working functions of tools and processes they are using use measurement tools to support the accurate completion of tasks use appropriate skills and techniques to plan and create a solution to a specific need
Work safely	<ul style="list-style-type: none"> understand how a particular rule encourages and promotes safe and hygienic practices demonstrate safe operation of tools and equipment; describe ways to provide a safe environment and control hazards 	<ul style="list-style-type: none"> understand the purpose of rules for safety and hygiene practise working with others to promote safety; remember and observe rules for the safe handling of tools and equipment 	<ul style="list-style-type: none"> describe actions to promote personal safety and hygiene apply routines to promote safety for self and others; employ safety principles when completing tasks

Sample learning opportunities

- Compare like materials (e.g. paper, sticky tapes, and glues) and describe their qualities e.g. absorption, strength, weight and viscosity
- Develop correct terminology for tools and processes e.g. pliers, hammer, hot glue gun, folding, coiling and crimping

- Use simple materials such as split pins, card, string and skewers to construct a tool or device that will move, hold weight or is self supporting
- Describe or discuss the appropriate use, transport and storage of hazardous materials e.g. scissors, glue, edicol dye, fabric paints and dyes
- Create a woven sphere from reeds, cane and branches and use this same system to make toy animals
- Sculpt a papier mache fruit bowl to gain an understanding of how glue and paper can be combined
- Make and decorate a serving tray using 3mm plywood as a base
- Create a novelty money box from recycled plastic containers
- Construct a picture frame from natural materials
- Design and make soap
- Visit the supermarket to investigate how foods are safely stored for sale
- Construct a book using folding and binding techniques
- Make and play a percussion, wind or stringed instrument from recycled materials
- Make and play a personally designed ocarina
- Use organic materials to create natural dyes
- Make a simple clay vessel with external glazing
- Make a soapstone carving
- Create a 'fish weaving' from cane, string and wool
- Make puppets and masks using conventional techniques
- Identify what unusual looking objects may be used for (e.g. an egg slicer, curler, an old iron) and imagine alternative uses
- Visit a museum and view an earlier version of a contemporary object (e.g. a wheelbarrow) then compare, contrast and design a futuristic model of the same object
- Taste and describe cuisine from different cultures or ethnic groups, research special festivals and events from different cultures

Teaching emphases for standard two

Teaching *Systems and Processes* at standard two may include approaches such as:

- The use of materials such as toilet roll tubes, cellophane paper, feathers, cotton balls, wool, milk cartons, foam, supermarket bags, garbage bags, straws, corrugated cardboard, cardboard cylinders, tissue paper, string, paper clips, dowel, cotton material, rubber bands and balloons
- Providing objects, machines and products for students to touch, explore, draw and appraise
- Providing books for students to use for research e.g. 'How things are Made', 'Cross Sections' and 'Visual Encyclopaedia'
- Demonstration and modelling of conventional techniques and processes e.g. using a screwdriver, using a wooden spoon or threading a needle
- Taking turns using equipment and resources
- Refining skills, sequences and routines through repetition and reflection
- Excursions to sites including bakeries, restaurants, factories and workshops
- Visits from guest speakers such as carpenters, builders, welders, gardeners, dressmakers, theatre and costume designers
- Re-iterating safe work practices, the correct use of equipment and awareness of others using the workspace.

Standard two

Strand 3: Applications and Solutions

Performance criteria

At each stage it is expected that students at standard **two** will:

	Stage four	Stage five	Stage six
Identify and propose solutions	<ul style="list-style-type: none"> pose questions – 'getting clear' questions, 'finding out more' questions and 'puzzle-finding' questions gather, record and organise simple data based on their observations 	<ul style="list-style-type: none"> identify a problem and use a problem-solving method to develop a solution use guided lateral thinking strategies (e.g. brainstorm, mind maps, P.M.I., M.A.S.) to develop project solutions 	<ul style="list-style-type: none"> propose and justify solutions to a problem or project challenge choose appropriate materials, techniques and processes to solve problems
Plan a project outline	<ul style="list-style-type: none"> follow rules and procedures to guide their participation in class projects predict what has to be done to complete a set task or challenge understand their role as a member of a group 	<ul style="list-style-type: none"> make learning connections between set tasks and challenges know when a task or challenge has reached completion organise a group to solve a teacher-given problem 	<ul style="list-style-type: none"> prepare a personal response to a set task or challenge describe the steps taken in completing their project or challenge support others to make valid contributions to the task or challenge being undertaken
Locate and manage resources	<ul style="list-style-type: none"> classify and compare goods and services understand that money is used to exchange goods and services use information to research the appearance of things and the way they function 	<ul style="list-style-type: none"> compare the value of similar items creatively explore opportunities to earn money or other rewards recall information to support their description of an idea or concept 	<ul style="list-style-type: none"> identify which products, goods or services will meet their project needs identify simple ways in which their decisions may impact on themselves, others, community and the environment present information from other sources to enhance project outcomes
Present and describe project outcomes	<ul style="list-style-type: none"> use classroom discussions, questions and answer, reports, role play and story to share their knowledge, skills and understandings create simple plans, diagrams, labels, models and illustrations to support their explanations 	<ul style="list-style-type: none"> describe the steps taken to complete a task or project and explain what they have learned describe project outcomes using simple digital presentation technology 	<ul style="list-style-type: none"> share their completed work with others using a range of presentation forms use digital cameras, scanners and simple templates to enhance the description of project outcomes

Sample learning opportunities

- Re-design the world to accommodate three-legged or one-legged humans
- Invent a slow release feeder for native or domestic birds
- Consider what would happen if it never rained again. How would humans adapt?
- Research how a bucket of water could be used in a desert climate
- Create a solution for protecting an outdoor vegetable garden from local wildlife
- Design a system to humanely capture and re-locate possums
- Identify a problem in the school (e.g. leaves blowing in or muddy shoes) and devise a solution using a graphic organiser
- Find the most effective way to safely remove stains from hands/clothes/objects considering factors including availability, affordability and practicality
- Find a way of recycling pre-loved goods
- Create taste plates to give people the experience of tasting different foods
- Design and make models of animal enclosures that reflect their habitat needs and satisfy the needs of the zoo visitors
- Design a way to reduce the amount of rubbish being dropped in the school playground
- Propose ways to reduce water consumption at the school and/or home
- Discuss, design and make a machine with a friend using different materials
- Create a simple ramp and move things of varying size and mass down it e.g. cars, balls, hoops and marbles
- Make simple rubber band cars and experiment with twisting to test strength and velocity
- Make balloon rockets, examining how weight affects distance
- Test how different materials are affected by water, oil, sun, hot, cold, wear and tear
- Test materials that float and sink then design a boat to carry cargo
- Research the strength and weaknesses of eggs and discuss how to package and protect an egg
- Cook an egg and create a diagram to explain how it was done, listing the steps
- Develop a vehicle for transporting four textas across the desk
- Invent a non-spill carrier/container for a hot or cold drink
- Create the tallest possible tower out of thirty straws
- Create a model house from edible food
- Contribute to a class Big Book using well-rehearsed language patterns from another culture
- Design an effective and efficient workspace for practical activities e.g. printmaking, gluing and cutting

Teaching emphases for standard two

Teaching *Applications and Solutions* at standard two may include approaches such as:

- Modelling a problem solving process for students
- Using thinking strategies such as brainstorming, PMI, mind mapping, Y Charts and visualisation
- Having students speculate, form hypotheses and test their ideas and solutions
- Acknowledging that people have different perspectives and will solve problems in a variety of ways
- Opportunities for students to negotiate and personalise their learning
- Working on a class based issue or challenge by dividing a project into small teams
- Using the immediate environment to identify problems or challenges
- Setting open ended problem solving challenges and providing appropriate learning support, materials and resources
- Introducing 'Young Inventors' challenges for students
- Selecting teams that balance the strengths, abilities and leadership qualities of individuals
- Creating simple action plans with schedules, tasks and responsibilities clearly outlined
- Having older students act as peer leaders or mentors for student projects
- Using parent or community help to assist students in their tasks or challenges.

Standard two

Strand 4: Futures Planning

Performance criteria

At each stage it is expected that students at standard **two** will:

	Stage four	Stage five	Stage six
Reflect upon personal strengths and interests	<ul style="list-style-type: none"> respond to feedback from others about their skills and abilities set aside work they feel proud of for display or for a scrapbook 	<ul style="list-style-type: none"> make simple connections between personal strengths and potential career options collect mementos of personal achievements e.g. certificates, ribbons, awards and photos 	<ul style="list-style-type: none"> develop clear learning interests based upon their strengths, preferences and abilities recognise and collect evidence of skills, attributes and successes
Set personal goals	<ul style="list-style-type: none"> set broad personal goals based upon notions of family, work, housing and recreation understand the difference between wants and needs talk about a particular career they would like to have when they are older 	<ul style="list-style-type: none"> discuss different careers and what it means to be a ... understand that money can be saved to meet wants and needs connect what they learn to what people need in their careers 	<ul style="list-style-type: none"> demonstrate an interest in a particular career option understand that money comes from a variety of sources and is limited understand that different careers require different skills
Develop participation skills	<ul style="list-style-type: none"> participate successfully in group activities apply good work habits for the classroom; identify skills and behaviours necessary to get along with others e.g. respect, helping, sharing and caring 	<ul style="list-style-type: none"> follow group rules and accept leadership from others name personal and social skills required in planning an activity or task 	<ul style="list-style-type: none"> know that people follow 'rules' and that rules are what helps to make positive communities practise the personal skills required in planning and implementing a task or activity
Learn about life and work	<ul style="list-style-type: none"> identify a variety of jobs and volunteer situations within the community identify the similarities and differences between their own community and those that other people live in 	<ul style="list-style-type: none"> describe the differences between the jobs/roles that people have understand that they belong to a number of communities e.g. family, school, sporting teams, neighbourhood and interest groups 	<ul style="list-style-type: none"> identify some skills that may be needed for different careers become familiar with the rules of different communities and describe what makes good communities work

Sample learning opportunities

- Brainstorm all the jobs that they know of and categorise these in different ways
- Invite a parent or carer to school to talk about their job – prepare questions to ask and interview the parent
- Describe the different jobs or roles that people do through different forms of presentation e.g. show and tell or a free dress theme
- Describe their personal goals, write them down and seal them in an envelope for viewing later
- Identify a list of skills students have developed and share this with others
- Survey peers for career pathways or aspirations and represent the results in various ways
- Research the roles/job descriptions of various careers using newspaper advertisements and the internet
- Brainstorm and create a list of class rules
- Compare the roles and duties of people in different jobs using a visual organiser e.g. PMI or Venn diagram
- Imagine a future job that does not exist yet and write a job description for this position
- Find a way to demonstrate that healthy eating involves a combination of different foods
- Identify those people who support them in their community and create a drawing showing how people work together
- Discuss and list all the ways in which people and materials are transported
- Start a personal scrapbook
- Visit a factory and describe or draw the jobs that people do
- Visit a restaurant and create a mind map of how people work together

Teaching emphases for standard two

Teaching *Futures Planning* at standard two may include approaches such as:

- Inviting guest speakers in from the community to talk to students about the work they do
- Visiting places of work e.g. building sites, the airport, a bakery, council chambers or bank
- Using visual organisers to map the immediate community and analyse relationships between people
- Using drama, movement, mime and role play to share understandings about the jobs that people do
- Using story, fantasy, daydreams and imagination to assist students in forming simple pathway aspirations
- Using illustrated stories to explore a range of roles, communities, relationships and changes over time e.g. *The Window* by Jeannie Baker
- Organising grandparents day with students asking older people about how life has changed or stayed the same
- Encouraging students to draw their understandings about what people, including their parents, do for work.

Skills and Dispositions Audit - Standard two

Conceptual Skills

Research and analysis	Refers to known images, objects, products and texts when creating a response to a design brief or challenge	
Creativity and design	Refines ideas to suit the requirements of the task or challenge, selecting design elements appropriate to their idea(s)	
Problem solving	Asks questions and gathers information to help solve the problems or challenges that have been set	
Decision making	Makes decisions based on the likelihood of an outcome being positive or negative	
Appraisal and evaluation	Provides a personal opinion about whether a product or system works well, or not	

Production Skills

Translating plans, documents, instructions and diagrams	Views simple plans, listens to and follows instructions when completing given tasks	
Preparation and layout	Gathers materials required to complete a task or activity and uses materials resourcefully	
Working with accuracy	Estimates the quantities required to complete their task, project or challenge	
Using technology	Uses tools and equipment to successfully manipulate materials appropriate to their task or concept	
Finishing and presentation	Completes work that has been designed for a specific audience or purpose	

Project Skills

Initiative and enterprise	Initiates ideas, contributes to class discussions and plans simple projects with others	
Communication	Communicates ideas and information clearly to others within work and class groups	
Teamwork	Responds well to team rules when working upon collaborative tasks	
Planning and organising	Plans and organises projects and tasks with support from others	
Time management	Completes tasks and activities within an allotted time	

Work Skills

Persistence	Continues to show effort despite some setbacks	
Task completion	Makes a conscious effort to complete set tasks and projects	
Safe and hygienic practice	Understands how to use tools and equipment safely and hygienically	
Self management	Takes responsibility for the materials and equipment required to undertake tasks	
Making sustainable choices	Demonstrates an awareness of reducing, reusing and recycling in their work practice	

Vocational and Applied Learning Standard three

Standard three

Students are *consolidating* their understanding of how things work and learn through demonstration, direction, design challenges, self-initiated projects and problem-based tasks. Teachers introduce students to theory, the direct modelling of production techniques and processes, planning and appraisal as methods for enhancing skill development and understanding.

Innovation and Design

Students generate design responses that take into account the complexities of an open-ended design brief. They recognise that their designs may have to meet a range of different needs. Their work is typically derivative and they synthesise ideas, images and styles from other designers and products. Students understand the factors that contribute to good design including appearance, strength, appeal, affordability and sustainability. They take time to research ideas and may develop models and prototypes to support their proposals. They clarify ideas when asked and use words, labelled sketches, and models to communicate the details of their designs. They monitor their progress and regularly evaluate their idea or design against the requirements of the initial design brief.

Systems and Processes

Students analyse materials, systems and technologies in increasing detail, learning the properties of each and their application to design and production tasks. They work to basic plans and templates and demonstrate increasing fine motor control. They use tools and equipment with some accuracy to manipulate materials and put system components together. Students make safe and efficient use of resources, and use established techniques and processes to complete tasks. They deconstruct designed products, noting how design elements, materials and technologies have been combined or assembled.

Applications and Solutions

Students work as individuals or in teams to solve problems and to plan and develop small projects or enterprises. They recognise constraints in equipment, materials and time, modifying their plans accordingly. They understand the value of the materials they are working with and develop strategies for estimating quantities. They implement simple planning processes and undertake a variety of roles within a team project. They develop systems for managing and monitoring resources and their project outcomes replicate real world products and processes.

Futures Planning

Students collect and store certificates, data and mementos as a way of recording and reflecting upon achievement. They explore pathways that are suited to their strengths, interests and aspirations. They recognise that certain core participatory skills are common across a range of careers and recognise their capacity for these. They research careers of interest to them and assess the benefits, risks and potential of pathways they have chosen.

Standard three

Strand I: Innovation and Design

Performance criteria

At each stage it is expected that students at standard **three** will:

	Stage seven	Stage eight	Stage nine
Respond to design challenges	<ul style="list-style-type: none"> respond to a design brief that features at least one variable that requires personal choice create a design that reflects their personal tastes 	<ul style="list-style-type: none"> respond to a design brief that requires a personal response to at least two variables create a design that adapts, modifies or customises the work of another designer 	<ul style="list-style-type: none"> respond to an open-ended design brief that features multiple variables create a design that has elements of originality and personalisation
Understand and apply design principles	<ul style="list-style-type: none"> develop design concepts that are both functional and aesthetically pleasing consider how other designers have solved similar problems 	<ul style="list-style-type: none"> understand the factors that influence good design e.g. form, function and affordability draw upon ideas from a range of sources and cultures 	<ul style="list-style-type: none"> evaluate designs for appearance, scale, proportion, strength, functionality, purpose and context create a product that references the work of others
Research, plan, trial and modify	<ul style="list-style-type: none"> generate ideas based on their observation of the techniques and processes that other designers have used seek information, data and images; determine what information is valuable and can be used in their planning successfully combine images and text to explain their idea or solution 	<ul style="list-style-type: none"> trial materials to be used in their designs, record their findings and adapt plans to suit record ideas in a notebook, journal or online, including preliminary drawings sketch a range of solutions and edit these to create a shortlist of preferred ideas 	<ul style="list-style-type: none"> test their ideas and give them ratings for functionality, aesthetics, suitability and sustainability synthesise and refine design solutions to a proposal stage draw a design before making, labelling key components of a system
Evaluate and reflect upon own work	<ul style="list-style-type: none"> reflect upon how their ideas compare to the solutions of other designers recognise that their journal has an audience other than themselves 	<ul style="list-style-type: none"> consider how their design can be made differently understand that their journal serves a purpose within a larger design context 	<ul style="list-style-type: none"> evaluate their idea or design against the requirements of the design brief systematically use a journal to support and document their learning or design project

Sample learning opportunities

- Use a mousetrap to power a vehicle
- Use available software to design their own personal island
- Create a 3D model of personal identity from found objects, toys, blocks and parts
- Disassemble dolls, clocks, machines and re-assemble to create fantasy beings
- Design a water tank that best suits their surroundings

- Design and knit an 'ugly doll'
- Make a shrine from recycled tin cans
- Design and make a personalised picture frame or personalised mirror
- Explore the drawings of inventions and contraptions by Leonardo da Vinci
- Brainstorm technologies based on nature e.g. aviation/birds, helicopters/dragonflies, backhoes/the human arm
- Design a silk screen print for a t-shirt and make a limited edition of five
- Design and print a recurring pattern using a simple stamp made from potatoes or linoleum
- Design a personal logo, create a two colour stencil and reproduce an image in three different media (e.g. silk screen, wood veneer and spray paint)
- Design a set of implements for cooking over a flame for one or two people; design and make a useful item that is needed for a camping trip
- Design and make nature inspired furniture using the shapes, colours, structures and textures found in nature to inspire design forms
- Create a device that an elderly or infirmed person can use to garden from and keep their tools together
- Design and race a CO₂ powered race car
- Invent a garden water feature using simple pump technology
- Design a poster to describe the difference between gross motor and fine motor skills
- Design a toy to teach a baby how to undo a button
- Examine the work of Andy Goldsworthy and make outdoor sculptural installations from natural materials
- Evaluate digitally created media e.g. the best navigation systems for a web site
- Create a digital media solution to a problem in three different formats; evaluate the effectiveness of the three software tools used through public performance by creating an opinionaire
- Design a house for typical Tasmanian weather conditions
- Create an electric guitar using robotic technology
- Curate a show of collectable objects and present this in an exhibition space
- Design and make a front door knocker; invent a piece of playground equipment; create a candle-lit lantern from paper and cane suitable for a parade; fabricate a heat resistant trivet; manufacture a souvenir that describes the local area; devise a system for hanging utensils up in the kitchen; or develop a prototype for a storage device to hold keys, mobile phone and wallet
- Design and make a heat-pack using a sewing machine; create a range of wearable art, including jewellery; design a personalised cushion, beanie, boxer shorts or mittens; or create a puppet using hand-stitching
- Visit the Tasmanian Museum and Art Gallery and view the collection of coins and medals; create their own version of a coin, medal or button using simple casting technology
- Visit the Queen Victoria Museum and Art Gallery and visit the Pacific Encounters exhibition; design and make masks, baskets, necklaces, tools, artefacts and sculptures for a mythical tribe

Teaching emphases for standard three

Teaching *Innovation and Design* at standard three may include approaches such as:

- Focusing on the inquiry process – gathering information, posing questions, trialling and evaluating
- Opportunity for students to develop original designs
- Opportunity for students to negotiate and personalise their learning
- Understanding and discussing the purposes of design
- Explicit teaching of design principles and elements e.g. colour, shape, texture, line, repetition, rhythm, movement, positive and negative space
- Encouraging the development of detailed sketches and plans to describe ideas
- Looking carefully at designed products and the work of significant designers
- Setting open ended design briefs
- Encouraging experimentation, trial and error and learning from failure
- Using adaptation, modification and customisation as legitimate design processes.

Standard three

Strand 2: Systems and Processes

Performance criteria

At each stage it is expected that students at standard **three** will:

	Stage seven	Stage eight	Stage nine
Appraise the work of others	<ul style="list-style-type: none"> consider the similarities and differences in the products, processes and systems used in designed objects trace the historical development of a product or technological process 	<ul style="list-style-type: none"> compare the characteristics of two or more products designed for a similar purpose examine and explain possible solutions to problems or flaws in design 	<ul style="list-style-type: none"> view a system or product; explain the decisions made by the designer and suggest alternative approaches identify and explain how past solutions can be combined to create new innovations
Explore systems, materials and technologies	<ul style="list-style-type: none"> operate familiar systems and describe their functions identify and describe the tools, materials and methods used in manufacturing processes 	<ul style="list-style-type: none"> begin to understand how systems work and the relationship between parts within a system experiment with a range of objects and materials to create a functional design 	<ul style="list-style-type: none"> construct their own simple systems using familiar tools and materials use a combination of tools and systems to effect their designs
Acquire skills and techniques	<ul style="list-style-type: none"> operate tools and equipment using correct techniques construct or create products to achieve specified standards apply known skills and techniques to plan and make a product related to a specific task 	<ul style="list-style-type: none"> listen to, view, and independently apply instructions in practical contexts use a range of skills and techniques to create a solution to a specific need demonstrate a working knowledge of the techniques and processes used to make a product 	<ul style="list-style-type: none"> demonstrate an ability to select, operate, maintain and troubleshoot tools and equipment select and use skills and techniques appropriate to the task requirement, design brief or concept monitor, appraise and refine their technical skills when working on a designed product
Work safely	<ul style="list-style-type: none"> use practices that help provide a safe and hygienic environment for self and others use appropriate equipment and tools safely to carry out a task 	<ul style="list-style-type: none"> use common tools and shared equipment in the classroom safely, carefully and hygienically describe ways to respond to potentially dangerous situations related to work, school and community environments 	<ul style="list-style-type: none"> identify and assess risk when working with materials, tools and equipment determine appropriate behaviours for student conduct at school, at home and in the community

Sample learning opportunities

- Pull apart an old clock, radio, sandshoe or toaster and describe the relationship between components, make a detailed sketch of the insides of things, describing how they work
- Make items for children in hospital for use on site or as gifts; produce toys, puzzles, and furniture for local schools or play groups; construct a noughts and crosses game using basic machinery; make a series of drink coasters using basic veneer techniques

- Use machine stitching and a zip fastener to make a gadget, pouch, pencil case, bag or cushion
- Learn the conventions of following a recipe; follow a commercial pattern to produce a machine sewn item; learn techniques for dry and wet felting
- Create a flowchart or storyboard to describe a system or set of relationships
- Create safety posters for a shared workspace
- Use a variety of materials and techniques to make kites using traditional designs
- Critically appraise an everyday object (e.g. coat hanger, coffee plunger or alarm clock) examining use of materials, manufacturing process, the design process, customisation and affordability
- Make a wood-fired bread or pizza oven and then bake bread in it
- Learn a number of dyeing processes from other cultures and use these to transform fabrics
- Create a herb or market garden
- Analyse the content of food labels
- Invite a friend for a lunch that demonstrates healthy food choices
- Plan and perform an item in another language for a specific audience e.g. parents
- Determine an appropriate set of rules for children at a playgroup enterprise
- Design and make culturally sensitive piñatas for a child's birthday party
- Design and make a novelty cake; make a hat/bag/item using handmade felt
- Clean and maintain tools after use
- Teach a skill to another person e.g. younger, older or same age
- Read and follow a recipe, datasheet or set of instructions
- Assist a child to make decisions about what to put on a healthy pizza
- Visit the Blacksmiths Shop at the Queen Victoria Museum and Art Gallery and examine the processes, tools and equipment that were used in earlier times and compare with today's processes. Who makes these things now? How are these things now made?
- Visit the *Strings Across Time* exhibition at the Queen Victoria Museum and Art Gallery, make a series of beaded jewellery items from natural materials
- Construct small metal tools e.g. a trowel; manufacture a range of dog kennels for all sized dogs; customise letter boxes or construct one from scratch; make surrounds and covers for bins that look like mystical beasts or bugs
- Produce safe lamps and light sources powered by flame; make contraptions that are powered by the wind; make a water craft that is propelled by rubber bands; re-create a machine from another era e.g. a trebuchet
- Develop a set of rules and good practices for using presentation software; create a checklist of dos and don'ts for effective use of presentation media; examine a variety of common media file types, identify where they can be used and which applications use them

Teaching emphases for standard three

Teaching *Systems and Processes* at standard three may include approaches such as:

- Introducing students to resources such as plastic bottles, aluminium cans, egg cartons, plastic bags, foam, straws, string, sticky tape, broken clocks, machine parts, paper, wire, tissue paper, papier mache glue, cardboard, glue guns, photographs, pot pourri, craft knives, icy pole sticks, tin, bark, wooden bases, cotton material, radiata pine or timber offcuts
- Using simple tools and machines such as pliers, hammers, tin snips, tape measures, pyrography kit, bench hooks, tenon saws, mallets, a cordless drill, hacksaw, orbital sander, hand plane, scroll saw, hot melt glue gun, sewing machine, oven, stove or microwave
- Explicit teaching of techniques and processes through demonstration and individual tuition
- Reinforcement of safety rules and expectations and the correct use of equipment
- Attention to skill development and refinement through repetition
- Allowing students to become familiar with tools and equipment through practice and experimentation
- Having simple machines and systems that students can pull apart and explore.

Standard three

Strand 3: Applications and Solutions

Performance criteria

At each stage it is expected that students at standard **three** will:

	Stage seven	Stage eight	Stage nine
Identify and propose solutions	<ul style="list-style-type: none"> question, reflect upon and revise solutions consider retro and re-invention as valid design tools 	<ul style="list-style-type: none"> use processes to include more than one perspective in solving a problem understand the interrelationship between project design and the technology required 	<ul style="list-style-type: none"> synthesise ideas and resources to create one or more possible design solutions consider a range of factors when developing a solution e.g. aesthetics, functionality, suitability, cost and sustainability
Plan a project outline	<ul style="list-style-type: none"> understand and apply a simple planning process plan and undertake a task, challenge or project take turns at making and managing decisions for group projects; help with team planning 	<ul style="list-style-type: none"> understand and apply simple decision making tools make personal decisions in relation to a project challenge work as a team member in projects, employ team strategies and monitor own performance within the task or activity 	<ul style="list-style-type: none"> produce highly individualised project responses realise they have choice over the style, structure, format, content and processes to be used in their project reflect upon how their team works and what strategies they have used in completing their task or challenge
Locate and manage resources	<ul style="list-style-type: none"> justify their selection of goods, services or products, appropriate to their project aims accurately complete simple financial forms access and use information from a number of sources to support project development 	<ul style="list-style-type: none"> estimate quantities and costs and form a preliminary budget for their project prepare simple plans and examine financial records edit information to create a document for planning or presentation 	<ul style="list-style-type: none"> develop simple budgets and financial records to track purchases and outlays use initiative and explore opportunities that can or may contribute to an income triangulate information from a range of sources to form conclusions and strengthen presentations
Present and describe project outcomes	<ul style="list-style-type: none"> employ the basic conventions of their presentation form when sharing their project outcomes employ basic desktop publishing procedures to generate reports 	<ul style="list-style-type: none"> identify the key elements of personal presentation and use these to enhance the quality of their communication delivery combine visual and written texts to create effective digital presentations 	<ul style="list-style-type: none"> demonstrate an awareness of who their audience is and modify their presentation accordingly use technology such as digital video editing software to create short, concise presentations

Sample learning opportunities

- As a class, brainstorm 100 different uses for paper, a toothpick, a paperclip or a match
- Re-design their life around an allocation of 40 litres of water a day for the whole family
- Find a way to reduce paper towel consumption within the school
- Using two sheets of A3 paper and a limited supply of tape, design and make the tallest tower possible that can support a large can of fruit
- Make a spaghetti bridge that spans 300mm in length and can support a substantial weight
- Participate in a global learning program e.g. the *Are You Making A Difference?* project
- View *Bush Mechanics* and discuss improvised solution to problems or challenges
- Invent a 'spin cycle' using bike technology
- Organise a blindfold food tasting to determine texture, taste and appearance of different foods
- Prepare a daily menu for a teenager displaying nutritional needs as outlined in the Australian Dietary Guidelines
- Make a bush instrument using only found materials
- Insulate a piece of ice to reduce its melting time
- Make paper planes using a variety of designs and test for speed, distance, aerodynamics and gliding qualities
- Construct a pair of glasses that create an optical effect
- Construct a periscope using mirrors
- Make a tin can camera and produce a photographic essay from the images that are developed
- Make a working parachute, rocket or glider
- Create a timing device that will time 15 seconds
- Make a pendulum that will swing 10 times in 10 seconds
- Use straws and paper to make a model of a canoe
- Make a mobile with no less than 31 vertical strings and 15 cross bars
- Construct a device for sorting different value coins of different denominations
- Invent a way of heating a cup of water without using fire or electricity
- Create a new type of light modular fencing
- Invent a device for getting messages from one side of the school grounds to the other
- Invent an angle measurer
- Produce a scale model of a historic building they have visited
- Learn about basic plant biology, health, requirements and general care by developing garden beds and growing seedlings in hothouses
- Look after a 'virtual baby' for an evening; create a recipe for a new type of baby food
- Design and create a model of a nursery using recycled materials
- Design a shade house for an agricultural enterprise e.g. aquaculture, horticulture, or poultry
- Develop a software application that highlights a strong personal interest (e.g. graphics applied to motor vehicles) using appropriate referencing
- Create a 'Collectors Cam' DVD about themselves
- Design and construct a personal learning journal using traditional binding techniques

Teaching emphases for standard three

Teaching *Applications and Solutions* at standard three may include approaches such as:

- Involving students in a process of defining and clarifying the problem, defining the 'knowns' and 'unknowns' and working towards a solution
- Using open ended questions, class brainstorms, mind maps and flowcharts
- Facilitating student discovery through modelling, coaching, scaffolding, student led inquiry and research, exploration and reflection
- Considering a range of alternatives, presenting findings and making recommendations
- Developing enterprise strategies e.g. planning, budgeting, communicating, working in teams, evaluating and presenting project outcomes
- Encouraging student led inquiry and research

Standard three

Strand 4: Futures Planning

Performance criteria

At each stage it is expected that students at standard **three** will:

	Stage seven	Stage eight	Stage nine
Reflect upon personal strengths and interests	<ul style="list-style-type: none"> begin to develop a clear sense of what their personal strengths and aptitudes are and what they can contribute to a group undertake a process for collecting evidence and select information about their skills and abilities 	<ul style="list-style-type: none"> describe their personal strengths and identify areas where further improvement is required analyse personal assets to expand a personal profile 	<ul style="list-style-type: none"> connect different aspects of their learning and understand the need to develop strengths in a range of areas identify personal qualities and events that have influenced their self-concept
Set personal goals	<ul style="list-style-type: none"> become interested in particular aspects of their learning and connect this with a potential pathway understand that there are different forms of income develop an awareness of the many employment opportunities available that are suited to their interests 	<ul style="list-style-type: none"> make a connection between the things they are good at or enjoy doing and identified career aspirations understand that buyers have rights and responsibilities understand how different careers require different skills, knowledge and attitudes 	<ul style="list-style-type: none"> understand that family roles and expectations may influence career interests understand that money can be borrowed and that savings can earn interest identify potential career options for themselves and entertain a range of possibilities
Develop participation skills	<ul style="list-style-type: none"> realise that they can control their levels of participation in response to group or individual tasks and make conscious decisions based on this knowledge understand personal responsibilities and follow through on these 	<ul style="list-style-type: none"> know that a career that they are interested in will require specific skills and attributes and work towards refining these understand that a group works well when everyone fulfils their role; identify behaviours that promote or interfere with group work 	<ul style="list-style-type: none"> understand and demonstrate that certain skills can be applied to specific situations identify the crossover skills and attributes that are required for participation in work and life
Learn about life and work	<ul style="list-style-type: none"> understand that people make choices about what they want to be explain the relationship between people, organisations, businesses and departments within their community 	<ul style="list-style-type: none"> understand that within a particular career area or industry there are many jobs and roles understand that people create, use, contribute to and control the community they live in 	<ul style="list-style-type: none"> research careers that are of particular interest to them consider the needs of diverse groups within their community

Sample learning opportunities

- Use a PMI to support a decision making process
- Describe themselves in 25 words or less
- Create a collage that tells other people about their qualities
- Reflect upon the things that are of most value to them
- Identify their top three personal dreams and aspirations
- Identify the choices that people have – as a child, as an adolescent, as an adult and think about the consequences of some of these choices
- Design a board game based on the choices people face in life
- Predict what their future might be like based upon the things they know they can do
- Make a personal five year plan, 10 year plan and 20 year plan
- Research how people learn best. Assess their preferred learning style
- Reflect upon the last thing they have learned – how did they learn it, how do they know they learned it, and how can they transfer this learning to new situations?
- Identify personal strengths and talents and recognise the strengths and talents that others have
- Discuss what ‘success’ means – create a mind map to describe different forms of success e.g. academic, cultural, family, spiritual, social, financial, vocational or physical
- Collect positive quotes about goal setting
- Research the lives of famous people and find out what their first job was
- Make a number of ‘quality’ cards and trade cards with others until they have the 5 qualities that describe them best e.g. lucky, artistic, neat, tolerant and honest
- Create a ‘success gallery’ for themselves and others
- Create a personal challenge and reflect upon the journey towards realising their goals
- Work with a mentor or trusted adult to set some personal goals
- Make a presentation about themselves entitled ‘I am inspired by...’
- Create a ‘wall of fame’ featuring people in the class
- Study Maslow’s hierarchy of needs and analyse their personal needs
- Empathy and visualisation – walk in another person’s shoes and write a personal reflection
- Research the mathematical structure of mandalas and create one of their world, from local to global
- Keep a personal diary or scrapbook
- Create a poster that describes a technology at a point in the past and now; make a prediction about the future
- Create a poster that describes the impact of technology on their lives
- Discuss how careers have changed with the inclusion of the digital age e.g. CAD, Website creation, game development and browsers
- Work with a young child to teach them a new skill
- Examine the child care options for a family with young children

Teaching emphases for standard three

Teaching *Futures Planning* at standard three may include approaches such as:

- Focusing students upon their strengths, achievements and interests
- Encouraging metacognition by discussing preferred learning and thinking styles
- Taking a ‘whole of life’ approach to planning careers and pathways, rather than focusing upon particular jobs or narrow vocational choices
- Talking about the importance of people achieving balance in their lives
- Discussing identity, wellbeing, relationships, family and culture
- Defining and making explicit age appropriate participation skills – teamwork, initiative, enterprise, communication, planning and learning
- Engaging students in goal setting and decision making scenarios
- Using role play and improvisation to enhance student understanding of relationships and status
- Encouraging students to keep reflective diaries and journals

Skills and Dispositions Audit - Standard three

Conceptual Skills

Research and analysis	Researches how things are made and applies these understandings to their own work	
Creativity and design	Creates work that blends ideas and concepts from a range of products and systems they have viewed	
Problem solving	Evaluates a problem in terms of positives and negatives and makes a decision based upon a simple analysis of issues	
Decision making	Explains why they have made a particular decision or choice, considering all available options	
Appraisal and evaluation	Describes the successes or constraints of an idea, product or system	

Production Skills

Translating plans, documents, instructions and diagrams	Follows instructions carefully and uses simple diagrams, recipes or plans to produce work	
Preparation and layout	Identifies, selects and prepares materials appropriate to the requirements of their task or project outline	
Working with accuracy	Applies basic numeracy to accurately measure the quantities required for set tasks e.g. volume, space, surface area, weight...	
Using technology	Competently uses previously unfamiliar equipment, including some powered technology	
Finishing and presentation	Produces work that is well made, functional and addresses an identified need	

Project Skills

Initiative and enterprise	Takes responsibility for their part in the completion of individual or group tasks	
Communication	Communicates effectively with others, receiving, comprehending and relaying information accurately	
Teamwork	Interacts positively with team mates and works towards improving group performance	
Planning and organising	Independently develops simple systems for organisation and planning	
Time management	Understands that tasks and projects have a beginning, middle and an end and plans their time accordingly	

Work Skills

Persistence	Puts problems into perspective and works to overcome difficulties	
Task completion	Completes tasks satisfactorily and reflects upon project difficulties	
Safe and hygienic practice	Independently demonstrates safe and hygienic work habits when working alone or in teams	
Self management	Works independently to complete set tasks, monitors and reflects upon progress	
Making sustainable choices	Understands the effects of waste and toxicity on the environment and takes steps to minimise their personal contribution	

Vocational and Applied Learning Standard four

Standard four

Students are *competent* in their use materials and technologies. They work confidently and with increasing skill, using recognised planning systems and processes to anticipate problems and resolve their design ideas. Teachers scaffold learning tasks to help students create products and projects that are well articulated in both concept and technique.

Innovation and Design

Students develop design ideas that satisfy a range of needs and requirements including aesthetics, functionality, safety and durability. They take into account the contexts in which their designs may be used, including the perspective of those who may utilise their products. They understand that the meaning audiences obtain from design is influenced by its form, style and presentation. They produce plans that clearly describe their intended methods of production.

Systems and Processes

Students work to design specifications using a range of tools, materials, ingredients, components and processes. They make sound and considered decisions regarding the selection of materials and equipment, recognising the benefits and constraints of the methods and processes they are applying. They use an increasingly complex technical language to describe the design and development of their product. They work in a focused way to complete work of quality, practising and refining their skills and techniques. They demonstrate safe work practices, understand risk management and take responsibility for shared workspaces and equipment.

Applications and Solutions

Students recognise systems as having components and use this knowledge to troubleshoot problems and develop alternative solutions with increasing independence. They use analysis and synthesis to generate ideas. They look for links and patterns and adapt prior experiences to new contexts. Students scope potential outcomes and identify the resources required to meet project goals. They implement steps and procedures, monitoring progress and expenditure. Students share and develop project outcomes with others, describing processes and systems and identifying obstacles, challenges and successes.

Futures Planning

Students have a strongly emerging sense of identity which can inform particular career or vocational pathways. They are aware of the personal attributes that make them unique and recognise these qualities in others. Many older students operate in an adult world through part-time work, community participation, family and sporting events. They recognise the participation skills for which they have a particular aptitude and work towards improvement in areas that need developing. They are aware of and use the networks and resources available to them. Students refer to adults and mentors to speculate about their future pathways. They participate in structured simulations which allows them to experience the world of work, further informing their personal decision making process.

Standard four

Strand I: Innovation and Design

Performance criteria

At each stage it is expected that students at standard **four** will:

	Stage ten	Stage eleven	Stage twelve
Respond to design challenges	<ul style="list-style-type: none"> respond to an open ended design brief by identifying needs, generating and selecting ideas, assembling and constructing solutions and evaluating outcomes create a design with consideration given to a particular audience or consumer 	<ul style="list-style-type: none"> understand and demonstrate how new technologies support and inform the development of their ideas create a design that is both functional and aesthetically pleasing 	<ul style="list-style-type: none"> identify, sequence, follow and demonstrate production procedures to develop design solutions create a design that is functional, aesthetically pleasing and communicates a symbol, messages or idea
Understand and apply design principles	<ul style="list-style-type: none"> recognise that good design is a combination of many elements create a product that satisfies a range of basic design criteria 	<ul style="list-style-type: none"> understand about form and function and recognise this principle in their designs work towards achieving a suitable balance between design elements 	<ul style="list-style-type: none"> understand and apply the principles of aesthetics manipulate design elements to produce work that satisfies the requirements of the brief
Research, plan, trial and modify	<ul style="list-style-type: none"> identify research methods, materials and techniques to test design ideas use cameras, scanners, 3D modelling and animation to shape proposals research how technological systems have been used to solve human problems 	<ul style="list-style-type: none"> prepare a series of experiments, tests or trials that critically examine products, processes and systems develop technical plans, explain modifications and respond to feedback from others hypothesise about what design might or might not work, selecting one for further development 	<ul style="list-style-type: none"> use research methods to support their design development select, reject or modify, as appropriate, the elements of design that support the outcomes of a design solution assemble and trial systems they design
Evaluate and reflect upon own work	<ul style="list-style-type: none"> make notes about successful materials, techniques and processes use a blend of text, images, photos, films, audio clips, references and clippings as part of the journaling process 	<ul style="list-style-type: none"> evaluate design trials rejecting unsuccessful attempts and retaining workable solutions select and archive journal materials as appropriate to the project or design brief 	<ul style="list-style-type: none"> gather feedback about their design ideas and implement changes or improvements use their journal as a focus for discussion between self and others e.g. parents, teacher, peers or client

Sample learning opportunities

- Create a CD/DVD holder from at least three different materials
- Design a sculptural bench for the school or local community
- Design and construct 'vandal-proof' indoor/outdoor furniture for the school

- Design a packaging system for festive occasions
- Design and construct toys for a local childcare centre; create a craft activity for a young child at a playgroup; design a pamphlet to advertise a school playgroup
- Design a structure that features an element of perpetual motion
- Research and design a device to launch water rockets using a bike pump
- Design a container for a specified need e.g. a box, a bag or a holder
- Create an 'identity box' that has been customised to describe an aspect of your personality
- Design a system for crushing, storing and recycling aluminium cans
- View the work of Claes Oldenburg and make a series of soft sculptures or create an over-sized version of a familiar object
- Visit a local gallery and critically appraise one designed object; curate an exhibition of designed objects, choosing an exhibition theme, writing a curator's statement and printing a catalogue
- Design a food product that meets the Heart Foundation Guidelines
- Make, present and cost a recipe using only four ingredients
- Visit the Museum of Old and New Art at Moorilla and view the collection of antiquities from Ancient Roman, Egyptian and Pre-Columbian times – create new works based on the images in this exhibition – sacrificial altars, mosaics, caskets and benches
- Design a label for a suitable product including a logo, slogan and other aspects of packaging
- Create a meaningful multimedia advert for a specific audience; create a vox pop or podcast to gauge public opinion on a topical issue; or create and design an edutainment product e.g. flash object or game maker game
- Consider the elements of design that are important when creating digital media
- Investigate the limitations and advantages of a piece of previously unseen software for use within the classroom
- Design a 3D model of a playground to improve a younger child's gross motor skills
- View the Wong collection at the Tasmanian Museum and Art Gallery - design and fabricate a series of related vessels e.g. bowls, plate, cups, pitchers, vases and snuff bottles
- Design and make a new ice-cream flavour; design a presentation based on a celebrity chef; organise a 'cook-off' with friends, each competing to make the tastiest and healthiest omelette, hamburger, pizza, toasted sandwich or dessert
- Create a holiday wardrobe collection using fashion illustration techniques; design and make a simple clothing garment, follow a commercial pattern and alter or combine design elements of their choosing
- Design and make a clock; a modularised wine rack; a toy/sculpture for an executive's desk; an elaborate candelabra; a trailer for a bicycle; a sound sculpture; a piece of kinetic art; a novelty go-cart; or a tea set with a Tasmanian theme

Teaching emphases for standard four

Teaching *Innovation and Design* at standard four may include approaches such as:

- Using strategies such as MAS, BAR and SCAMPER to stimulate creative and lateral thinking (see glossary)
- Encouraging students to create models or prototypes of their designs before proceeding
- Requiring students to create a plan or detailed drawing of their design proposal
- Creating open ended design briefs with some non-negotiable requirements
- Emphasising design criteria to students e.g. aesthetics, functionality, affordability and strength
- Sharing design publications and magazines with students
- Inviting designers in to mentor/work with students
- Reminding students that their design will have a purpose and an audience or end-user

Standard four

Strand 2: Systems and Processes

Performance criteria

At each stage it is expected that students at standard **four** will:

	Stage ten	Stage eleven	Stage twelve
Appraise the work of others	<ul style="list-style-type: none"> identify the constraints and difficulties in designed products and propose alternatives describe technologies based on their positive and negative outcomes 	<ul style="list-style-type: none"> analyse a design solution and identify how it was affected by the technology used in its development evaluate the social and economic impacts of automation and computer controlled processing 	<ul style="list-style-type: none"> form criteria and analyse designed products commenting on strengths and weaknesses evaluate the ethical and environmental aspects of a designed product or environment
Explore systems, materials and technologies	<ul style="list-style-type: none"> choose the appropriate tools, systems, equipment and resources that solve problems and meet the requirements of a design brief use tools such as rulers, thermometers, cameras and computers to measure, observe and record ideas and information 	<ul style="list-style-type: none"> combine materials and test their properties to create new products or processes describe the use of new technology in the production of designed objects and products 	<ul style="list-style-type: none"> use technical language to describe the physical structures and practices used in designed products and systems use and apply new technologies in the production of designed objects and products
Acquire skills and techniques	<ul style="list-style-type: none"> demonstrate concentration and commitment when working with tools and equipment adjust skills and understandings to suit the needs and conditions of the design task use skills in a deliberate and purposeful way to accomplish specific tasks 	<ul style="list-style-type: none"> demonstrate the use of skills, techniques and processes in a safe and accurate way develop and practise complex skills required to create ideas, solutions, processes or products build upon existing skills to develop a range of competent techniques and practices 	<ul style="list-style-type: none"> use equipment to manipulate materials to design specifications practise and develop a repertoire of skills that allow for high quality standards of work practise skills to obtain a high level of proficiency when working with familiar systems or processes
Work safely	<ul style="list-style-type: none"> demonstrate safe and hygienic work habits, routines and dispositions when using equipment and materials understand that personal action can enhance safety and minimise risk 	<ul style="list-style-type: none"> demonstrate safety and hygiene awareness when working in shared spaces demonstrate a range of safe skills to achieve the standards required of a task 	<ul style="list-style-type: none"> understand the importance of regulations for occupational health and safety understand the personal responsibility associated with risk and use learned strategies to minimise harm

Sample learning opportunities

- Renovate or restore a piece of furniture
- Create a template to assist in a production run of identical objects
- Critically analyse a designed product, explaining how it has been made and evaluating some of the design decisions that were made
- Fabricate table top furniture – small furniture that sits on another piece of larger furniture
- Create a small production run of outdoor furniture
- Use a brush cutter engine to power a bike sourced from a tip shop
- Produce lamps and light sources powered by electricity
- Install water features – multi-material units that add to the attraction of sitting outside
- Beautify cabinets and dressers by removing ply panels and replacing them with.....
- Learn advanced food preparation techniques e.g. white sauces, yeast cookery, pastry or stir fries
- Research indigenous bush tucker and prepare dish using these principles
- Design a workplace safe advertising campaign e.g. commercials, posters, jingles, stickers, brochures and signs; research and discuss what makes a workplace safe then devise a '10 Commandments for a Safe Workplace'
- Make a book stand using conventional joining techniques; construct a CD stand using cutting and folding techniques; create a desk tidy from metal components, make a mobile phone stand using plastics technology; create a puzzle for a child using scroll saw techniques; fabricate a business card holder using leather and fasteners; create a mobile storage unit using wheeled technologies; make a Lazy Susan using swivelling technologies; make a fully functioning fish tank; follow a pattern or template to make a musical instrument or sports equipment; create a tray using veneer inlay techniques; or use vacuum formed moulds to create a designed object
- Develop recycling techniques for clothes - from Op Shop to Wardrobe
- Cater for a party; plan the food, invitations, time management and cleaning up; complete a Cookery Order Form, costing each ingredient; or design recipe cards (flip file) suitable for nutritious but economical living and/or moving out of home
- Visit an industrial kitchen to look at food production on a large scale
- Invite a 'foods' guest in e.g. chef, photographer or producer/supplier
- Complete a 'food safe handlers' course
- Investigate feed types for different farm animals, design a feed program and assess the success of this through measuring the daily weight gains of stock
- Visit the Tasmanian Museum and Art Gallery and view the *Islands To Ice* exhibition, and make notes about the technologies used in the Antarctic e.g. sleds, boots, clothing and shelter
- Create a multimedia learning object (e.g. a radio show, pod cast, animation or published poster) to help people understand safe work practices in an industry of their choice
- Explain the difference between vector based and bitmap graphics giving examples of software that use each and where and why they would use them
- Design and create a self published magazine (zine)
- Create a children's book and read it to a group of children; devise a healthy menu for a children's party; construct a mobile suitable for a baby

Teaching emphases for standard four

Teaching *Systems and Processes* at standard four may include approaches such as:

- Demonstrating techniques and processes, supported by theoretical underpinnings
- Having students appraise/deconstruct designed products from everyday life
- Encouraging students to combine, adapt or modify technologies to create new products
- Allowing students to explore the potential of a technique or process and using this to inform new designs
- Intervening when observing a student using a tool or technique incorrectly or inefficiently
- Reinforcing the safe use of materials, equipment and workspace

Standard four

Strand 3: Applications and Solutions

Performance criteria

At each stage it is expected that students at standard **four** will:

	Stage ten	Stage eleven	Stage twelve
Identify and propose solutions	<ul style="list-style-type: none"> break problems into parts and recognise the relationship between elements; identify inconsistencies, anomalies and dilemmas within a problem use one problem solving technique to solve a problem or issue 	<ul style="list-style-type: none"> differentiate between human problems, wants and needs; recognise and justify a problem that is worth solving vary the problem solving techniques used to suit the content of the design brief or challenge 	<ul style="list-style-type: none"> find, frame and reformulate problems; develop several alternative solutions for the same project or problem refine one solution for a real-life problem
Plan a project outline	<ul style="list-style-type: none"> research the project work of others and approximate the processes and techniques they have observed work through a logical and stepped sequence of tasks develop a planning cycle to design a project and allocate different roles within a team environment 	<ul style="list-style-type: none"> develop an action plan with responsibilities and timelines clearly stated analyse management systems for a project or enterprise examine alternative possibilities and analyse their potential impact on other individuals 	<ul style="list-style-type: none"> successfully complete a project that responds to a given brief use a range of strategies to scope out the potential of their project identify potential threats to the success of their project and suggest strategies to resolve them
Locate and manage resources	<ul style="list-style-type: none"> identify resources such as time, money, information, people, materials and equipment accurately estimate quantities and costs interpret information from a range of sources e.g. internet, television, newspapers, library... 	<ul style="list-style-type: none"> demonstrate strategies for effectively managing time and other resources order materials and organise use of equipment use information to support a personal belief or standpoint 	<ul style="list-style-type: none"> complete a project according to planning schedule and describe the efficiencies made successfully acquit projects on time and within budget use information to improve understanding of systems, processes, opportunities, vacancies or courses of action
Present and describe project outcomes	<ul style="list-style-type: none"> evaluate and select appropriate methods of communication to describe a given problem or solution translate work to an appropriate digital format e.g. website, DVD or CD 	<ul style="list-style-type: none"> demonstrate the proper use of the terminology associated with the practice they are describing use a range of technologies to present project outcomes e.g. website, film, audio or desktop publishing 	<ul style="list-style-type: none"> transfer meaning from one context to another, monitoring the response of their audience create technical illustrations for flyers, reports and documents using appropriate software

Sample learning opportunities

- Plan a holiday that has a negligible carbon footprint
- Design and evaluate a pasta meal within a specified budget
- Create a fashion show from totally recycled materials
- Develop a herb or vegetable garden and use the produce in cooking; develop a system for worm farming; develop a school composting program; develop a system for collecting recyclable containers within the school; install a micro irrigation system for a garden to reduce water wastage; plan a water recycling strategy for the local community
- Make sculptural furniture that is functional and decorative
- Mentor primary students in practical cookery or practical sewing projects
- Design and organise a morning tea for grandparents; design and organise an afternoon activity for Kindergarten children; knit a collaborative patchwork rug for an old folk's home
- Research the *Costume Play Gang* from Tokyo's Harajuku District and design and organise a fashion parade based on this style
- Develop a new idea for headwear to protect people from the sun
- Make a series of portable skate ramps from plywood; develop protective wear for skaters; design a fashion range for skaters
- Organise and conduct a playstation ® or other gaming tournament
- Design a fact sheet to inform others of a specific dietary or medical need e.g. diabetic or celiac
- Plan and develop a bilingual book
- Reverse brainstorming – work out how to guarantee a product or project will fail and use this to create a workable solution
- Use a five whys technique to understand how a problem has arisen and might be solved
- Visit the Tasmanian Museum and Art Gallery and view *ningenneh tunapry* the permanent exhibition in the Tasmanian Aboriginal Gallery; discuss how Tasmania's Indigenous people use available materials to create technologies e.g. canoes, shell necklaces, baskets, carrying bags, stone tools and shelters
- Invite an Aboriginal Heritage Officer in to demonstrate Indigenous land management techniques
- Develop stock handling skills in preparation for the local agricultural show
- Design and install a water reticulation system to support an aquaculture enterprise taking into account water systems, water testing and quality, basic trout biology and health care
- Develop an awareness program to support the conservation of Tasmania's endangered species e.g. Tasmanian Devil, Orange Bellied Parrot or Giant Freshwater Crayfish
- Design a portable computer, mobile phone or MP3 player to be released in three years time
- Look after a 'virtual baby' for an extended period of time and use a diary to document the experience
- Analyse the safety feature of a model nursery to determine if it conforms to Australian Standards
- Assist a group of young children to present a role play about how to respond to bullying
- Work in a group to plan a session for a playgroup enterprise

Teaching emphases for standard four

Teaching *Applications and Solutions* at standard four may include approaches such as:

- Using the CRASH model (see glossary) to develop and implement an enterprise idea
- Researching and applying the ICICLE model for creating commercially profitable ideas (see glossary)
- Using the PRISME method (see glossary) to develop and present a project
- Exploring issues of conservation and sustainability
- Using 'real world' contexts as learning outcomes e.g. presenting an exhibition at a gallery, staging a fashion parade, catering for a banquet, publishing an illustrated book, shooting a photographic essay, recording a compact disc
- Using popular culture to initiate ideas for projects and products
- Working with students to develop solutions for local communities.

Standard four

Strand 4: Futures Planning

Performance criteria

At each stage it is expected that students at standard **four** will:

	Stage ten	Stage eleven	Stage twelve
Reflect upon personal strengths and interests	<ul style="list-style-type: none"> identify the connection between personal identity and work and lifestyle choices understand the need to document personal skills and interests 	<ul style="list-style-type: none"> identify personal strengths in a range of contexts: relationships, home, work and study, wellbeing leisure and recreation, skills and attributes, potential careers collect and organise evidence of achievements into a logical order 	<ul style="list-style-type: none"> analyse the relationship between personal characteristics, interests, abilities and skills and the achievement of personal and career goals develop processes for the selection of evidence that identifies personal skills and abilities
Set personal goals	<ul style="list-style-type: none"> understand their capacity to make decisions appropriate to their interests and preferences understand that a range of factors affect spending choices identify the personal, social and financial resources that are available to help them realise their goals 	<ul style="list-style-type: none"> create a personal action plan with actions, timeline and responsibilities clearly listed understand own personal spending habits and the value of setting personal financial goals include family, friends, teachers and others in discussions about their potential for different careers 	<ul style="list-style-type: none"> reflect upon the plans made to this point in time and assess the changes that can be made understand consumer rights and responsibilities and demonstrate informed and assertive buying behaviours explore potential career choices in depth, assessing the positives and negatives of each
Develop participation skills	<ul style="list-style-type: none"> make a concerted effort to develop skills and aptitudes across a range of areas including those which may be challenging to them describe the development of their transferable skills 	<ul style="list-style-type: none"> practise their participation skills in a range of contexts, particularly in relation to positive learning choices understand that they need a base repertoire of skills and aptitudes to be able to participate successfully in work and life 	<ul style="list-style-type: none"> match a growing level of skill and aptitude to the expectations that others have of them within and beyond school e.g. in part-time work, sports team, and family contexts successfully complete tasks and roles that require high level teamwork, problem-solving, planning, management and communication skills
Learn about life and work	<ul style="list-style-type: none"> state interests or preferences for particular career options, either job specific or related more broadly to a general industry area understand that they belong to a complex layer of communities, including local, regional, national and global communities 	<ul style="list-style-type: none"> research a potential career interest and gain an understanding of the expectations and requirements within this industry identify and classify occupations in local, regional and global communities 	<ul style="list-style-type: none"> develop a more detailed understanding of their pathway through a process of identification, observation, investigation, participation and reflection participate in an experience that simulates the world of work e.g. internship, shadowing, mentoring ...

Sample learning opportunities

- Make a list of personal skills and attributes and find examples that demonstrate each of these
- Undertake a detailed investigation of an industry or career that is of a strong interest
- Read the biographies of successful people and reflect upon the factors that help them
- Reflect upon the factors that shape identity e.g. ethnicity, gender, religion, age or sexuality
- Talk to older people about what it was like when they were young
- Research shared and unique characteristics of Generation Y, Generation X and Baby Boomers
- Identify all the different forms of work paid and unpaid e.g. voluntary, part-time, full time, casual
- View job advertisements with the job title blanked out – what types of skills are employers looking for?
- Write a job description for themselves describing their strengths and capabilities
- Make a list of their life accomplishments and the skills these demonstrate
- Make a prediction about what they think they will accomplish in their life
- Prepare a presentation about themselves for an interview panel
- Create a mind map to describe the various people in their personal network
- Make a list of the people who are available to help or support them
- Research the wages and conditions that young people can expect; research unemployment benefits and allowances; make a list of jobs they do not want to do
- Conduct a vox pop in the local community asking people what they think of young people
- View ‘The Worst Jobs In History’ and brainstorm modern equivalents
- Research various quotes about work and discuss the meaning behind each
- Research the impact of technology and innovation on work
- Brainstorm what the world of work might look like in the future in a range of vocations
- Organise and conduct a school or community careers and work expo
- Conduct a SWOT analysis for an apprenticeship, a traineeship, a diploma and a degree
- Research the training organisations and courses available to work in a career of choice
- Research OH&S and discrimination and harassment laws including exemptions
- Talk to a union official, employer, occupational therapist and a worker about how they define a safe workplace
- Talk to women/men about gender in the workplace; examine the way that the roles of men and women have changed in the last 30 years, particularly the way they care for children
- Research changing attitudes, expectations and conditions for men and women in the workplace
- Create a pregnancy diary to describe the changes that take place in a woman’s body during pregnancy
- Interview an ‘employee of the month’ about how they achieved their award
- Create a digital portfolio for assessment
- Explore “new” career paths associated with digital media including changes within traditional industries, e.g. sign writing, newspaper production, screen-printing

Teaching emphases for standard four

Teaching *Futures Planning* at standard four may include approaches such as:

- Reinforcing with students the employability skills and attributes valued by the Australian Chamber of Commerce and Industry (ACCI)
- Reinforcing with students the generic graduate attributes recognised by Australian universities
- Asking students to research the generic skills that diverse workplaces are looking for and/or make a list of jobs that require specialised skills
- Encouraging students to talk to older people about the nature of workplaces
- Engaging students in career investigations about training opportunities, conditions, salary, economic forecasts
- Assisting students to prepare a portfolio, resume, letter of introduction and mock interview
- Focusing upon balancing the competing demands of life and work
- Developing student understanding that learning is lifelong.

Skills and Dispositions audit - Standard four

Conceptual Skills

Research and analysis	Views the works of others to determine how things are made and the materials, components and systems that have been used	
Creativity and design	Produces works that display original thought and satisfies multiple criteria from a design brief	
Problem solving	Considers a number of alternative responses to a problem, identifying causes and possible solutions	
Decision making	Reflects upon personal values and beliefs before making an informed decision	
Appraisal and evaluation	Compares products or systems, identifying variations in components, quality of materials and manufacturing processes	

Production Skills

Translating plans, documents, instructions and diagrams	Understands and applies the conventional layout of plans, diagrams and recipes when completing tasks	
Preparation and layout	Prepares for class, selects and arranges materials ready for work, follows set procedures and works in a logical sequence	
Working with accuracy	Works accurately to complete tasks or projects to a satisfactory or functional standard	
Using technology	Demonstrates a good working knowledge of tools and equipment, including maintenance and safe use	
Finishing and presentation	Completes set tasks or projects efficiently and in accordance with project aims and expectations	

Project Skills

Initiative and enterprise	Works independently towards completing scheduled tasks or assignments	
Communication	Uses a range of communication skills including reading, viewing, speaking, listening, writing, drawing and demonstration	
Teamwork	Understands their role in the team and the way their performance impacts upon the others within the group	
Planning and organising	Uses a cycle of planning by sequencing projects into a series of tasks and responsibilities	
Time management	Manages time effectively and completes tasks and projects within a negotiated time frame	

Work Skills

Persistence	Develops personal and team strategies for overcoming project difficulties	
Task completion	Completes all parts of a project including sub-components	
Safe and hygienic practice	Identifies potential risks and takes steps to avoid harmful situations	
Self management	Makes plans and sets personal goals and works towards the attainment of these	
Making sustainable choices	Clearly understands sustainable practice through waste management, water conservation and by monitoring and conserving energy use	

Vocational and Applied Learning Standard five

Standard five

Students at Standard Five are largely *autonomous* participants in design and production processes. Their work is highly original and reflects a sophisticated understanding of the relationship between design, materials and technologies. Students are capable of operating effectively and independently within a workplace environment and their standard of work qualifies them for entry into a traineeship, apprenticeship or post Year 10 VET course.

Innovation and Design

Students produce sophisticated responses to design briefs. Their work reflects an understanding of aesthetics, functionality, ergonomics, structure and the organisation of materials and processes. Student works are highly personalised and reflect a sense of style, identity and audience. They produce detailed plans that communicate information about systems and processes in an efficient manner. The needs of their audience, including customers and design users, are highly considered. Their work is original and innovative. They use a number of individual or group strategies to generate ideas and approaches. Their works are well documented and presented within professional contexts.

Systems and Processes

Students work towards achieving industry standards and expectations. Their skill level reflects that of a person in transition to a workplace or place of further learning. Products and projects are well made and systems and processes well resolved. Students attain a high standard of production and completion by working with precision and accuracy. They understand procedures and protocols for participating safely within a team environment. They analyse systems and sub-systems and apply recognised, industry standard techniques and production processes.

Applications and Solutions

Students take into account the legal, ethical, environmental, social and cultural implications of projects they are undertaking. They assess the risk of their projects and develop strategies for monitoring progress, seeking feedback and making improvements. They successfully work in teams, using individual and collective strengths to deliver upon project goals. They manage resources skilfully and ethically and are accountable for their actions. They describe clearly their project outcomes and use a variety of presentation forms to communicate these with an audience.

Futures Planning

Students have a strong sense of personal identity and this is often matched with a clear pathway focus. They develop personal presentation skills through oration and the creation of personal documents including a resume, portfolio, letter of introduction and personal details. They become skilled at preparing for interviews and use this experience to assist them in applying for jobs or placements. They know their strengths and attributes, use these in everyday contexts and can speak articulately about them when required. They research the opportunities, resources and courses available to them and make clear plans for themselves that represent a holistic view of 'futures'.

Standard five

Strand I: Innovation and Design

Performance criteria

At each stage it is expected that students at standard **five** will:

	Stage thirteen	Stage fourteen	Stage fifteen
Respond to design challenges	<ul style="list-style-type: none"> respond to a design brief by refining their design response to the most appropriate or effective solution create a design with reference to other designers, design icons or design movements 	<ul style="list-style-type: none"> respond to an open-ended design brief by preparing and documenting a detailed project overview create a design that includes an element of narrative, story or a reference to the built or natural world 	<ul style="list-style-type: none"> develop and test their solution to check that it supports their original design proposal create a design that is highly original, has a meaning and purpose, and produces a positive response from its user
Understand and apply design principles	<ul style="list-style-type: none"> deliberately use principles of design and aesthetics to produce a product that is pleasing to the senses use a set of preferred design elements to create a signature style of work 	<ul style="list-style-type: none"> combine design elements and principles to create a product that is functional, aesthetically pleasing and appropriate to its context experiment with previously untried methods, systems and processes to create new and interesting design responses 	<ul style="list-style-type: none"> use principles of aesthetics and design to create a highly original, harmonious and functional piece of work develop a highly personal response to each new creative challenge, taking into account all possible design options
Research, plan, trial and modify	<ul style="list-style-type: none"> respond to ideas and new evidence that might result in the modification of their design prepare drawings and specifications that identify the characteristics of systems and structures adapt systems where necessary to suit initial project aims (or re-define initial project aims) 	<ul style="list-style-type: none"> respond to planning and engineering requirements generate a computer aided drafting (CAD) design of their proposal resolve project challenges prior to final presentation of outcomes 	<ul style="list-style-type: none"> select appropriate technical processes to fabricate a working prototype produce plans that reflect commercial or industrial standards; apply accepted design principles of text and graphics to the layout of plans, rendered drawings and models. present a completed project that satisfies all initial design criteria
Evaluate and reflect upon own work	<ul style="list-style-type: none"> monitor progress, evaluate project shortcomings and modify proposal aims if necessary create journals for specific audiences e.g. self, teacher, peers, client, potential employer or online correspondents (e.g. web log) 	<ul style="list-style-type: none"> produce a detailed report about their design and the processes undertaken to successfully complete and achieve project aims use a journal to communicate ideas, materials and processes to an audience, consumer or client 	<ul style="list-style-type: none"> evaluate the ethical, environmental, social and moral considerations relevant to their design solutions keep an interactive online journal as a way of storing ideas, monitoring progress, communicating information and gathering feedback

Sample learning opportunities

- Design a range of ergonomic furniture; a range of modular furniture; an ergonomic workstation
- Design a collapsible object using principles such as nesting, folding, creasing, hinging, rolling, sliding, inflation, fanning, concertina, telescoping and articulation
- Record and produce a CD of school bands playing original contemporary music
- Use ICT to design and create a woven, embroidered or mosaic image based upon a photograph
- Design, decorate and trial a snowboard, surfboard, skateboard; design a fashion range that includes shoes/watches/baseball caps/belts
- Invent a prosthetic device for a person with a missing limb
- Talk to a local designer about their preferred materials, influences and sources of inspiration
- Design and install a shopfront display incorporating fashion, set design and graphics
- Design and make a jumper using computer knit software technology; design a garment for your favourite rock star; design and make a handbag incorporating at least three different materials
- Screen print a pattern onto fabric and this use to upholster a chair, make curtains, create a garment
- Design a semi-permanent portable shelter for one of the following environments: desert, Antarctica, tropical rainforest; or design and fabricate an outdoor shelter for homeless people
- Design and make a collapsible tent, a sleeping bag and a pack to put them in
- 'Good design is....' List 10 qualities of good design
- Design a food product (e.g. muesli bar or cereal) including packaging, identity, branding and image
- Design and present a totally organic menu; design and present a menu using only produce from their local region
- "The chair is a very difficult object. Everyone who has ever tried to make one knows that. There are endless possibilities and many problems--the chair has to be light, it has to be strong, it has to be comfortable. It is almost easier to build a skyscraper than a good chair." Discuss this quote from Mies Van der Rohe
- As a team, design and make a chair in a day from found objects; make 10 chairs in 10 days
- Design a sculpture that incorporates electronic technologies with metal, wood or plastics
- Research the work of designers such as Ray and Charles Eames and design a piece of furniture that uses laminating techniques
- Create a conventional piece of furniture and customise it using wood carving techniques
- Use metaphor within a design e.g. a radio or car grille that has a face, an 'insect' bottle opener
- Study the work of designers such as Patrick Hall and design a piece of furniture that tells a story
- Study creative people to find out where they gain inspiration from
- Design a meal for a catering function; run a food stall with foods appropriately labelled; design a nutritious menu item for the canteen and help the canteen produce and sell it
- Use a mobile phone to take a movie of new and innovative house products, edit and produce media appropriate for phone advertising and web pop-up advertising; participate in a mobile phone short film festival
- Design an innovative child care centre; design a rocking device to help a baby go to sleep

Teaching emphases for standard five

Teaching *Innovation and Design* at standard five may include approaches such as:

- Using an abstraction technique to reduce an image to a stylised or symbolic design
- Using synthesis to combine two or more ideas or techniques to create a design
- Using transposition to transfer design ideas from one technology to another e.g. nature into architecture, space technology into car design, animals into household appliances (e.g. Alessi)
- Using juxtaposition to place two unlikely ideas or images together to create a third meaning
- Using irony or humour to create an original design
- Combining forms and processes (e.g. image, text, language, fabric or furniture) to create an original design
- Studying the work of significant designers, artists and craftspeople.

Standard five

Strand 2: Systems and Processes

Performance criteria

At each stage it is expected that students at standard **five** will:

	Stage thirteen	Stage fourteen	Stage fifteen
Appraise the work of others	<ul style="list-style-type: none"> recognise the work of past and contemporary designers across a range of settings – cultural, industrial and historical trace the influence of key designers over time 	<ul style="list-style-type: none"> analyse designed products and rate their levels of success e.g. use of materials, functionality, aesthetics, affordability, need, social impact and environmental implications forecast trends in design and technology and project their potential impacts 	<ul style="list-style-type: none"> provide a critical analysis and develop a report on the suitability and sustainability of products, processes and systems used by others design for future applications
Explore systems, materials and technologies	<ul style="list-style-type: none"> research innovative uses of materials, processes and systems initiate new ideas, solutions and processes for products and materials 	<ul style="list-style-type: none"> challenge traditional uses of materials in the creation of innovative products identify and pinpoint the use of secondary materials and processes in designed products 	<ul style="list-style-type: none"> explain the use of innovative materials, structures, controls, processes, systems and subsystems used in their designed product describe their work as a complex set of inter-related parts and principles
Acquire skills and techniques	<ul style="list-style-type: none"> select appropriate tools when making adjustments to their design transfer specific skills to new contexts select from a repertoire of skills the most appropriate techniques for completing a task 	<ul style="list-style-type: none"> use skills to maintain tools and equipment suited to the design task work to a high standard of quality and finish use skills to achieve a desired effect appropriate to the initial concept or brief 	<ul style="list-style-type: none"> practise and develop high standards of work that approximate entry level industry standards adapt skills to successfully complete previously untried tasks use skills creatively to take risks and explore new ways of working
Work safely	<ul style="list-style-type: none"> develop routines for the care and maintenance of materials, tools, equipment and workplace develop strategies to promote harm reduction and risk management 	<ul style="list-style-type: none"> use equipment and tools safely, demonstrating an understanding of OH&S standards understand how laws, regulations and rules contribute to health and safety practices 	<ul style="list-style-type: none"> practise and implement safety laws and regulations as they relate to a specific industry analyse and evaluate laws and policies that promote personal, community and workplace safety

Sample learning opportunities

- Coordinate a powered technology competition between schools
- Design and construct a human powered vehicle; build a 'quick and dirty' boat for the local wooden boat festival; visit the Queen Victoria Museum and Art Gallery and view the display of

- early aviation history then design and construct a flying device and organise a 'flugtag' event; design and construct a solar powered vehicle using a supplied solar cell
- Develop a project that uses both electrical and wind power technologies to identify high wind danger
 - Develop a project that uses pneumatic technologies, remote control access, remote sensing, rocketry or spatial technologies (e.g. GPS)
 - Design and make a project that uses hydraulic technologies to open a gate
 - Design and make a hovercraft using vacuum technology
 - Sculpture slam – construct a stable sculpture from found objects in one hour
 - Produce detailed instructions or drawings that describe or demonstrate a production method to an audience
 - Create a week long dietary plan for a specific dietary requirement group
 - Make a special occasion cake using advanced cake decorating techniques
 - Make a banquet garnish using chocolate artistry; create a series of garnishes for a convention
 - Present a parade of fashions throughout history
 - Fashion slam – design, construct and model a ready to wear piece from supplied materials and garments within a 30 minute time frame and using unconventional or recycled materials
 - Produce an inflatable dinghy, sail or canopy using industrial textile fabrication techniques
 - Follow a complex commercial pattern to produce a clothing garment
 - Prepare for a dinner showing a step by step plan for purchase, storage and preparation of foods
 - Analyse a range of diets from different cultural groups for nutritional value
 - Devise a system for the mass production of a plastic and timber domino set
 - Use computer aided manufacturing to create production run of designed products
 - Use computer software to design a seating area for the school utilising 1201 bricks
 - Cater for a school function, community event or grade camp
 - Learn the criteria for judging sheep, beef, pigs and dairy cattle and participate in judging at Tasmanian shows
 - Research, prepare and present an expo of foods of other cultures
 - Visit the Tasmanian Museum and Art Gallery and view the Huon Pine Furniture exhibition, making note of construction and decoration techniques – discuss the properties of Huon pine as a furniture making timber
 - Build and modify mobility aides for older people; build or modify transport for people with special needs
 - Use the structural and stylistic elements of Japanese anime to create a short animated film
 - Make a piece of 3D furniture from just one piece of 1200 mm x 2400 mm plywood
 - Compare and contrast virtual exhibitions with the real experience (e.g. a field trip)
 - Investigate the social impact of social networking sites, looking at the legal and moral implications
 - Make a scale model of their dream home; analyse a home and make recommendations to improve the safety standards for parents of a new baby
 - Critically appraise a local children's playground, examining the safety features of the equipment and making suggestions for improvement

Teaching emphases for standard five

Teaching *Systems and Processes* at standard five may include approaches such as:

- Students working independently on negotiated or personalised projects
- 'Just in time' learning i.e. students adapting systems and techniques to suit their work
- Students investigating sophisticated materials and technologies
- Students spending significant amounts of time on a production or investigation
- Students working and learning alongside adult instructors, mentors or facilitators
- Students taking responsibility for safe and efficient use of resources
- Students disassembling and re-assembling designed products
- Opportunities for students to showcase a high level of skill development e.g. exhibitions, competitions, demonstrations or challenges.

Standard five

Strand 3: Applications and Solutions

Performance criteria

At each stage it is expected that students at standard **five** will:

	Stage thirteen	Stage fourteen	Stage fifteen
Identify and propose solutions	<ul style="list-style-type: none"> use SWOT analysis, Drill Down techniques and/or PEST charts to test the validity of their ideas use planning templates to ensure project success 	<ul style="list-style-type: none"> resolve problems using techniques that take into account personal, social and ethical considerations communicate detailed design proposals that demonstrate the development of ideas 	<ul style="list-style-type: none"> develop a highly sophisticated response to an authentic project brief, integrating ideas into efficient solutions present a design proposal to others using a variety of communication forms
Plan a project outline	<ul style="list-style-type: none"> distinguish between project alternatives that involve varying degrees of risk prepare spreadsheets and diagrams to communicate project schedules to team members assume different roles within a team environment, reflecting upon their performance in each role 	<ul style="list-style-type: none"> introduce communication processes which clearly identify team outcomes and monitor progress support and encourage others to focus strongly on the achievement of team goals develop strategies for team improvement based upon the task at hand and the potential of the team 	<ul style="list-style-type: none"> analyse the managerial skills necessary for decision making in different work situations develop sophisticated projects that take into account the complexities of working within a team take a leadership role and describe their preferred leadership and planning styles
Locate and manage resources	<ul style="list-style-type: none"> develop project management systems to plan, allocate responsibilities and resources, implement and evaluate their work use critical thinking and problem-solving skills to make informed consumer and financial decisions collate information to gain a greater understanding of how systems and processes work 	<ul style="list-style-type: none"> calculate resource requirements; prepare submissions, develop timelines and action plans for a design project recognise opportunities to generate income and wealth and the risk management of those opportunities use information from reliable and accredited sources to support project development 	<ul style="list-style-type: none"> understand principles of enhancement and sustainability and build these into project goals and outcomes develop ethical behaviours in relation to the management of resources use information creatively and persuasively to support project aims and outcomes
Present and describe project outcomes	<ul style="list-style-type: none"> upon request, provide information about a diverse range of topics related to their project develop an online journal or web log that demonstrates the changing nature of the project 	<ul style="list-style-type: none"> explain the process of designing, planning and completing a product or project create web content to illustrate project developments and outcomes 	<ul style="list-style-type: none"> use multimodal presentation forms to demonstrate high level concepts produce a highly refined digital portfolio of project outcomes

Sample learning opportunities

- Create a system for an alternative energy source e.g. wind, solar, tidal, hydrogen, bio-mass
- Develop an alternative fuel (e.g. bio-diesel or ethanol) and convert a vehicle for its use
- Develop and produce a TV food show; develop and produce a Home Renovation TV show; design and prepare a theme based dinner; conduct a *My Restaurant Rules* challenge; organise an international food expo; conduct a 'renovation blitz' on an aspect of the school or community environment that needs enhancing
- Develop a vegetation renewal program for a local area; build a wildlife rehabilitation centre
- Organise a fashion parade with catwalk, music, MC, program, lighting; create costumes, sets and props for a performing arts performance e.g. school production, musical theatre, rock eisteddfod
- Make a film about their community in a language other than English and share it with a sister school overseas
- Design and construct a commemorative arch or entrance way for their town or suburb; design and construct a local tourist information centre; design and install a local interpretation centre and trail; design and construct a community banner that tells a story about key people, places and events in their local area; conduct an eco-tour for their local region, highlighting the natural and cultural heritage of the area; re-design an ecologically friendly transport system for their region
- Plan and organise an overseas exchange trip or an event to welcome visitors from another country or culture; use digital or online resources to communicate in another language with an overseas school
- Use an agricultural software program to simulate the planning and running of a farm enterprise; design a sustainable farm irrigation system observing regulation plumbing procedures; design and build a safe and practical set of cattle and sheep yards from standard stock yard plans
- Develop a local response to a conservation issue through projects such as tree planting, seed collection, track and trail construction, weed control, erosion control, fencing and landscaping, endangered flora and fauna surveys, wildlife protection and monitoring, historic restoration, cultural exchange activities, habitat and heritage restoration
- Audit sustainable practice in the school and design a carbon offset program so that the school can attain carbon neutral status; develop an accredited carbon forest project site; develop a list of environmental tips for the home, school or workplace e.g. buy second hand, borrow rather than buy, return unused or unwanted items, assess the need for an item or product, look for goods that will last...
- View and review *Design for the Other 90%* materials and think of other solutions to assist people who live in poverty
- Devise a public awareness campaign around a global issue using a range of designed products such as: a documentary on DVD, a public billboard, a mural, printed T-shirts, bumper stickers, TV, radio or online advertisement
- Work in a child care centre and analyse the activities that are offered; design and run a playgroup enterprise on a regular basis (using a democratic decision making system)

Teaching emphases for standard five

Teaching *Applications and Solutions* at standard five may include approaches such as:

- Students using a PEST (Political, Environmental, Social and Technological) analysis to assess the implications of a project idea
- Students using a SWOT analysis as a risk assessment device (see Glossary)
- Students using a Gantt Chart to schedule project components (see Glossary)
- Backward planning e.g. using a visualisation technique to assist students in creating an idea for a product or project, drawing it and then working out how to make it
- Using hypothesis to propose a solution, using models and prototypes to prove it can work
- Using proof and reasoning or trial and error to develop a solution that works
- Using a drilling down technique to identify all possible variables within a problem
- Using a process of divide and conquer to break a problem into its component parts

Standard five

Strand 4: Futures Planning

Performance criteria

At each stage it is expected that students at standard **five** will:

	Stage thirteen	Stage fourteen	Stage fifteen
Reflect upon personal strengths and interests	<ul style="list-style-type: none"> collect evidence of the skills, competencies and attributes they have developed through schooling, community and work based activities create a generic personal portfolio and produce a resume, personal statement and letter of introduction 	<ul style="list-style-type: none"> select and use material for specific purposes including presentations for external audiences develop portfolio material that is adaptable for a range of audiences 	<ul style="list-style-type: none"> develop high refined skills of personal advocacy suitable for a range of contexts use a range of technologies to produce portfolios to suit many different contexts
Set personal goals	<ul style="list-style-type: none"> review personal plans, monitoring progress and adopting new strategies understand that income is derived from a range of sources with different levels of reliability make short and long term plans for their future and consider the work / life balance needed to support their goals 	<ul style="list-style-type: none"> identify and access the supports, courses and resources that contribute to the realisation of their goals accept responsibility and evaluate the consequences for self and others of personal spending decisions develop a personal vision that outlines through to early adulthood the steps needed to establish a preferred lifestyle 	<ul style="list-style-type: none"> have established a clear pathway into their career of choice and understand the steps they need to get there take initiative to build sustainable levels of support and make business related decisions take action in establishing transitions into places of further work or learning
Develop participation skills	<ul style="list-style-type: none"> use strategic work and life skills to improve performance understand and practise the skills and attributes that are required for successful participation in work and life 	<ul style="list-style-type: none"> adapt and apply work and life skills to unfamiliar and challenging circumstances; have well developed 'executive functions'. focus upon specific skill development in key areas – needs, strengths and vocational interests 	<ul style="list-style-type: none"> take responsibility for key areas of life including learning choices, task commitment, personal commitments, personal organisation and deadlines adapt skills and attributes to suit different contexts and circumstances
Learn about life and work	<ul style="list-style-type: none"> engage in some informal experience of work (e.g. voluntary, part-time, helping) and reflect upon the positive benefits of working develop understandings around the reasons people work, voluntary work, types of work, part-time work, unemployment and underemployment 	<ul style="list-style-type: none"> understand about work conditions and practices, wages, responsibilities, rights, hierarchies, relationships, training, job forecasts and skills shortages understand concepts of communication, social capital, trust, community bonds, norms, team altruism, synergy and collaboration 	<ul style="list-style-type: none"> reflect and make decisions about the kind of work they wish to participate in, the choices available to them and the training requirements necessary for them to attain their goals describe their community as complex layers of systems – legal, social, political, cultural, technological, financial, services and utilities

Sample learning opportunities

- Develop a futures folio using multimedia software; write a resume and letter of introduction; gain interview experience; and practice public speaking through talks and demonstrations
- Research what dress, hours and transport arrangements are required to participate in a pathways experience
- Assess a workplace or business for: clientele, goods and services, customer base, management structure, the forms of employment available, skills or training and career potential
- Explore a career or industry in depth by undertaking a cycle of identifying, observing, investigating, preparing, participating and reflecting
- Appraise their personal participation (transition) skills using a self-evaluation rubric; review their goals – financial and consumer, health and wellbeing, relationships and family, learning, travel, location, occupation or culture and leisure
- Research the pathways of some famous or significant people
- Brainstorm ‘lists of five’ - most preferred jobs, least preferred jobs, hardest jobs, easiest jobs, most dangerous jobs, interesting, well paid, glamorous, female/male dominated or temporary
- Interview people who work in an industry they are interested in; research jobs, industries and organisations that interest them; brainstorm a number of careers that suit their learning or thinking style; undertake a SWOT analysis of a chosen career
- Collect job advertisements – compare and contrast requirements, skills, experience and salary
- Research how work is portrayed in popular culture e.g. poetry, film, song or TV
- Research different types of work – permanent, casual, contractor, sub-contractor, temporary, shift worker, contributing family worker, community work and voluntary work
- Trial a cross-age tutoring program for another language and report on what was achieved
- Look at the abundance of new careers and make a time line describing their existence and impact on the global employment market
- Create and evaluate a template for a newspaper to inform parents about back to school requirements for their child at a local primary school; analyse the changing nature of parenting in the world today
- Present their digital portfolio, identifying goals and future objectives; create an effective graphical user interface (GUI) for the end user on a digital portfolio or other media

Teaching emphases for standard five

Teaching *Systems and Processes* at standard five may include approaches such as:

- Developing projects that target particular participation skills, for example:
 - Learn to do something you have never done before (Learning)
 - Teach something you know to someone else (Communicating)
 - Form a team to achieve a common goal (Teamwork)
 - Solve a problem (Problem solving)
 - Design your future (Self management)
 - Work out what matters (Being ethical)
 - Get organised (Planning and organising)
 - Explore a new technology (Technology)
 - Think globally (Global thinking)
 - Take action (Initiative and enterprise)
- Supporting students in the development of material that will assist them in gaining employment or further training
- Encouraging students to participate in a pathway experience – internship, shadowing, mentoring, part-time work, industry taster, careers expo, mini-trade, mini-degree, project based learning, entrepreneurship, voluntary work, community event, online learning, challenges, collaborations and competitions...
- Supporting student to make short, medium and long term goals
- Establishing clear pathways for students to the next place of work or training.

Skills and Dispositions audit - Standard five

Conceptual Skills

Research and analysis	Understands the complexity of designed products and can describe the relationship between system components	
Creativity and design	Takes creative risks to produce work that is both functional and an original response to a design challenge	
Problem solving	Uses a range of strategies to analyse the complexities of a problem before deciding upon a solution	
Decision making	Takes into consideration the implications of a personal decision upon self and others	
Appraisal and evaluation	Critically analyses designed products or systems, describing their effectiveness against a range of criteria	

Production Skills

Translating plans, documents, instructions and diagrams	Follows industry standard plans, instructions and diagrams and adapts these for use in their work	
Preparation and layout	Understands the scope of a task or project, selects, prepares and manages materials required to complete task successfully	
Working with accuracy	Works with a high level of precision according to project specifications	
Using technology	Uses industry standard equipment, including digital technologies, to complete their tasks or projects	
Finishing and presentation	Sets high standard of finish and presents work that is equivalent to industry standard	

Project Skills

Initiative and enterprise	Demonstrates leadership in developing and managing both individual and collaborative projects	
Communication	Effectively uses a range of communication forms including language, mathematics, drawing, modelling, performance or demonstration to describe project aims and outcomes	
Teamwork	Supports and encourages others within the work group and focuses strongly on the achievement of team goals	
Planning and organising	Understands different systems for planning and organising and uses these effectively to complete projects and evaluate outcomes	
Time management	Balances a complex range of activities and commitments, completing each within set time frames	

Work Skills

Persistence	Finds alternative ways to negotiate the difficulties encountered when working on a task or project	
Task completion	Manages and completes a number of complex tasks within a project schedule	
Safe and hygienic practice	Demonstrates an understanding of OH&S standards	
Self management	Establishes priorities based upon personal aims and makes informed decisions after considering a range of options	
Making sustainable choices	Considers the environmental, ethical and social implications of their personal actions, decisions and ideas	

Assessment evidence guide for Vocational and Applied Learning

This guide lists examples of evidence of student achievement across each standard and at each stage within a standard. Teachers can use the Assessment Evidence Guide to help make on-balance judgements when assessing student work. So that students are challenged to improve their learning, opportunities to learn should be provided in advance of expected assessment ratings.

Students do not have to be capable of achieving everything within a particular stage to be rated as performing at that stage, but they should be capable of demonstrating most of the evidence. Students need as many opportunities as possible to demonstrate their understanding and skill level. Teachers make an on-balance judgement about whether a student's performance is at a similar level to the evidence described in this guide.

A range of performances are possible within each stage. For assessment purposes, teachers should make a judgement as to whether the student has only just reached that stage (proficient) or has progressed well towards the next stage (advanced). The assessment of being proficient or advanced is based on teacher judgement supported by collegial discussions, feedback and moderation. This level of discrimination should also be reflected in the teacher comments on student performance. It is important that teachers can explain what understanding and skills are required for students to progress to the next stage.

The points of reference for assessment are illustrated below:

	Standard 1						Standard 2						Standard 3						Standard 4						Standard 5					
Stage	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15	
Level	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A

Stages for assessment ratings

Year levels	Kinder and Prep	Years 1 and 2	Years 3 and 4	Years 5 and 6	Years 7 and 8	Years 9 and 10
Standards 1 – 5	1	1 – 2	2 – 3	2 – 4	3 – 4	4 – 5
Assessment ratings Stages 1 – 15	Stages 1 – 3	Stages 2 – 5	Stages 4 – 8	Stages 6 – 10	Stages 8 – 12	Stages 10 – 15

Assessment evidence at each stage

The table below describes sample indicators of performance at each stage. It is not intended to be used as a set of criteria or a checklist of performance for each stage and it does not map the entire territory of Vocational and applied learning. It provides examples of what might be expected at each stage. The examples will help teachers use professional judgement to locate student performance within the appropriate standard.

This following evidence guide is organised by strand.

Standard one: Innovation and Design

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 1	Standard 1 Stage 2	Standard 1 Stage 3	Standard 2 Stage 4
Respond to design challenges	work intuitively on making something from available materials e.g. make a 'Lego' vehicle without instructions	describe and illustrate a familiar scene e.g. draw their family with each person wearing their favourite clothes	respond to simple design tasks e.g. draw a house for a family of 6 people	construct a model following a simple plan e.g. a 'Lego' vehicle
Understand and apply design principles	use design elements in an intuitive way	describe how some colours, shapes or textures make them feel	explain why they have used certain colours, shapes and textures	talk about how a design changes if some elements of it are changed e.g. miniature elephants, giant mice, blue giraffes...
Research, plan, trial and modify	explore materials provided and construct improvised images or objects	talk about how they might use the materials provided to make an image or object	explain what they have made and why they have combined elements in a particular way	play with different design ideas using fantasy and absurdity
Evaluate and reflect upon own work	describe how they feel about their work	explain what their work is about in simple terms	talk about how they could have changed certain design elements in their work	talk about how their designed product has been made and whether or not they are happy with it

Standard two: Innovation and Design

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 3	Standard 2 Stage 4	Standard 2 Stage 5	Standard 2 Stage 6	Standard 3 Stage 7
Respond to design challenges	respond to simple design tasks e.g. draw a house for a family of 6 people	construct a model following a simple plan e.g. a 'Lego' vehicle	make a personal response to a set task or project e.g. make a salad sandwich	describe some other ways they could have designed their product e.g. used buttons instead of beads	respond to a simple design brief e.g. design a child's toy considering safety features suitable for a 2 year old
Understand and apply design principles	explain why they have used certain colours, shapes and textures	talk about how a design changes if some elements of it are changed e.g. miniature elephants, giant mice, blue giraffes...	show personal preference for some design elements and describe these e.g. chunky, shiny smooth, soft, pink, straight lines, curvy...	describe how their design choices have created certain effects e.g. warm, scary, dark, wintry...	demonstrate an awareness that products are often designed to be both attractive and functional
Research, plan, trial and modify	explain what they have made and why they have combined elements in a particular way	play with different design ideas using fantasy and absurdity	experiment with different materials e.g. mix colours, try different glues, combine patterned and plain fabrics...	describe what works and what doesn't and why e.g. wood glue makes paper go wrinkly	use a simple 2D drawing program to represent ideas
Evaluate and reflect upon own work	talk about how they could have changed certain design elements in their work	talk about how their designed product has been made and whether or not they are happy with it	explain what they like about their designs and what they might change next time	describe what they have found out about materials and design elements	comment on design successes and shortcomings – what works, what doesn't

Standard three: Innovation and Design

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 2 Stage 6	Standard 3 Stage 7	Standard 3 Stage 8	Standard 3 Stage 9	Standard 4 Stage 10
Respond to design challenges	describe some other ways they could have designed their product e.g. used buttons in stead of beads	respond to a simple design brief e.g. design a child's toy considering safety features suitable for a 2 year old	adapt a design specification to make a personal statement e.g. a mobile that features endangered species	create a design that reflects personal values, tastes, hobbies or interests e.g. a screen printed punk style T-shirt	create a design for a particular purposes e.g. design a gift for a family member taking into consideration their age, gender, interests and aesthetics
Understand and apply design principles	describe how their design choices have created certain effects e.g. warm, scary, dark, wintry...	demonstrate an awareness that products are often designed to be both attractive and functional	identify and substantiate good and bad design in everyday products	identify elements of proportion and ratio in a designed product	create a functional object and make a design decision about each of the basic design elements – colour, texture, shape, scale, volume...
Research, plan, trial and modify	describe what works and what doesn't and why e.g. wood glue makes paper go wrinkly	use a simple 2D drawing program to represent ideas	use a backward design process to create 'thumbnail' sketches of alternatives design proposals	create basic 3D hand drawn sketches and prepare a materials list for self designed product	use a basic computer aided design software and/or produce a scale model or prototype to represent a design idea
Evaluate and reflect upon own work	describe what they have found out about materials and design elements	comment on design successes and shortcomings – what works, what doesn't	compare original drawings with design outcome and describe their decision making process	evaluate the success of their design with consideration given to the initial design brief instructions	keep a design journal with anecdotal notes, orthographic projections, exploded views and labelled parts

Standard four: Innovation and Design

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 3 Stage 9	Standard 4 Stage 10	Standard 4 Stage 11	Standard 4 Stage 12	Standard 5 Stage 13
Respond to design challenges	create a design that reflects personal values, tastes, hobbies or interests e.g. a screen printed punk style T-shirt	create a design for a particular purposes e.g. design a gift for a family member taking into consideration their age, gender, interests and aesthetics	create a design that serves at least two purposes e.g. a soft sculpture beanbag	create a design that incorporates at least two construction techniques e.g. a mitred jewellery box with a hinged lid and decorative inlay	create a design based on a significant design movement using three different materials
Understand and apply design principles	identify elements of proportion and ratio in a designed product e.g. a handcrafted quilt	create a functional object and make a design decision about each of the basic design elements – colour, texture, shape, scale, volume...	recognise the importance of proportion in the construction of a designed product e.g. the golden mean	create an designed product that is fully functional and representative of the maker's or user's personality e.g. an alligator go-cart	create a mood-board to establish which different design elements will be incorporated within a designed product
Research, plan, trial and modify	create basic 3D hand drawn sketches and prepare a materials list for self designed product	use a basic computer aided design software and/or produce a scale model or prototype to represent a design idea	create plans, patterns, stencils and templates to support a design idea e.g. hand printed cushion covers	undertake a process of trial and modification to produce a workable designed product e.g. a candle-lit lantern from paper and cane	undertake market research to assess need, cost, viability and marketability of design ideas using questionnaires and surveys
Evaluate and reflect upon own work	evaluate the success of their design with consideration given to the initial design brief instructions	keep a design journal with anecdotal notes, orthographic projections, exploded views and labelled parts	test designed products on consumers or users and gather feedback e.g. a restaurant review for a catered function	explore the potential of design ideas for manufacturing with an assembly line flowchart	critically evaluate the safety features of a designed environment, taking into account the client's needs e.g. re-design a playground to suit children with special needs

Standard five: Innovation and Design

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 4 Stage 12	Standard 5 Stage 13	Standard 5 Stage 14	Standard 5 Stage 15
Respond to design challenges	create a design that incorporates at least two construction techniques e.g. a leather and metal handbag	create a design based on a significant design movement using three different materials	tell a story through design e.g. a community banner that identifies key events, dates and personalities	create a design that challenges design conventions e.g. a table that doesn't have legs
Understand and apply design principles	create an designed product that is fully functional and representative of the maker's or user's personality e.g. an alligator go-cart	create a mood-board to establish which different design elements will be incorporated within a designed product	use a design analysis process to demonstrate an awareness of how ergonomics influence product design	create a designed product that takes account of its end-user's wants and needs e.g. a café for 10 year olds
Research, plan, trial and modify	undertake a process of trial and modification to produce a workable designed product e.g. a candle-lit lantern from paper and cane	undertake market research to assess need, cost, viability and marketability of design ideas using questionnaires and surveys	create design specifications that describe the possibilities and restrictions of the product e.g. size and weight, appearance, use and performance, safety, cost and maintenance	create a prototype and a manufacture plan with sub assemblies, component parts and production schedules
Evaluate and reflect upon own work	explore the potential of design ideas for manufacturing with an assembly line flowchart	critically evaluate the safety features of a designed environment, taking into account the client's needs e.g. re-design a playground to suit children with special needs	create a comprehensive project report detailing initial aims, changes made, specifications, costing trials, customer feedback and areas for improvement	conduct a project risk analysis, taking into account workplace health and safety and the political, environmental, social and technological (PEST) implications of the project design and manufacture

Standard one: Systems and Processes

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 1	Standard 1 Stage 2	Standard 1 Stage 3	Standard 2 Stage 4
Appraise designed products	identify the differences between two designed products e.g. milk cartons, painted and unpainted wooden blocks, chocolate and strawberry milk	explain the purpose of a range of classroom objects e.g. stapler, scissors, pencil...	express a preference from a selection of snack items, explaining why they have made a particular choice	examine a familiar item, describe and give reasons for common features e.g. lunch boxes, sandwiches, toy cars...
Explore materials, systems and technologies	make a construction in the block corner	make a representational object from found everyday materials and show/tell how to make it e.g. a kite, a car, a rocket, a clock...	construct something with a variety of materials e.g. paper, material, sticky tape, glue stick...	brainstorm how many different ways there are to join 2 pieces of paper
Acquire skills and techniques	use scissors to cut paper	use a wool needle to sew a design onto a Hessian or flywire screen	follow a diagram to make a simple 'Lego' construction	use a stapler to make a simple book
Work safely	carries scissors safely	push chairs under table after use	explain what to do if they spill something e.g. through role play or by making a sign	cite basic class rules for working with tools and equipment e.g. coping saw, screwdriver, vice...

Standard two: Systems and Processes

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 3	Standard 2 Stage 4	Standard 2 Stage 5	Standard 2 Stage 6	Standard 3 Stage 7
Appraise designed products	express a preference from a selection of snack items, explaining why they have made a particular choice	examine a familiar item, describe and give reasons for common features e.g. lunch boxes, sandwiches, toy cars	describe the effectiveness of a fastener on a designed product e.g. Velcro on shoes	produce a labelled diagram to explain the design features of a school bag	'deconstruct' an object to see how it was made
Explore materials, systems and technologies	construct something with a variety of materials e.g. paper, material, sticky tape, glue stick...	brainstorm how many different ways there are to join 2 pieces of paper	produce a flow chart to show how to order and receive a school lunch	combine provided materials to make an object that floats	cut fabric using correct tools and techniques
Acquire skills and techniques	follow a diagram to make a simple 'Lego' construction	use a stapler to make a simple book	make independent use of a tool or piece of equipment to complete a design challenge e.g. a scanner, a camera, a glue gun...	use a ruler and tape measure to make a scale model set for a favourite toy e.g. a car or a doll	effectively use tools and equipment e.g. an iron, a sewing machine...
Work safely	explain what to do if they spill something e.g. through role play or by making a sign	cite basic class rules for working with tools and equipment e.g. coping saw, screwdriver, vice...	demonstrate awareness of the danger of heat and spillage when undertaking an activity, e.g. cooking, boiling water...	take precautions to protect self and others when undertaking a task e.g. wear an apron, safety glasses, ear muffs...	demonstrate safety guidelines for kitchen or workshop e.g. hair tied back, apron, closed shoes...

Standard three: Systems and Processes

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 2 Stage 6	Standard 3 Stage 7	Standard 3 Stage 8	Standard 3 Stage 9	Standard 4 Stage 10
Appraise designed products	produce a labelled diagram to explain the design features of a school bag	'deconstruct' an object to see how it was made	brainstorm the design features of a product and describe why certain design decisions may have been made	create a flow chart to describe how a product or system works, describing how alternative design features may enhance or detract from its effectiveness	look at a designed object and assess which techniques and processes have been used in its construction e.g. a trailer
Explore materials, systems and technologies	combine provided materials to make an object that floats	cut fabric using correct tools and techniques	demonstrate simple cutting and joining techniques e.g. cutting square, using simple jigs, cutting sheet metal, clamping work, metal joining...	work from a pattern to create and embellish a designed product e.g. a decorative cushion	use the appropriate tools and equipment when working to a plan or specification e.g. a magnetic bender
Acquire skills and techniques	use a ruler and tape measure to make a scale model set for a favourite toy e.g. a car or a doll	effectively use tools and equipment e.g. an iron, a sewing machine...	measure dry and liquid ingredients, using measuring cups, spoons and measuring jugs	demonstrate an ability to use combining techniques when mixing ingredients e.g. rubbing, sifting, melting...	demonstrate a proficient level of hand skills e.g. cutting, shaping, separating, smoothing, forming, casting, finishing...
Work safely	take precautions to protect self and others when undertaking a task e.g. wear an apron, safety glasses, ear muffs...	demonstrate safety guidelines for kitchen or workshop e.g. hair tied back, apron, closed shoes...	carry tools, equipment and materials appropriately e.g. knives pointing down, food on a plate...	demonstrate awareness of self and others by using hand tools safely and appropriately e.g. pliers, hammers, hack saw, scroll saw, hand plane, cordless drill...	respect tools and equipment and observe all safety instructions

Standard four: Systems and Processes

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 3 Stage 9	Standard 4 Stage 10	Standard 4 Stage 11	Standard 4 Stage 12	Standard 5 Stage 13
Appraise designed products	create a flow chart to describe how a product or system works, describing how alternative design features may enhance or detract from its effectiveness	look at a designed object and assess which techniques and processes have been used in its construction e.g. a trailer	create an exploded view diagram to describe a designed object e.g. a building, a boat	evaluate a designed product , describing the elements that have gone into its preparation/construction e.g. a three course catered banquet	research significant designers and use this to inform their own practice e.g. Brodie Neill, Marc Newson, Alessi, Starck, MAMBO...
Explore materials, systems and technologies	work from a pattern to create and embellish a designed product e.g. a decorative cushion	use the appropriate tools and equipment when working to a plan or specification e.g. a magnetic bender	select a particular system or technology appropriate to the task or design e.g. a dowel joint/ biscuit joint/ butt joint	use computer aided design to create and apply an image to a garment or object e.g. embroidery	independently create a product following a commercial plan, pattern, recipe or template and modify the design to suit their own needs
Acquire skills and techniques	demonstrate an ability to use combining techniques when mixing ingredients e.g. rubbing, sifting, melting...	demonstrate a proficient level of hand skills e.g. cutting, shaping, separating, smoothing, forming, casting, finishing...	practise skills and demonstrate improvements in speed and efficiency e.g. food preparation	manipulate materials and equipment to achieve desired effect e.g. turning table legs on a lathe	demonstrate the transferability of skills into multiple contexts e.g. stencilling into air brushing/ screen printing/ marquetry/ frosting/ sand blasting...
Work safely	demonstrate awareness of self and others by using hand tools safely and appropriately e.g. pliers, hammers, hack saw, scroll saw, hand plane, cordless drill...	respect tools and equipment and observe all safety instructions	monitor own safety and that of others e.g. wear protective equipment at all times and encourage peers to do the same	demonstrate a base level understanding of industry level OH&S rules and regulations	apply OH&S understandings to everyday tasks e.g. ear and eye protection, back protection, seating posture...

Standard five: Systems and Processes

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 4 Stage 12	Standard 5 Stage 13	Standard 5 Stage 14	Standard 5 Stage 15
Appraise designed products	evaluate a designed product , describing the elements that have gone into its preparation/ construction e.g. a three course catered banquet	research significant designers and use this to inform their own practice e.g. Brodie Neill, Marc Newson, Alessi, Starck, MAMBO...	create a rubric to appraise designed products against key criteria – innovation, sustainability, affordability, marketability, environmental impact...	fully evaluate a designed product analysing design, quality, manufacturing process, value for money, areas for improvement...
Explore materials, systems and technologies	use computer aided design to create and apply an image to a garment or object e.g. embroidery	independently create a product following a commercial plan, pattern, recipe or template and modify the design to suit their own needs	create an accessory using at least three closing devices for pockets or compartments e.g. clasp, zipper, press stud, button	create a flow chart to describe the manufacturing process for their designed product including assembly and sub-assembly systems
Acquire skills and techniques	manipulate materials and equipment to achieve desired effect e.g. turning table legs on a lathe	demonstrate the transferability of skills into multiple contexts e.g. stencilling into air brushing/ screen printing/ marquetry/ frosting/ sand blasting...	clean and maintain tools and equipment in order to get the best results from them	work autonomously and with a high degree of efficiency to complete design tasks and adapt skills to suit complex tasks
Work safely	demonstrate a base level understanding of industry level OH&S rules and regulations	apply OH&S understandings to everyday tasks e.g. ear and eye protection, back protection, seating posture...	demonstrate an awareness of commercial standards for providing goods and services e.g. food preparation and handling, auto servicing...	cite appropriate OH&S practice when discussing tasks and responsibilities

Standard One: Applications and Solutions

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 1	Standard 1 Stage 2	Standard 1 Stage 3	Standard 2 Stage 4
Identify and propose solutions	talk about what a problem is and how to solve problems	talk about problems that they may have solved and how they solved them	undertake an individual or group problem solving challenge	suggest at least one way to solve a set problem e.g. how to keep the flies out of a room
Plan a project outline	talk about the kinds of things they are doing when undertaking an activity e.g. mixing paint, building a sand castle	follow a sequence of instructions with adult support to complete a task e.g. making gingerbread people	talk about the steps they have to go through in order to complete a task	talk about what needs to be done in order to complete a task or solve a problem e.g. where to begin, what materials to use, what happens when finished
Locate and manage resources	work with simple tools and materials, describing what it is they do e.g. scissors cut, paper folds	with support take materials and equipment from their place, clean them and return them e.g. wash brushes, tidy up scraps...	understand how they might use materials resourcefully e.g. use paint as required, cut from the edge of paper not from the middle...	speculate about the different value of materials e.g. scrap paper and cartridge paper, MDF and radiata pine, plastic and glass...
Present and describe project outcomes	talk about what they have done when working upon a task e.g. mixing cordial	talk about what they like about their work or design	describe what they have done and why they have made some decisions e.g. the dinosaur is purple because...	use a preferred form of communication to demonstrate how they created a product e.g. talk, picture, story...

Standard two: Applications and Solutions

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 3	Standard 2 Stage 4	Standard 2 Stage 5	Standard 2 Stage 6	Standard 3 Stage 7
Identify and propose solutions	undertake an individual or group problem solving challenge	suggest at least one way to solve a set problem e.g. how to keep the flies out of a room	participate in a class brainstorm to suggest a number of ways of solving a problem	consider alternatives and settle upon one way to solve a problem	show evidence of some research and evaluation of alternatives before beginning a project
Plan a project outline	talk about the steps they have to go through in order to complete a task	talk about what needs to be done in order to complete a task or solve a problem e.g. where to begin, what materials to use, what happens when finished	make simple plans for self and/or group in responding to task requirements e.g. materials and equipment, who does what...	make explicit the fact that their project has a beginning, a middle and an end	create a flow chart to describe the sequence of steps to be taken during a project
Locate and manage resources	understand how they might use materials resourcefully e.g. use paint as required, cut from the edge of paper not from the middle...	speculate about the different value of materials e.g. scrap paper and cartridge paper, MDF and radiata pine, plastic and glass...	describe ways in which people can make money e.g. buying and selling, working for others, saving...	as a class create small items for selling to others and keep a record of income and expenditure with support	list the project resources required, assemble and monitor the resources
Present and describe project outcomes	describe what they have done and why they have made some decisions e.g. the dinosaur is purple because...	use a preferred form of communication to demonstrate how they created a product e.g. talk, picture, story...	talk about the process of making an object or product e.g. the steps taken, help required, materials, skills...	write a reflection about their project and illustrate with pictures describing the process undertaken	keep a project journal, documenting processes, systems and outcomes e.g. photos, diagrams, flow charts, demonstrations...

Standard three: Applications and Solutions

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 2 Stage 6	Standard 3 Stage 7	Standard 3 Stage 8	Standard 3 Stage 9	Standard 4 Stage 10
Identify and propose solutions	consider alternatives and settle upon one way to solve a problem	show evidence of some research and evaluation of alternatives before beginning a project	survey local community or identified customers about proposed product or project	create a mind map to undertake product analysis, including costs, consumers, suppliers, design considerations...	scan the local community for problems or issues that need or are worth solving
Plan a project outline	make explicit the fact that their project has a beginning, a middle and an end	create a flow chart to describe the sequence of steps to be taken during a project	create a project plan that can be read and followed by others	detail a system for manufacturing e.g. simple packaging	implement a simple planning cycle to guide project participation, monitor progress and describe outcomes
Locate and manage resources	as a class create small items for selling to others and keep a record of income and expenditure with support	list the project resources required, assemble and monitor the resources	when ordering materials make choices between resources based on cost, quality and appearance and keep records of sales and production costs	allocate roles, produce a roster and keep an account of money	keep an account of income and expenditure using an appropriate system e.g. a balance sheet
Present and describe project outcomes	write a reflection about their project and illustrate with pictures describing the process undertaken	keep a project journal, documenting processes, systems and outcomes e.g. photos, diagrams, flow charts, demonstrations	create a graph of sales/profits and present this to the class group	present project outcomes using presentation boards, a journal, a photographic essay...	document project outcomes through graphs, drawings, progress photos, personal reflections, testimonials from others...

Standard four: Applications and Solutions

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 3 Stage 9	Standard 4 Stage 10	Standard 4 Stage 11	Standard 4 Stage 12	Standard 5 Stage 13
Identify and propose solutions	create a mind map to undertake product analysis, including costs, consumers, suppliers, design considerations...	scan the local community for problems or issues that need or are worth solving	create a concept map of a problem or project and identify how component parts fit together, look for malfunctions and potential for improvement	use a decision making matrix to prioritise and weight a range of project options	use a recognised method to examine the complexities of a problem e.g. SWOT analysis, PEST chart, drill down analysis
Plan a project outline	detail a system for manufacturing e.g. simple packaging	implement a simple planning cycle to guide project participation, monitor progress and describe outcomes	create an action plan with tasks, responsibilities, deadlines...	create a diagram to describe the assembly and sub-assembly processes involved in creating a product	prepare a Gantt Chart to identify project schedules and sequencing of tasks
Locate and manage resources	allocate roles, produce a roster and keep an account of money.	keep an account of income and expenditure using an appropriate system e.g. a balance sheet	use appropriate software to keep project balance sheets and generate financial statements	Upon request, account for all debits and credits, costs and savings	test materials and products for product suitability, providing an analysis of these tests
Present and describe project outcomes	present project outcomes using presentation boards, a journal, a photographic essay...	document project outcomes through graphs, drawings, progress photos, personal reflections, testimonials from others...	communicate project outcomes to an unfamiliar audience using supporting texts e.g. slide show, graphs, diagrams...	communicate project outcomes to a panel of experts using appropriate terminology to describe the production process	respond to requests for project information from various parties e.g. customers, teacher, school executive officer...

Standard five: Applications and Solutions

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 4 Stage 12	Standard 5 Stage 13	Standard 5 Stage 14	Standard 5 Stage 15
Identify and propose solutions	use a decision making matrix to prioritise and weight a range of project options	use a recognised method to examine the complexities of a problem e.g. SWOT analysis, PEST chart, drill down analysis	evaluate the wider implications of a problem or solution e.g. the effectiveness of energy efficient homes in varying climatic conditions	create a 15 minute presentation designed to influence a prospective client about the merits of the project
Plan a project outline	create a diagram to describe the assembly and sub-assembly processes involved in creating a product	prepare a Gantt Chart to identify project schedules and sequencing of tasks	monitor progress according to timelines and budget, making adjustments where necessary	collate project schedules, product analysis, materials specifications and budgets into one document
Locate and manage resources	account for all debits and credits, costs and savings upon request	test materials and products for product suitability, providing an analysis of these tests	research a range of suitable techniques and apply one of them towards achieving the project outcome e.g. appliqué, machine embroidery, stencilling, shadow appliqué...	order materials and schedule deliveries, manage personnel and keep account of stock
Present and describe project outcomes	communicate project outcomes to a panel of experts using appropriate terminology to describe the production process	respond to requests for project information from various parties e.g. customers, teacher, school executive officer...	present a 'big picture' analysis of their project, describing planning processes, production schedule and outcomes	evaluate and acquit project, with reference to outcomes achieved, successes and disappointments, financial statements...

Standard one: Futures Planning

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 1	Standard 1 Stage 2	Standard 1 Stage 3	Standard 2 Stage 4
Reflect upon personal strengths and interests	talk about things of interest to them e.g. playing football, riding a bike...	talk about some personal responsibilities e.g. getting dressed, brushing teeth, walking the dog...	tell people what they are good at doing e.g. running fast, counting, reciting the alphabet...	describe the things they have done well at the conclusion of a task or activity
Set personal goals	talk about or make a drawing of what they would like to be when they are older	participate in a class role play to describe the various jobs that people do	talk about a job they would like to do when they are older and describe some of the tasks that such a person does	describe and draw some things they would like to have in their life when they are older e.g. friends, family, house, car, speedboat...
Develop participation skills	participate in class activities, describing their part	work in pairs or small teams on class activities	describe what they are doing when they 'help' others	reflect positively upon an achievement, describing how they feel about their participation
Learn about life and work	create a drawing describing their family	participate in a class brainstorm identifying various jobs within the community	create a simple mind map describing people in their world	communicate with people in other communities

Standard two: Futures Planning

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 1 Stage 3	Standard 2 Stage 4	Standard 2 Stage 5	Standard 2 Stage 6	Standard 3 Stage 7
Reflect upon personal strengths and interests	tell people what they are good at doing e.g. running fast, counting, reciting the alphabet...	describe the things they have done well at the conclusion of a task or activity	set aside work they feel proud of to take home or include in a folder of achievements	talk about how they might use something they have learned in a future context e.g. writer/author, recorder player/musician, cook/chef...	communicate own strengths and interest to others through a group activity e.g. personal qualities card activity
Set personal goals	talk about a job they would like to do when they are older and describe some of the tasks that such a person does	describe and draw some things they would like to have in their life when they are older e.g. friends, family, house, car, speedboat...	follow a learning interest by researching a related career e.g. sports person, scientist, forensic officer, geologist...	create a visual profile of someone in a particular job, career or profession and make labels to describe their work e.g. doctor, police officer, road worker, truck driver...	identify an item for purchase and develop a savings plan over a given period of time
Develop participation skills	describe what they are doing when they 'help' others	reflect positively upon an achievement, describing how they feel about their participation	use words to describe their participation in group activities e.g. sharing, co-operation, teamwork, following rules...	identify the rules that help members of their class or small groups work well together	describe the role(s) they play in contributing to the class community
Learn about life and work	create a simple mind map describing people in their world	communicate with people in other communities	compare and contrast the features of different jobs and roles	research and list the skills that are required for different jobs	describe the roles of people in the community, how they connect and how communities work

Standard three: Futures Planning

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 2 Stage 6	Standard 3 Stage 7	Standard 3 Stage 8	Standard 3 Stage 9	Standard 4 Stage 10
Reflect upon personal strengths and interests	talk about how they might use something they have learned in a future context e.g. writer/author, recorder player/musician, cook/chef...	communicate own strengths and interest to others through a group activity e.g. personal qualities card activity	keep a journal, scrapbook or personal diary, describing hobbies, interests and aspirations	create a personal profile describing strengths and interests	collate material from a range of sources for inclusion in a personal portfolio
Set personal goals	create a visual profile of someone in a particular job, career or profession and make labels to describe their work e.g. doctor, police officer, road worker, truck driver...	identify an item for purchase and develop a savings plan over a given period of time	create a personal timeline that shows past events, current focus and future goals	participate in a program that simulates decision making in adult life e.g. The Real Game	create a personal vision statement, anticipating future pathways
Develop participation skills	identify the rules that help members of their class or small groups work well together	describe the role(s) they play in contributing to the class community	take responsibility for tasks that connect them to the broader school community e.g. canteen monitor, school council, peer support, team captain...	become involved in broader community groups e.g. environment, sport, theatre, volunteering, leaflet drops, paper runs...	list key participation skills and conduct a personal audit of these
Learn about life and work	research and list the skills that are required for different jobs within their community	describe the roles of people in the community, how they connect and how communities work	design a cause and effect chart to explain the make-up of the local community	explain cause and effect scenarios of community removal/collapse e.g. no garbage collection	provide evidence of participation in a series of communities for everyday life and learning

Standard four: Futures Planning

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 3 Stage 9	Standard 4 Stage 10	Standard 4 Stage 11	Standard 4 Stage 12	Standard 5 Stage 13
Reflect upon personal strengths and interests	create a personal profile describing strengths and interests	collate material from a range of sources for inclusion in a personal portfolio	describe their skills and attributes across a range of organisers e.g. school, family, home, leisure and recreation, work...	develop portfolio material that describes their ability across a range of skill areas	create a personal portfolio that includes a letter of introduction, resume, contact details and referees page
Set personal goals	participate in a program that simulates decision making in adult life e.g. The Real Game	create a personal vision statement, anticipating future pathways	demonstrate consumer awareness and responsibility e.g. control of impulsivity	use a risk analysis process to assess suitability of personal goals e.g. SWOT, decision matrix, drilling down...	develop a commitment to a potential career pathway and negotiate learning opportunities that enhance the development of skills and experience in this particular area
Develop participation skills	become involved in broader community groups e.g. environment, sport, theatre, volunteering, leaflet drops, paper runs...	list key participation skills and conduct a personal audit of these	identify the core employability skills that employers are seeking	consider the resources and skills they will need in order to live the life they want	consciously develop skills in areas that require improvement
Learn about life and work	explain cause and effect scenarios of community removal/collapse e.g. no garbage collection	provide evidence of participation in a series of communities for everyday life and learning	research in detail a particular industry or pathway	work informally in a range of contexts related to personal interests through volunteering or community participation	undertake an intensive experience in a workplace or industry of their interest

Standard five: Futures Planning

The following examples are **indicators** of achievement that can be used to inform assessment

Performance criteria	Standard 4 Stage 12	Standard 5 Stage 13	Standard 5 Stage 14	Standard 5 Stage 15
Reflect upon personal strengths and interests	develop portfolio material that describes their ability across a range of skill areas	create a personal portfolio that includes a letter of introduction, resume, contact details and referees page	create a digital portfolio, adaptable to a range of contexts and audiences	practise public presentation skills in a range of contexts e.g. interview, report, demonstration...
Set personal goals	use a risk analysis process to assess suitability of personal goals e.g. SWOT, decision matrix, drilling down...	develop a commitment to a potential career pathway and negotiate learning opportunities that enhance the development of skills and experience in this particular area	create structures that support personal autonomy e.g. phone account, bank account, driving lessons...	develop a complete overview of their intended pathway including enrolment requirements, further education, salary packages, job forecasts...
Develop participation skills	consider the resources and skills they will need in order to live the life they want	consciously develop skills in areas that require improvement	demonstrate high levels of organisation for life, work and study	demonstrate high levels of support for self and others and participate in leadership roles
Learn about life and work	work informally in a range of contexts related to personal interests through volunteering or community participation	undertake an intensive experience in a workplace or industry of their interest	develop an awareness of work conditions, rights, responsibilities, union representation, awards, OH&S...	implement their personal pathway plan for life and further study or work

Glossary of terms

Abstraction

Determining the essential characteristics of an object and creating a design that represents these as basic or simple elements.

Acting ethically

The ability to think and reason within a set of explicit and defined personal values.

Action plan

A list of tasks to be completed as part of a project, usually involving assigning tasks to people and proposing a deadline.

Action research

Involves students identifying a question or problem and then collecting and analysing relevant data.

Adaptation

Something, such as a device or mechanism, that is changed or changes so as to become suitable to a new or special application or situation.

Aesthetic learning

A means of inquiry that operates cognitively and affectively through the senses to offer a particular way for students to understand the world.

Aesthetics

The properties of a design that appeal to the senses.

Affordability

Economic or financial influences on the development of a product or design.

Altruism

The belief that acting for the benefit of others is right and good.

Analogue

Information made up of gradual change in data.

Analysis

An examination of something in detail in order to understand it better and/or draw conclusions from it.

Application

The act of putting something to a special use or purpose; the capacity of being usable; relevance.

Applied learning

Learning that allows students to demonstrate their skills and understandings in a 'real world' context when students are given an opportunity to transfer the skills they have learned into project based settings.

Applied technology

The development of personal or commercial applications for technology.

Appliqué

A decoration or ornament, as in needlework, made by cutting pieces of one material and applying them to the surface of another.

Appraisal

A judgement or assessment of the value of something.

Apprenticeship

The training period for when a person is learning a trade or occupation; a combined work and learning program for a specific trade.

Assessment

The process of acquiring information and making judgements about students' learning.

Asymmetrical

When the weight of a composition is not evenly distributed around a central axis.

Attribute Web

Attribute webs are used to determine the essential characteristics or traits of an idea, a person, or thing (to show likeness or difference) or to summarize an idea or sequence of events. Once the characteristics are identified an attribute web is used to define or classify objects.

Audience

The target group/s for which a product or text is created, composed or constructed.

Authentic assessment

Authentic assessments are performance assessments that are not artificial or contrived, but linked to a real task undertaken in order to achieve a real purpose.

Authentic learning

Schooling related to real-life situations; the kinds of problems faced by adult citizens, consumers, or professionals.

Automation

Mechanical controlling of machinery for speed, efficiency and accuracy.

Autonomy

Being self-confident and having a sense of worth which includes: being free to make decisions, making informed choices, taking ownership for one's own learning and future pathways, being independent adult learners.

Baby boomers

A member of the post World War 2 'baby boom' generation born between 1946 and 1964

Backward Design/Planning

An approach in which the outcomes of a project are decided upon first, then used as a basis to determine the appropriate process, materials and personnel to realise the goals or aims that have been set.

Balance

A visual equilibrium; the reconciliation of opposing forces in a composition that results in visual stability.

Balance sheet

A statement of a business or institution that lists the assets, debts, and owners' investment as of a specified date.

BAR

A method to encourage creative thinking among students, to adapt or modify their design or that of an existing product:

- **Bigger** – make a part or the whole bigger
- **Add** – add something to make it more appealing, practical or adaptable
- **Remove, reduce or replace** – take away a part, make a part smaller or replace a part

Bio-diesel

A fuel that is similar to diesel fuel and is usually derived from vegetable sources.

Bio-fuel

Fuel derived from biomass.

Brainstorm

An instructional tactic used for group problem-solving that involves the spontaneous contribution of ideas from all members of the group.

Bundling

Uses inductive thinking and is a tactic in which ideas or responses are grouped or 'bundled' into various categories decided upon by the students or participants.

Business

A commercial activity engaged in as a means of livelihood or profit, or an entity which engages in such activities; a legally recognized organisational entity designed to provide goods and/or services to consumers or corporate entities such as governments, charities or other businesses.

CAD

Computer Aided Design

CAM

Computer Aided Manufacturing

Career

The process of managing life, learning and work over the lifespan - an ongoing lifelong process that is no longer just about particular pathways through work, but more about the sequence and variety of roles (both paid and unpaid) that one undertakes throughout a lifetime. More broadly, 'career' includes life roles, leisure activities, learning and work.

Careers expo

An organised event which showcases several different industries or employers to students.

Casting

Making objects by pouring molten or liquid materials into moulds, allowing it to solidify inside the mould and then removing it from the mould.

Client

A customer or patron.

CNC

Computer Numeric Control

Coaching

Directing, instructing and training a person or group of people, with the aim to achieve some goal or develop specific skills; a style of learning that helps a student achieve the required level of skill, knowledge and competences.

Cognition

The mental process of knowing, including aspects such as awareness, perception and judgement.

Collaboration

A relationship between individuals or organisations that enables the participants to accomplish goals more successfully than they could have separately.

Colour

The appearance of objects (or light sources) described in terms of a person's perception of their hue and lightness (or brightness) and saturation; colour represents emotion and allows objects to stand out from their background.

Communication

The exchange of information between people; the process of sharing thoughts, ideas, information and messages. Communication requires that all parties understand a common language that is exchanged with each other.

Community

A group of people linked by common ground i.e. living in the same area or having same or similar interests.

Community based learning

Any learning that takes place within a school's community, usually with a public or project outcome.

Competencies

Groups of skills, behaviours or knowledge that are identified as performance standards for a particular job.

Components

Parts that combine to form an object or a system.

Composition

The combining of distinct parts or elements to form a whole; the manner in which such parts are combined or related.

Consumer

One who uses or purchases a product or service.

Contrast

Setting the point of emphasis apart from the rest of its background.

Concept

A mental construct that classifies sets of examples or ideas sharing common attributes. They are usually timeless, universal, abstract and broad in scope.

Concept map

Concept maps are tools for organising and representing knowledge. They illustrate concepts and the relationships between them. These links are indicated by words that specify the relationship between two or more concepts.

Context

Context can be described as the range of personal, social, historical and cultural situations in which a text or product is constructed and responded to.

Consumer

A person that acquires goods or services for direct use or ownership rather than for resale or use in production and manufacturing.

Contractor

A self-employed person engaged by a business to perform a specific task over a set period of time.

Cooperative learning

A teaching strategy combining teamwork with individual and group accountability. Working in small groups, with individuals of varying talents, abilities, and backgrounds, students are given one or more tasks. The teacher or the group often assigns each team member a personal responsibility that is essential to successful completion of the task.

Copyright

The exclusive right of a designer, author or publisher to market their work.

CRASH

A process that helps students generate and appraise their ideas:

- **C**reate the idea
- **R**esearch the idea
- **A**ction the idea
- **S**how and Tell
- **H**arvest the rewards

Creativity

The ability to develop successful alternative solutions to stated problems; engaging in imaginative and reflective thinking, experimentation and problem solving which includes:

- Demonstrating enterprise and innovation
- Valuing originality and self-expression
- Recognising and appreciating aesthetic qualities

Creative Thinking

A novel way of seeing or doing things that is characterised by - fluency (generating many ideas); flexibility (shifting perspective easily), originality (conceiving of something new), and elaboration (building on other ideas).

Critical Reflection

The means by which we work through beliefs and assumptions, assessing their validity in the light of new experiences or knowledge, considering their sources, and examining underlying premises.

Critique

A critical review or commentary, especially one dealing with works of art or design.

Culture

Customs, society, ethnicity, background or way of life.

Curriculum Vitae (CV)

A summary of a person's education, professional history, and job qualifications, usually for a prospective employer.

Data

A collection of facts and statistics used to inform decision making processes.

Decision making

The process of selecting from several choices products or ideas, and taking action.

Deconstruct

To break down into components; dismantle.

Design

The act of working out the form of something by making a sketch, an outline, a plan or a model; creating or developing the form of a product, system or environment.

Design brief

A plan identifying the problem to be solved and stating any relevant criteria or restraints; a key project planning document that specifies what the project has to achieve, by what means, and within what timeframe.

Design elements

Components of a design that can be manipulated to achieve a desired effect e.g. composition, colour, shape, scale, proportion, texture, movement, dynamic, repetition, rhythm, radiation, harmony, balance, dominance, unity, stability, gradation, line, contrast, pattern and direction.

Derivative

Copied or adapted from others.

Differentiated instruction

A form of instruction that seeks to maximize each student's learning by meeting each student where they are and helping them to progress.

Differentiated teaching

Providing for a range of student differences in the same classroom by using different learning materials, assigning different tasks, and using other practices, such as cooperative learning.

Digital media

Any form of information stored in the computer, including data, voice and video.

Direction

Horizontal, vertical or oblique lines or planes within a design.

Direct instruction

Instruction in which the teacher explains the intended purpose and presents the content in a clear, orderly way. Contrasts with inductive, discovery, or constructive teaching, in which students are led, by means of investigation or discussion, to develop their own ideas.

Discovery learning

Learning activities designed so that students discover facts and principles themselves rather than having them explained by a textbook or a teacher.

Disposition

A prevailing tendency, mood or inclination to act in a certain manner.

Divergent thinking

Thinking that moves away in diverging directions so as to involve a variety of aspects and which sometimes leads to novel ideas and solutions; associated with creativity; an idea generation technique (such as brainstorming) in which an idea is followed in several directions to lead to one or more new ideas, which in turn lead to still more ideas.

Dominance

Varying degrees of emphasis in a design.

Drill down

A simple technique for breaking complex problems down into progressively smaller parts.

Durability

The ability of a product to resist the wear and tear associated with its operating conditions.

Dynamic

Of or relating to energy or to objects in motion; using design elements to suggest force, energy or activity.

e-business

Conducting a business electronically via the internet.

Economy

Management of finances; a system of trade in which goods and services are made, traded and used.

Employability skills and attributes

The Australian Chamber of Commerce and Industry (ACCI) and other industry groups have defined the types of aptitudes and skills required in work, either working in an enterprise or being self-employed.

Attributes include: loyalty, commitment, honesty and integrity, enthusiasm, reliability, personal presentation, commonsense, positive self-esteem, sense of humour, balanced attitude to work and home life, ability to deal with pressure, motivation and adaptability.

Skills include: communication, teamwork, problem-solving, initiative and enterprise, planning and organising, self-management, learning and technology.

Enterprise learning

Enterprise learning involves students in designing, producing and marketing a product or service. Students work with the wider community, business or industry to create or produce something that is tangible and real; the establishment of businesses or community-centred activities within schools, started and run by young people using such skills as planning, negotiation, teamwork, quality control, marketing, financial planning and meeting deadlines.

Ergonomics

The science of making things fit people instead of asking people to fit things; the study of the relationship between people and their environment.

Ethics

A system of values and beliefs that guide actions within a given context.

Ethnicity

The feeling of belonging to a particular racial or cultural group.

Evaluation

Evaluation is the process of gathering, measuring, interpreting and using information to make educational decisions or judgements. The term 'evaluation' is usually used to describe a reasoned judgement about the effectiveness of a learning sequence or a program.

Exhibition

Substantial products or presentations, which are often complex public performances showcasing student learning and competence. They may be judged by an expert panel and can incorporate judgements from a range of sources including learners, peers, educators, parents and others.

Exploded view

An illustration or diagram of a construction that shows its parts separately but in positions that indicate their proper relationships to the whole.

Extrinsic motivation

When the motivation to achieve a goal does not come from within but rather is imposed on the individual.

Experiential education

Education that emphasises the personal experience of the learner rather than learning from lectures, books, and other second-hand sources.

Export

Goods and services sold by a business within a country to other countries to earn foreign currency.

Fabrication

To construct by combining or assembling diverse, typically standardised, parts.

Feedback

Comments made in relation to performance.

Finance plan

A detailed report of the resources used in a project with costs applied.

Financial literacy

The ability to make informed decisions regarding the use and management of money.

Financial statement

Report containing financial information about an organisation.

Five whys

A thinking strategy for examining an issue by asking a why question and after each response is given a why is asked again. It is recommended to do this five times to gain deeper levels of understanding of the topic or issue.

Flexible manufacturing systems

The alteration of a production line to manufacture a variety of end products.

Flowchart

A schematic representation of a sequence of operations, as in a manufacturing process or computer program.

Food Technology

The application of science and engineering to the refining, manufacturing, and handling of foods.

Form

The shape or structure of a designed product or system.

Function

The capacity of a design to fulfil its operating criteria; the action or use for which something has been designed.

Functionality

The capacity or capability of a product to serve a purpose well.

Futures

Relating to the indefinite time yet to come; something that will happen in time to come.

Futures wheel

A graphic organiser that places a future event in a circle in the centre of a document. Consequences from this first event are placed in a second ring of circles, then a third, and so on. The futures wheel identifies expanding consequences.

Gantt Chart

A schedule chart that helps work out the order in which tasks need to be carried out; identifies the resources needed to complete the project, along with the times that these resources will be needed.

Gender

Refers to the socially constructed roles, behaviours and attitudes a society or culture considers most appropriate or typical for a given gender. The concept is made up of gender identity – a person's internal sense of being male, female or a combination – and gender expression – external characteristics and behaviours that are socially defined as masculine, feminine or both.

Generation X

The generation following the post-World War II baby boom from the early 1960s to the late 1970s.

Generation Y

The generation following Generation X from the early 1980s to the late 1990s.

Generic graduate attributes

Those qualities deemed to be desirable of graduates irrespective of the courses they complete. These may include: knowledge, communication skills, problem solving skills, global perspectives and social responsibility.

Globalisation

The increase of trade and communication around the world, especially by large corporations.

Global issues

Political, social and environmental concerns that have a worldwide impact.

Global thinking

The ability to think and act as a global citizen.

Goal setting

The process of deciding on something you want, planning how to get it, and then working towards the objective.

Goods and services

The utilisation of economic goods in manufacturing or to satisfy personal needs.

GPS

Global positioning system; a world wide satellite-based navigation system.

Gradation

A series of graded values through a regular progression or steps, usually of shape, tone or colour.

Graffiti

A cooperative learning strategy that facilitates brainstorming. A group of students record their immediate responses to a given topic on a shared piece of paper. Graffiti can also be used as a group energiser.

Graphic organiser

A tool which organises information in visual form. There are many different types of graphic organisers including concept maps, fishbone maps, flow charts, Venn Diagrams and timelines. They are often used to extend student thinking and deepen understanding.

Harmony

Having component elements pleasingly or appropriately combined.

Holistic learning

A theory of education that places importance on the complete experience of learning and the ways in which the separate parts of the learning experience are interrelated.

Hydraulic

Of, involving, moved by, or operated by a fluid, especially water, under pressure.

Hygiene

Conditions and practices that serve to promote or preserve health.

Hypothesis

A hypothesis is a tentative statement that proposes a possible explanation for some phenomenon or event. A hypothesis must be testable and better hypotheses allow predictions to be made about future events e.g. plants grow taller when they are given fertiliser.

ICICLE

A sustained model for developing ideas or projects:

- Identify the goal
- Concentrate on a solution
- Identify goal again
- Concentrate again
- Let idea go
- Eureka!

ICT

Information and Communication Technologies

Idea

A thought or conception, that potentially or actually exists in the mind as a product of mental activity.

Identity

Individual characteristics, including ideas, feelings and attitudes towards self-worth and capabilities of a person or characteristics of a social group. Often used interchangeably with self-concept, self-knowledge and self-awareness which includes:

- Developing one's physical, social, sexual, cultural and emotional spiritual self
- Being responsible for one's health and well-being.
- Being resilient
- Having a sense of purpose and belonging, in terms of past, present and future contexts.

Industrial

To do with the production of raw materials or manufacturing of parts and products.

Ingredient

A component of a mixture or compound.

Imagination

The ability to form mental images of things or events.

Import

Goods and services purchased by businesses within a country from other countries.

Improvisation

The practice of acting and reacting, of making and creating, in the moment.

Indigenous people

The original inhabitants of a country also sometimes called First Peoples.

Inductive thinking

One of the two broad methods of logical reasoning - the other being deductive thinking. Inductive thinking uses a 'bottom up' approach moving from specific observations through to broad generalisations and theories.

Industrial relations

The relationship between management and workers, particularly groups of workers represented by unions.

Industry standard

A standard that is established and can be applied across an industry.

Industry tasters

Experiences designed to give students an introductory view of a particular industry or career.

Informal assessment

Teachers and students use informal assessment opportunities to make incidental and immediate judgements and provide feedback about student learning. Informal assessment is frequently used for formative assessment purposes.

Innovation

The process of implementing new ideas; a new device or process that creates a new need or satisfies an existing one in a new way.

Integrated curriculum

A way of teaching and learning that does not depend on the usual division of knowledge into separate subjects.

Intellectual property

A tangible asset arising from creative processes: human knowledge and ideas.

Interactive learning

Occurs when the source of instruction communicates directly with the learner, shaping responses to the learner's needs.

Internship

A form of vocational learning very similar to work experience or work placement. A student spends a block of time within a workplace to gain an understanding of a particular career or industry.

Intrinsic motivation

Having the drive and motivation to achieve one's goal; doing the task because one wants to.

Inquiry

A close examination of a matter in a search for information or truth.

Irony

The use of words to express something different from and often opposite to their literal meaning.

Jigsaw

A method of focusing attention and developing, then sharing expertise. It involves four steps:

1. arrange cooperative groups and assign material
2. form expert groups by grouping students with the same assigned material
3. students return to cooperative groups and take turns presenting material to one another
4. individual and groups demonstrate mastery of the material

Job description

A document that details all the relevant duties for a specific job.

Journal

A personal record of occurrences, experiences, and reflections kept on a regular basis.

Just in time learning

The acquisition of knowledge or skills as they are needed.

Just in time manufacturing

Making what the market wants, when it wants it.

Juxtaposition

To place elements side by side, especially for comparison or contrast.

Knowledge economy

The use of knowledge to produce economic benefits. A knowledge worker works with his or her head not hands, and produces ideas, knowledge, and information.

KWL

K-W-L stands for what I **K**now, what I **W**ant to know and what I **L**earned. Students brainstorm as a class or in groups what they know and list this prior knowledge (**K**). They set their goals for learning (**W**) and reflect or evaluate their learning (**L**). An updated version K-W-H-L includes **H** How will I find out?

Learning styles

Simply defined as 'different approaches or ways of learning'. Learning styles theory recognises that individuals have preferences for different types of thinking processes and this affects their learning behaviour.

Line

The linear marks made with a pen or a brush; the edge created when two shapes meet.

Literacy

A flexible group of communication skills, strategies and practices that are linked to context and purpose.

Making

The act or process of forming, causing, doing, or creating a system or product.

Management

The planned use of human, physical and financial resources to achieve set goals.

Manufacturing

The transformation of raw materials into finished goods for sale, especially by means of a large scale industrial operation.

Market

A person or group of people to whom goods and services are offered for sale.

Marketing

The commercial processes involved in promoting, selling and distributing a product or service.

Mass produced

The manufacture of goods in large quantities, often using assembly line techniques with all finished products looking the same.

Materials

The tangible substance that goes into the makeup of a physical object; things needed for doing or making something.

MDF

Medium Density Fibreboard

Mentor

A role model who offers support to another person. A mentor has knowledge and experience in an area and shares it with the person being mentored.

Mentoring

One on one counselling from a trusted and experienced adviser.

Metacognition

The ability to be conscious of and, to some degree, control one's own thinking.

Mind-mapping

Closely related to concept mapping, mind mapping is a technique for representing related ideas which radiate out from the one central idea. Mind mapping is a useful tool for students to share prior knowledge, to establish connections between ideas and to list ideas quickly without judgment.

Mini-degree

An experience of university that involves an internship, mentoring or shadowing.

Model

An approximate representation of an object or process that serves to explain a physical phenomenon. This may be in a physical form or a computer simulation.

Modification

A small alteration, adjustment, or limitation.

Monitoring

A series of assessments made over time, in order to keep track of developments in students' learning.

Mood board

A type of poster design that may consist of images, text, and samples of objects in a composition of the choice of the designer; used to develop design concepts and to communicate ideas to other members of the design team or the client.

Movement

The suggestion or illusion of motion in a painting, sculpture, or design.

Multimedia

Different types of media, including graphics, video and sound.

Multimodal texts

Mode refers to whether language is spoken or signed, written, visual, non-verbal or auditory. Many contemporary texts combine language modes and are referred to as multimodal. Particular examples of multimodal texts include television, film, video games and computer presentation media.

Narrative

A retelling, often in words of something that happened (a story).

Negotiation

The process of involving students in decisions about their learning.

Network

An extended group of people with similar interests or concerns who interact and remain in informal contact for mutual assistance or support.

Networking

Keeping in contact with a range of people; going to functions to meet like-minded people.

Norms

A standard, model, or pattern regarded as typical.

Numeracy

The demonstration of practices and dispositions that meet the demands of typical everyday situations that involve number, algebra, function and pattern, measurement, chance and data, working mathematically and space.

Objective assessment

Assessment where there is a right answer.

Ocarina

A small terra-cotta or plastic wind instrument with finger holes, a mouthpiece, and an elongated ovoid shape.

OH&S

The general area of concern in employment which covers the physiological and psychological well-being of persons engaged in work. Employers have a common law duty to take reasonable care to guard their employees' health and safety at work.

On-the-job-training

The teaching of new skills in the workplace.

Open questions

Questions that cannot be answered by a single word or phrase. For example: What is truth? Open questions are useful for promoting student discussion.

Opinionaire

A form of survey that asks students to agree or disagree with particular perspectives about a contested issue.

Organic

Forms, methods and patterns found in living systems.

Orthographic projection

A means of representing a three-dimensional (3D) object in two dimensions (2D); the drawing technique of representing lines, surfaces or solids in one or more imaginary planes that are at right angles to one another.

Outsource

To send work to an external supplier.

Partnership

People engaged in a business or other relationship together.

Patent

A set of exclusive rights granted by a state to an inventor or his/her assignee for a fixed period of time in exchange for a disclosure of an invention.

Pathway planning

Pathways are the journeys made by young people as they move through education, training and work towards independent young adulthood. Pathway Planning assists young people to explore their unique set of needs and capacities by identifying their strengths, interests, goals and aspirations. This supports them to make informed and realistic choices about their pathways

Pattern

An arrangement of repeated parts or decorative designs; a plan, diagram or model to be followed in making things (see also Template).

Part time work

Employment to work a fixed number of hours per week, which is less than the ordinary weekly hours of a full time staff member in the same classification.

Pedagogy

The art of teaching, especially the conscious use of particular approaches and methods. If a teacher uses a discovery approach rather than direct instruction, for example, she is using a different pedagogy.

Peer assessment

Peer-assessment occurs when students provide feedback to other learners about their learning. The feedback could be about the content, process or presentation of the work. To be effective peer-assessment should be structured, planned for and take place in an environment of trust. Peer-assessors should be trained in the process, and protocols for constructive criticism need to be established.

Performance assessment

A performance view of assessment requires students to be able to demonstrate their understanding in new contexts. This often requires students to take part in a culminating performance designed to exhibit deep understanding.

Performance of understanding

An activity that requires students to use knowledge in new ways or situations and that helps students to build, as well as demonstrate, their understanding.

Personalised learning

Schooling that emphasises the needs of students as individual human beings. To personalise learning, teachers must be able to adapt to students' particular interests and styles, so they must know students well.

Personal learning projects

A form of curriculum delivery which supports personalised learning. A personal learning project is typically student-initiated, self-directed and problem-based.

PEST

A simple tool that helps understand the **P**olitical, **E**conomic, **S**ocio-Cultural and **T**echnological implications of a project.

Placemat

A cooperative learning strategy which allows students to think about, record and share their ideas around a key idea or issue.

Planning

The process of setting goals, developing strategies, and outlining tasks and schedules to accomplish the goals.

P-M-I

Plus/Minus/Interesting, is a lateral and creative thinking strategy. It is used for affective processing to consider the pluses, minuses and interesting points felt about a lesson, concept or issue.

Pneumatic

Run by or using compressed air.

Podcast

Like a radio show, but instead of being broadcast live, a podcast is recorded, then distributed over the internet, so that it can be listened to directly from the website or downloaded and listened to at a later time.

Portfolio

A collection of student work chosen to exemplify and document a student's learning progress over time.

Powered technology

Technology which requires a form of energy to work e.g. solar cars, human powered vehicles, robotics...

Primary sector

Work using natural resources.

PRISME

A way of evaluating and organising a project

- **P**roblem
- **R**estrictions – size, cost, materials, ingredients
- **I**nvestigation – sketches, pictures, photographs, models
- **S**olution
- **M**anufacture
- **E**valuation

Private sector

Businesses owned by individuals or shareholders.

Problem based learning

An approach to curriculum and teaching that involves students in the solving of real-life problems rather than conventional study of terms and information.

Problem solving

Problem solving involves goal-directed thinking and action in situations for which no routine solutions exist.

Process

A series of operations performed in the making or treatment of a product; a technique or a way of doing something, especially a systematic way; implies an orderly logical arrangement.

Product

An artefact, object or system that has been created by someone or some process; the result of a manufacturing process; something that is made to be sold.

Product analysis

A process to help understand the important materials, processing, economic and aesthetic decisions which are required before any product can be manufactured, often represented as a concept map or mind map.

Production

The activity of manufacturing; transforming goods from raw materials into products; the process of making goods to be sold.

Production line

The arrangement of workers and equipment along which a product being assembled passes until completed.

Project based learning

Any learning that involves students working on a 'real world' task or challenge, typically with a public outcome.

Project management

The discipline of planning, organising, and managing resources to bring about the successful completion of specific project goals and objectives.

Properties

The characteristics that define something; its attributes.

Proportion

The comparison of dimensions or distribution of forms; the relationship in scale between one element and another, or between a whole object and one of its parts.

Proposals

Plans related to a suggested or intended activity or project.

Protocol

A code of behaviour; a structured way of doing things.

Prototype

A basic working model of a product or information system, usually built for demonstration purposes or as part of the development process.

Quality

The relative standard of materials and production methods associated with a product or design.

Quality assurance

Processes and checks that occur in the workplace that ensure a continuous process of improvement in products and workplace activities.

Radiation

Repeated unit forms, or structural subdivisions which revolve around a common centre.

Rectilinear

Moving in, consisting of, bounded by, or characterized by a straight line or lines.

Recyclability

The capacity of a product or design component to be recycled.

Reflection

The close consideration, meditation upon or contemplation of an experience, idea or concept; that operation or power of the mind by which it is conscious of its own acts or states; the capacity for judging rationally.

Remote control

The control of an activity, process, or machine from a distance, as by radioed instructions or coded signals; a device used to control an apparatus or machine from a distance.

Remote sensing

The technique of collecting information from a distance. Most common mediums used are aerial photography and satellite imagery.

Renewable

Able to be renewed or replaced.

Repetition

The repeated use of the same image or component as a stabilising influence within a pattern or design; the use of patterning to achieve timed movement and a visual 'beat'.

Research and development

Investigative activities that a business chooses to conduct with the intention of making a discovery that can either lead to the development of new products or procedures, or to improvement of existing products or procedures.

Resistant materials

Materials such as metal, wood, plastics, ceramics and glass.

Responsibility

Acceptance of individual and collective responsibility for developing sustainable communities which includes:

- Being accountable for own choices and actions
- Active engagement in, and service to the community, locally, nationally, globally.

Resource

A natural, physical or human quantity that can be drawn upon when needed.

Resume

A document containing a summary or listing of relevant job experience and education, usually for the purpose of obtaining an interview when seeking employment.

Retro-fitting

A change in design, construction, or equipment in order to incorporate subsequent improvement.

Reverse brainstorming

A technique for finding ways to prevent the actual success of a project, thereby determining what not to do:

- Reverse the problem to 'how to cause it'
- Identify ways of causing the problem question.
- Find ways of preventing the problem being caused

Rhythm

The repetition or alternation of elements, often with defined intervals between them.

Risk

The likelihood that a potential hazard will result in harm or injury.

Risk assessment

An estimate of the likelihood of adverse effects that may result from something.

Risk management/minimisation

The identification of incidents that may or do occur as a result of the same risk and putting place procedures to prevent further injury.

Robotics

A branch of engineering that involves the conception, design, manufacture and operation of robots.

Role play

Participants act out the role of characters, or parts that may have personalities, motivations, and backgrounds different from their own.

Rubric

Specific descriptions of performance of a given task at several different levels of quality. Teachers use rubrics to evaluate student performance on performance tasks.

Safe work practices

Manufacturing procedures, developed by people in the industry, that are deemed safe.

Scaffolding

The way a teacher provides support to make sure students succeed at complex tasks they couldn't do otherwise.

Scale

A proportion used in determining the dimensional relationship of a representation to that which it represents; the relative size of something to a bigger/smaller replica.

SCAMPER

A model for re-interpreting designs into new ideas:

- **S**ubstitute
- **C**ombine
- **A**dapt
- **M**odify/magnify/minimise
- **P**ut to another use
- **E**liminate
- **R**emove/reverse

Scope and sequence

Scope and sequence is vital in whole school planning and in the planning of individual learning sequences. Consideration of scope includes decisions about what is significant and manageable. Consideration of sequence includes decisions about what is necessary for sequential development of both skills and concepts.

Secondary sector

Manufacturing and process work.

Service learning

Involves young people in helping to determine and meet real, defined community needs. It is reciprocal in nature, benefiting both the community and the service providers by combining a service experience with a learning experience.

Shadowing

A form of vocational learning that involves a student working alongside a trained adult to observe their work practices.

Shape

A self contained defined area of geometric or organic form; can be positive or negative.

Skill

Proficiency, facility, or dexterity that is acquired or developed through training or experience.

Social capital

The value of connections within and between social networks.

Software

The various kinds of programs used to operate computers and related devices.

Solution

The method or process of solving a problem.

Spatial technologies

Any software or hardware that interacts with real world locations. Since everything is 'somewhere' on the earth's surface, spatial technologies have a broad range of uses across industry and education.

Specifications

Detailed instructions on how something should be done or produced.

Spiral curriculum

An approach to curriculum design that provides for periodic revisiting of key topics over a period of years, presenting them in greater depth each time.

Spreadsheet

A file that contains a grid and rows, used to produce and analyse numerical data.

Standardisation

The process of establishing a technical standard to ensure compatibility of production assemblies.

Storyboard

A sequence of frames to plan or describe dynamic media.

Style

The manner in which something is made or expressed; the combination of distinctive design features.

Stylisation

The act of stylising; causing to conform to a particular style.

Sub-assembly

A unit put together separately but designed to fit with other units in a manufactured product.

Subsystem

A system that is part of some larger system.

Suitability

Appropriate to a purpose or an occasion.

Suppliers

One who supplies materials, products, or services to others; a firm in either the wholesale or the retail supply business.

Sustainability

Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

SWOT Analysis

A framework through which **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats are identified in order to make considered judgements on an issue.

Symbols

Objects that stand for or represent something else; anything which suggests an idea or quality, or another thing, as by resemblance or by convention.

Synergy

The interaction of two or more agents or forces so that their combined effect is greater than the sum of their individual effects.

Synthesis

The combining of separate elements or substances to form a coherent whole.

Synthetic

Not made from natural (animal or plant) materials.

Systems

A combination of interconnected and interdependent things or parts forming a complex whole.

TAPP

Traineeship and Apprenticeship Pathway Program

T chart

A chart that students use to brainstorm positive and negative ideas. Students draw a large T in the centre of their page and use the columns created by the T to write different views about the topic e.g. likes and dislikes, rights and wrongs, points in favour and against.

Technology

The art and application of tools, machines, materials and processes to solve human problems.

Template

A pattern that is traced onto another material.

Tertiary sector

Work involving the provision of services.

Textiles

A textile is any kind of woven, knitted, knotted or tufted cloth, or a non-woven fabric.

Texture

The surface quality of a material or object eg. rough, smooth, soft, hard, glossy...

The Real Game

A career and life skills education programme that helps students see the connections between school studies and life after school.

Think-board

A graphic organiser designed to help students think about ideas and conceptual understandings in a range of ways. The think-board encourages students to make connections and show what they know through medium of pictures, stories, signs, and symbols.

Think-Pair-Share

A cooperative learning structure. The teacher or facilitator gives one or two minutes 'wait time' for the students or participants to think about an idea or topic and then pair with a partner for discussion. After discussing with a partner ideas are shared with the whole group.

Thumbnail

Small image to give an impression of the larger image.

Trade

An occupation, especially one requiring skilled labour e.g. the building trades, including carpentry, masonry, plumbing, and electrical installation.

Trade unions

Associations of people in a particular trade or industry who come together to improve their working conditions.

Traineeship

Financial aid that enables a person to get trained for a specified job; a combination of formal working and working in a job.

Training agreement

A formal contract relating to the training to be taken both on and off-the-job.

Transposition

To put into a different place or order; to alter in form or nature; transform.

Unknown-to-Known

An instructional approach in which objectives are presented to learners beginning with unknown concepts and proceeding to known concepts. Used as a motivational technique to induce students to want to know more.

Underemployment

Employed only part-time when one needs and desires full-time employment; inadequately employed, especially employed at a low-paying job that requires less skill or training than one possesses.

Unemployment

The state of being unemployed, especially involuntarily.

Unity

The relationship between the individual parts and the whole of a composition.

Vacuum

Containing air or other gas at a reduced pressure; operating by means of suction or by maintaining a partial vacuum.

Validity

A measure of the appropriateness of interpretations made from assessment results with regard to a particular use.

Value added

The increased value of a product after a process or action has been carried out.

Values

Values describe the underlying or expressed beliefs of an individual or culture.

Venn diagram

Venn diagrams illustrate the relationships between two or more groups of objects that share something in common. Venn diagrams do not have to overlap. However examples that fit into both categories, overlap in the circles.

VET

Vocational Education and Training (VET) provides people with skills and knowledge needed in the workplace for jobs in particular industries, including construction, hospitality, agriculture, community services, recreation, administration, IT and many others. Often these skills are gained both through a training organisation and in the workplace.

Vision statement

A statement giving a broad, aspirational image of the future that an organisation is aiming to achieve.

Visualisation

Visualisation The act of viewing or of achieving a complete visual impression of an object; any technique for creating images, diagrams, or animations to communicate any message.

Visual texts

Any visual communication using language, signs and / or symbols.

Vocational learning

General learning that has a vocational perspective. It includes elements such as generic employability skills, enterprise education, career education and community and work based learning.

Voluntary work

Work done or undertaken of one's own free will

Weblog

An online personal diary or journal, also known as a 'blog'.

Wellbeing

The concept of wellbeing encompasses the physical, mental, emotional, social and spiritual dimensions of the individual.

Wiki

A wiki is a type of website, where anyone can add, remove and edit any of the content quickly and easily. Probably the best-known example of a wiki is Wikipedia, an encyclopaedia that has been created by its users in over 200 languages.

Xylem

The fibrous material that makes up the stem and branches of trees and shrubs.

Y Chart

A Y chart is a cooperative learning strategy for discussing a multifaceted issue. A Y is used as the organiser for students to brainstorm what a topic looks like, feels like and sounds like.

Zine

The word zine is short for magazine. Zines are small, handmade, usually photocopied, booklets that are part of an underground culture.

2, 4, 8, 16 Whole class work

This strategy involves students working on an issue or task individually. They then form pairs to share ideas. Two pairs form a group of four and the process is repeated. The eight then form a group of sixteen or join as a whole class and the process is repeated for the last time. Conclusions are drawn at the whole class level.

Additional resources for teachers

Listed below are useful websites, organisations and texts that provide access to pedagogy and Vocational and Applied Learning concepts, skills and understandings throughout all four strands and across the five standards

Innovation and Design

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- Sullivan, C. (2004) *HI Tech Textiles Stage 4*, Heinemann Harcourt Education, Melbourne
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- Design 4 Life: The Technology Programme (2002) Classroom Video*
- Developing the Squeezy Bottle: The Big Squeeze Series (2005) Classroom Video*
- Marketing the Squeezy Bottle: The Big Squeeze Series (2005) Classroom Video*
- Design and Make It! 2: The Technology Program (2000) Classroom Video*
- Designing a Workshop Project: Planning, Designing and Costing in the Workshop, Classroom Video*
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Package Design In Japan, (1989) Taschen Books

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New, J. (2005) *Drawing From Life: The Journal As Art*, Princeton Architectural Press, New York

Graphic 10, Diaries, Notebooks and Sketches, graphic@magnabooks.com (2006)

Mollerup, P. (2001) *Collapsibles: The Genius of Space Saving Design*, Chronicle Books, San Francisco

Topham, S. (2002) *Blowup: Inflatable Art, Architecture and Design*, Prestel-Verlag, Munich

Inspiration Books (2007) *Design Inspirations*, DAAB Publishing

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Mumaw, S. and Oldfield, W. L. (2006) *Caffeine for The Creative Mind: 250 Exercises to Wake Up Your Brain*, How Books, Ohio

Magliaro, J. and Hung, S. (2006) *By Hand: The Use of Craft in Contemporary Art*, Princeton Architectural Press

Seven Wonders of the Industrial World, DVD

Scrapheap Challenge, SBS TV

American Chopper, Discovery Channel

Wallpaper magazine: www.wallpaper.com

Object magazine, Australian Centre for Craft and Design, www.object.com.au

(inside) *Australian Design Review* magazine, Niche Media

Xntrick cycles: <http://xntrick.co.uk/>

Bike Forest: <http://www.bikeforest.com/>

Atomic Zombie extreme machines: Atomiczombie.com

Weird bicycles: <http://www.popgive.com/2008/02/some-weird-bicycles.html>

The Sartorialist: <http://thesartorialist.blogspot.com/>

Buy and sell handmade goods online: <http://www.madeit.com.au/>

Designer: <http://www.dexigner.com/>

Interiors, architecture, design: <http://www.indesignlive.com/>

Australian INFront: <http://www.australianinfront.com.au/>

Design Sponge: <http://www.designspongeonline.com/>

Print and Pattern: <http://printpattern.blogspot.com/>

Desire to Inspire: <http://desiretoinspire.blogspot.com/>

Design and Life: <http://www.designandlife.com/>

Coolhunting: <http://www.coolhunting.com/>

Moco Loco: <http://mocoloco.com/>

Industrial Design Supersite: <http://www.core77.com/>

Superfuture: <http://www.superfuture.com/city/home/>

Style, design, art ,food, beauty, party, e-shop and online boutique: <http://www.colette.fr/>

Ecospecifier: <http://www.ecospecifier.org/>

The Anticraft: <http://www.theanticraft.com/>

Bazaar Bizarre: <http://www.bazaarbizarre.org/>

Church of Craft: <http://www.churchofcraft.org/>

Craftivism <http://www.craftivism.com/>

Betsy Ross: <http://www.betsyrosspatterns.com/>

Craftster: www.craftster.org

Craft Revolution: www.craftrevolution.com

Crafty Chica: www.craftychica.com

Crafty Ladies: www.craftyladieschicago.com

Craft Mates: www.craftmates.net

Cut out and Keep: www.cutoutandkeep.net

Get Crafty: www.getcrafty.com

The DIY Network: www.diynetwork.com

Fitz Patterns: www.fitzpatterns.com

Make Workshop: www.makeworkshop.com

Micro Revolt: www.microrevolt.org

Nexstitch: www.nexstitch.com

Portland Supercrafty: www.pdxsupercrafty.com

Renegade Craft Fair: www.renegadecraft.com

Bust: www.bust.com

Craft: www.craftzine.com

CrochetMe: www.crochetme.com

Hello Indie: <http://helloindie.us>

Readymade: www.readymademag.com

Spun Magazine: www.spunmag.com

SuperNaturale: www.supernaturale.com

Castoff: www.castoff.info

The Daily Knitter: www.dailyknitter.com

Fuzzy Galore: www.fuzzygalore.biz

Knitting and Crochet Guild: www.knitting-and-crochet-guild.org.uk

Knit Chicks: www.knitchicks.co.uk

Roxy Craft: www.roxycraft.com

Stella My Star: www.stellamystar.co.uk

Sublime Stitching: www.sublimestitching.com

Thrift Deluxe: www.thriftdeluxe.com

Mindtools: <http://www.mindtools.com/>

Systems and Processes

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Encarcion, E. (2007) *Buildings at Work* (series), QED Publishing

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Ultimate Book of Cross Sections (1996) DK Publishing

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Fashion Files, Marcom Projects

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Adolescence, Food and Health, DVD

Knife Handling Skills, DVD

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Free Woodworking Plans: <http://www.freewoodworkingplans.ca/>

Woodworking Patents: <http://www.woodworkingpatents.com/>

Furniture Maker Plans: <http://www.furnituremakerplans.com/>

Woodnobis: <http://www.woodnobis.com/>

Woodworking Hobbyist: <http://www.woodworkinghobbyist.com/>

Xtreme Woodworking Plans: <http://www.xtremewoodworkingplans.com/>

Woodworking Gopher: <http://www.woodworkingplan.ca/sitemap.html>

Robotics: <http://www.nxtprograms.com/>

Landline, ABC TV

Department of Primary Industry, Queensland: www.dpi.qld.gov.au/

Department of Primary Industry, NSW: www.agric.nsw.gov.au/

Department of Primary Industry, WA: www.agric.wa.gov.au/

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Curtis, R. et al (2002) *Thinking Strategies for the Successful Classroom: Upper Primary*, Blake Education

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Design for the other 90%: <http://other90.cooperhewitt.org/>

Architecture for Humanity: <http://www.architectureforhumanity.org/>

Design Corps: <http://www.designcorps.org/>

Design that Matters: <http://www.designthatmatters.org/>

Global Village Shelters: <http://www.gvshelters.com/>

Industrial Designers Society of America: <http://www.idsa.org/>

Public Architecture: <http://www.publicarchitecture.org/>

Squid Labs: <http://www.squid-labs.com/>

Sustainable House: www.abc.net.au/science/planet/house/default.htm

Bush Mechanics, ABC TV

Mindshop: www.mindshop.com

Conservation Volunteers: www.conservationvolunteers.com.au

Action for Climate Change: www.actionforclimatechange.org.au

Futures Planning

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Pearson, J. (2006) *Community Helpers: What Do Doctors Do?*, Echidna Books, Melbourne

Pearson, J. (2006) *Community Helpers: What Do Dentists Do?*, Echidna Books, Melbourne

Pearson, J. (2006) *Community Helpers: What Do Firefighters Do?*, Echidna Books, Melbourne

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Baby Centre: www.babycentre.com.au

Life At One, ABC TV: www.abc.net.au/tv/life

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General teacher resources

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Courses and programs

Wood Design Collection, Design Centre of Tasmania, Launceston

Australian School Of Fine Furniture, Launceston

DOT: Designed Objects Tasmania, 27 Tasma St., Hobart

Furniture Construction Course, Thynes Centre, 214 - 216 York Street Launceston, Tasmania, Australia 7250
asff.enquiries@utas.edu.au

School of Architecture and Design, University of Tasmania, Inveresk Campus, Locked Bag 1-323 Launceston, Tasmania 7250 <http://www.utas.edu.au/arch>

Academy of Interactive Entertainment, Block E, Canberra Technology Park, Phillip Ave, Watson, ACT 2602
<http://www.aie.edu.au/>

Bachelor of Design Teaching: Launceston Camp, Locked Bag 1-352, Launceston, TAS 7250

Furniture Design Course, Tasmanian School of Art, Hunter St. Hobart

Professional Associations

Home Economics Institute of Australia: <http://www.heia.com.au/>

Design and Technology Teachers Association Australia: <http://members.iinet.net.au/~datta/>

Design and Technology Association (UK): www.data.org.uk

Business Educators Australasia: <http://www.afsse.asn.au/index.htm>

Business Educators Australasia Tasmania: www.afsse.asn.au/beat/index.htm

National Association of Agricultural Educators: <http://www.naae.asn.au/>

Tasmanian Society for Information in Education (TASITE): www.tasite.tas.edu.au/

Australian Teachers of Media (ATOM): <http://www.metromagazine.com.au/metro/>