

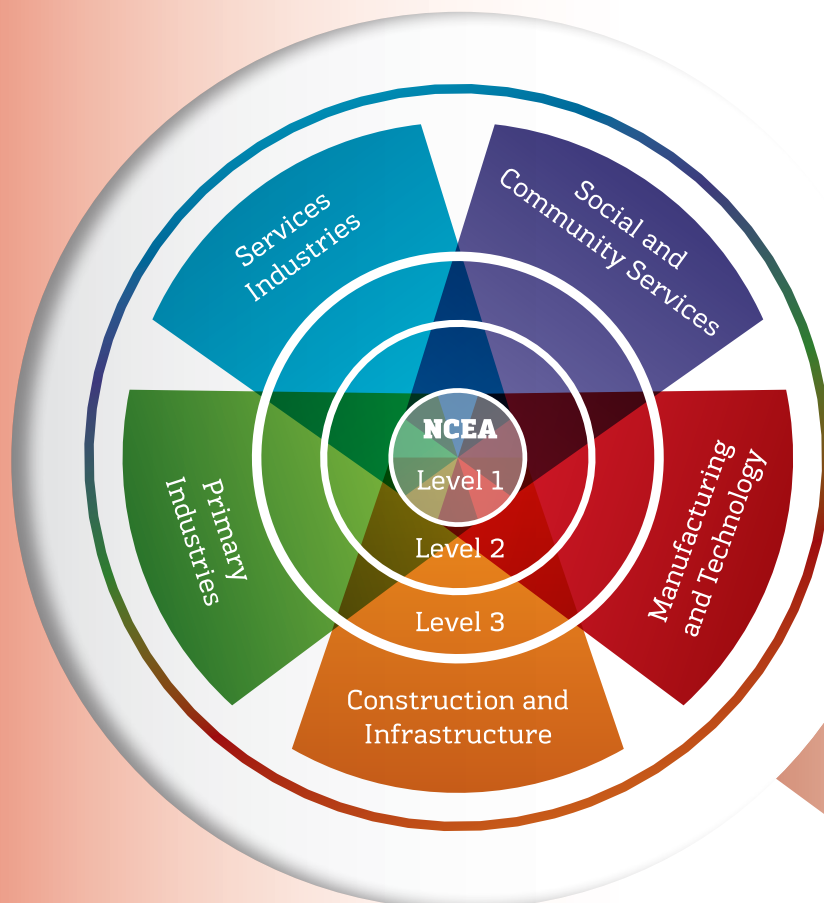
GUIDANCE DOCUMENT

This document provides guidance to schools, ITOs and tertiary providers who wish to develop programmes using the Vocational Pathways. Contexts of learning are provided as examples to encourage development in the sector.



Introduction to ICT and Digital Technologies in New Zealand

Guidance for developing a contextualised learning programme for the Manufacturing and Technology Vocational Pathway



*Graduate with
NCEA Level 2*

*Pathway to Level
2–6 industry skills or
pathway to university
professional study for
industry*



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Background

Introduction

This document provides guidance for educators who wish to develop learning programmes using particular Vocational Pathways. It outlines key ideas about Vocational Pathways and delivery approaches that align with a Vocational Pathway philosophy, drawing together secondary and tertiary perspectives on the competencies that are required for NCEA Level 2, and exploring the connections within and across pathways. Programme design is a key feature, which includes examples of practice for organisations to consider when thinking about their own contexts. Finally, considerations related to assessment possibilities are discussed. Questions are posed throughout the book for you to deliberate on and share your thinking with your colleagues.

Aim of Vocational Pathways

The New Zealand Curriculum¹ outlines a vision for all young people:

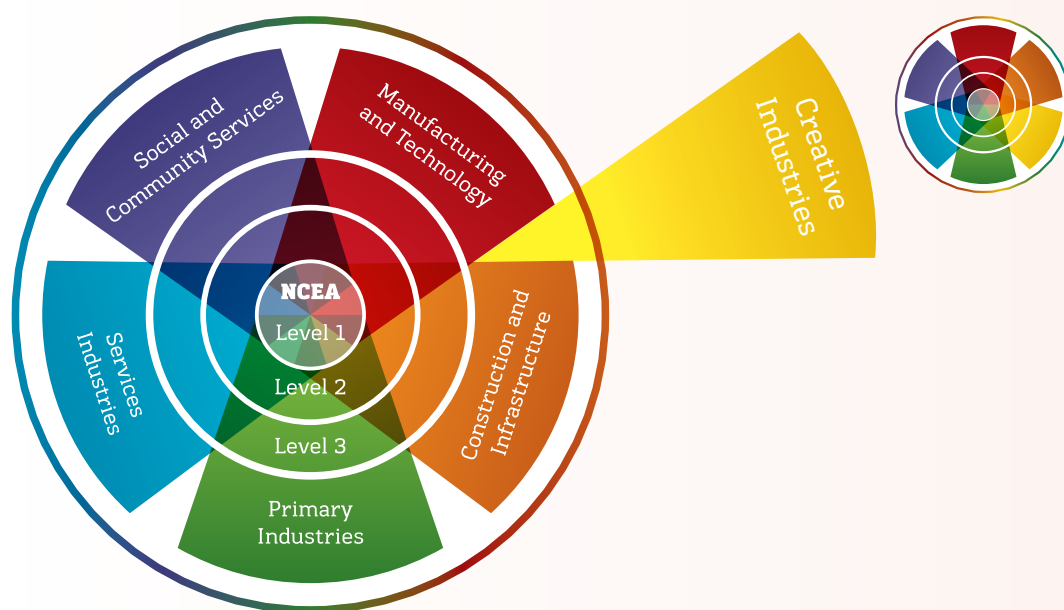
- who will be creative, energetic, and enterprising;
- who will seize the opportunities offered by new knowledge and technologies to secure a sustainable social, cultural, economic, and environmental future for our country;
- who, in their school years, will continue to develop the values, knowledge, and competencies that will enable them to live full and satisfying lives;
- who will be confident, connected, actively involved, and lifelong learners.

To achieve this vision we need to provide all young people with an education that enables them to develop the **foundational** knowledge and skills that employers are seeking.² Employers are already reporting difficulty in filling the jobs that are needed to grow their businesses owing to a mismatch between their expectations and the provision of skills and knowledge by potential employees. Furthermore, recent research has shown that employment growth in New Zealand will be stronger for more highly-skilled professions and trades but weaker in low and semi-skilled professions.³ Achieving NCEA Level 2, with Level 1 literacy and numeracy, provides the **foundation** skills, knowledge and competencies that will enable students to transition successfully to further education, training and employment.

Vocational Pathways

Vocational Pathways provide students with a framework to consider their options, identify the relevance of their learning and see the links between education and employment, using tools such as the '**profile builder**'. Using the Vocational Pathways ensures that deliberate steps are made towards equipping all students with the skills, knowledge and competencies that will allow them to succeed. The pathways also provide direct linkages between what students are learning at school, in a tertiary setting, or with an ITO provider, and the skills they will need in the future. At present there are five pathways, and a sixth pathway for Creative Industries will be available in 2014.

Figure One: The Vocational Pathways



1. Ministry of Education, 2007, p.8
 2. Harry, 2013
 3. Ministry of Business Innovation and Employment, 2012, p.5

What is a learning programme?

This section aims to clarify the nature of a learning programme within a Vocational Pathway approach. Learning programmes are defined as a set of interconnected courses based on broadly defined outcomes that progress a student towards a particular qualification. A course is generally one component within a programme, described by specifically defined outcomes and includes content and teaching and learning activities, and assessment set within a time frame. For example, in a school setting a student may follow a programme that consists of an 'academy' course, supported by two additional or optional courses. Alternatively it may be an integrated programme developed across curricula

and delivered by several teachers or tutors. Tertiary providers may also work with schools to provide programmes that the schools by themselves cannot offer. You may want to consider the following questions to review the extent to which your learning programmes align with a Vocational Pathways approach.

- How are programmes for all your students presently thought about for development?
- Who has the role of developing these programmes?
- What curricula are the learning programmes based upon?
- How is the student involved in programme creation?
- To what extent do the learning programmes show a direction through study to employment?

Key ideas about Vocational Pathways

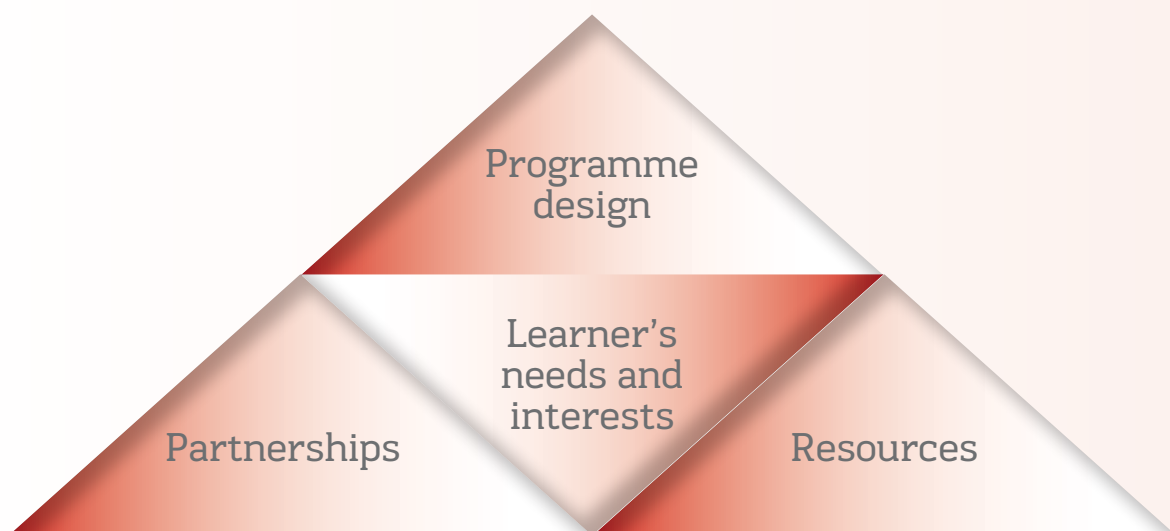
Student-centred approach

Programmes are designed to be responsive; those that respond to the particular needs and interests of students will provide the basis for increased engagement in learning, leading to higher achievement. When an organisation is independently considering the provision of resources and conditions for innovative programmes such as Vocational Pathways, this can appear difficult to achieve. However, by working alongside other partners who share the same aim for their students, the learning options for students broaden (see Figure Two).

Principles of a Vocational Pathways Approach

The Principles of the New Zealand Curriculum⁴ set out what is important and desirable in a programme of learning. Figure Three highlights four of the principles and illustrates how these align with the Principles of the Vocational Pathway approach (See page 5).

Figure 2: Collaborative approach to programme design



4. Ministry of Education, 2007

Figure 3: Principles underpinning programme design

NZ Curriculum Principles	Vocational Pathways Principles
<p>High expectations The learning programme supports and empowers all students to learn and achieve personal excellence, regardless of their individual circumstances.</p> <p>Inclusion The learning programme ensures that all students feel valued and that their learning needs are addressed.</p> <p>Coherence The learning programme offers all students a broad education that makes links within and across learning areas, provides for coherent transitions, and opens up pathways to further learning.</p> <p>Future focus The learning programme prepares students for the future.</p>	<p>Principle 1 Programmes of learning and courses are student-centred.</p> <p>Principle 2 Programmes of learning and courses comprise coherent knowledge and skills.</p> <p>Principle 3 Programmes of learning are within a coherent learning pathway leading to New Zealand qualifications and employment.</p> <p>Please refer to Appendix One, which provides guidance for educators when planning programmes that respond to the Principles of the New Zealand Curriculum and Vocational Pathways.</p>

Benefits for learners

Engaged in a programme of learning related to a Vocational Pathway, or across Vocational Pathways, learners could:

1. Gain a foundation experience, knowledge and skills in a Vocational Pathway

- Learners are equipped with a foundational knowledge, understanding and realistic expectation of the employment sector requirements.
- A graduate can achieve NCEA Level 2, which includes literacy (10 credits) and numeracy (10 credits) at Level 1 or above including :
- 60 Level 2 credits from the *recommended* assessment standards for a particular Vocational Pathways sector, of which 20 Level 2 credits are from *sector-related* standards for the same sector, which can be found in the following [link](#).
- May also be eligible for a [Vocational Pathway Award](#) in Manufacturing and Technology, which can be requested from June 2014 and will be automatically available from 2015.
- May also be eligible for NCEA Level 2 course endorsement, where students have performed exceptionally well (14 credits at excellence or merit) in individual courses.
- May also be eligible for NCEA Level 2 certificate endorsement, if a student gains 50 credits at excellence or merit level.

2. Be prepared for higher learning

- From February 2014 a Vocational Profile will be accessible on the NZQA website.
- A graduate from a Level 2 "Introduction to ICT and Digital Technologies in New Zealand" Vocational Pathways programme will have their foundation for higher learning knowledge, skills and valued competencies acknowledged.
- A graduate will achieve NCEA Level 2 through study at Level 7 of The New Zealand Curriculum and in relevant industry knowledge and skills at New Zealand Qualifications Framework Level 2 or higher.
- A graduate will be able to meaningfully progress to further Level 2 industry programmes and on the job experience.
- Opens up pathways towards diploma and degree level study.

3. Understand and be aware of the pathways from education towards employment

- See what future courses and qualifications are available after completing the current programme of learning.
- Understand how the programme of learning can lead towards future employment.
- Understand how key competencies are being developed in this programme and how they are valued by future employers in the Manufacturing and Technology pathway.
- Understand how and why subject knowledge, skills and practices are important in this programme and how they contribute to the world of work across the Manufacturing and Technology sector.
- Understand how learning in the Manufacturing and Technology pathway can open up discussion of issues that are important to the wider community and industry.

Getting started

Schools, tertiary organisations and ITOs are at different places on the journey to provide Vocational Pathways for all students. In some instances collaborative relationships between organisations have been forged a long time ago, in an attempt to respond to student needs and interests, whilst in others this is still growing. This section is intended to help you wherever your starting point may be.

Strengthening and building partnerships

Collaboration and communication between secondary, tertiary and ITOs will enable educators to develop a full understanding of their students' needs, and how best to accommodate them. You may want to use the following questions to initiate conversation and reflection.

- What are our learner needs? What evidence do we have to inform us? How do we use it?
- How will students' progress and needs be monitored and shared?
- Who do we currently have relationships with?
- What possible new partnerships could be formed? Who should do this?
- How would new partnerships create benefits for our students?
- How could partnerships be strengthened?
- How will new initiatives be tracked and monitored?
- How could we alter our business model or share funding to accommodate greater changes?

Figure Four: Essential components for designing an effective learning programme

FIRST LEVEL OF PLANNING	
Students	Evidence is used to identify all student needs and interests, and students are engaged in learning.
Current learning programmes	Partners review current programmes and assess to what extent programmes are meeting the needs of the students, including those at risk of disengaging and those currently not achieving.
Community and Industry	Collaboration with the community, possible new partnerships are established, and others strengthened. Resources may be reviewed again.
Resourcing	Partners assess current resourcing and explore possible new options with community input. Educator and other expertise, for example industry, is explored, identified and sourced, this includes the need for particular expertise to support or extend students. The requirements for facilities, equipment, materials and tools are scoped.
SECOND LEVEL OF PLANNING	
Programme design	Programmes created incorporate relevant industry content and the learning areas in the New Zealand Curriculum, and focus on essential skills and key competencies, with progression to further education and employment.
Teaching and learning/ delivery approaches	Educators use evidence of teaching approaches that have a positive impact on their students. A reflective approach is used by all educators and students (see teaching and delivery section).
Location of learning	Partners identify and utilise the most appropriate locations for learning.
Connections	Connections with workplace, community and industry are actively maintained.
Assessment approaches	Assessment delivery caters for individual student needs. Quality Assurance processes exist and are monitored.

Teaching and delivery approaches

Regardless of the location of learning, there is extensive, well-documented evidence about the kinds of teaching approaches that consistently have a positive impact on the achievement of students. The research tells us that students learn best when educators:

- create a supportive learning environment;
- encourage reflective thought and action;
- enhance the relevance of new learning;
- consistently make connections between learning and the world of employment;

- facilitate shared learning;
- make connections to prior learning and experience;
- provide sufficient opportunities to learn;
- inquire into the teaching–learning relationship.⁵

Successful integration of E-learning into programmes of learning also supports and motivates students to achieve.⁶

Whilst this list is by no means exhaustive, Figure Five outlines a number of other teaching delivery approaches that could be considered.

Figure Five: Teaching and delivery approaches

Contextualised learning	<ul style="list-style-type: none"> • real life and industry related contexts • cultural contexts • build products where possible, for actual clients.
Problem solving	<ul style="list-style-type: none"> • use problem-based scenarios • use actual situations in real time • OR use virtual simulations.
Skills development	<ul style="list-style-type: none"> • introduce a wide range of foundational skills and competencies • skills are taught and practised regularly in a variety of situations.
Work-integrated learning experiences	<ul style="list-style-type: none"> • visits to a range of relevant industry sites • meet a range of industry employees across levels of the industry • use available funding mechanisms to support work-integrated learning experiences (e.g. Gateway and STAR).
Relationship building	<ul style="list-style-type: none"> • affirmation of identity, language and culture • relationships are positive and learning engages students' interests and cultural perspectives • students' achievements, attitudes, personal backgrounds and interests are sought.
Special education needs	<ul style="list-style-type: none"> • teaching environments are modified to include all students • learning difficulties and/or problematic behaviours lead to appropriate student support.
Health and Safety	<ul style="list-style-type: none"> • the physical and cultural health and safety of individuals, groups and visitors is well managed.
Learning and assessment feedback	<ul style="list-style-type: none"> • all formative feedback is regular, on time, in manageable chunks, and next steps are clearly identified • all summative feedback identifies next steps and sets achievable challenges and goals.
Reflective practice	<ul style="list-style-type: none"> • educators constantly reflect on what is going well and not so well and adjustments are regularly made. Educators encourage students to do the same.



5. New Zealand Curriculum p.33
6. Ministry of Education, 2007

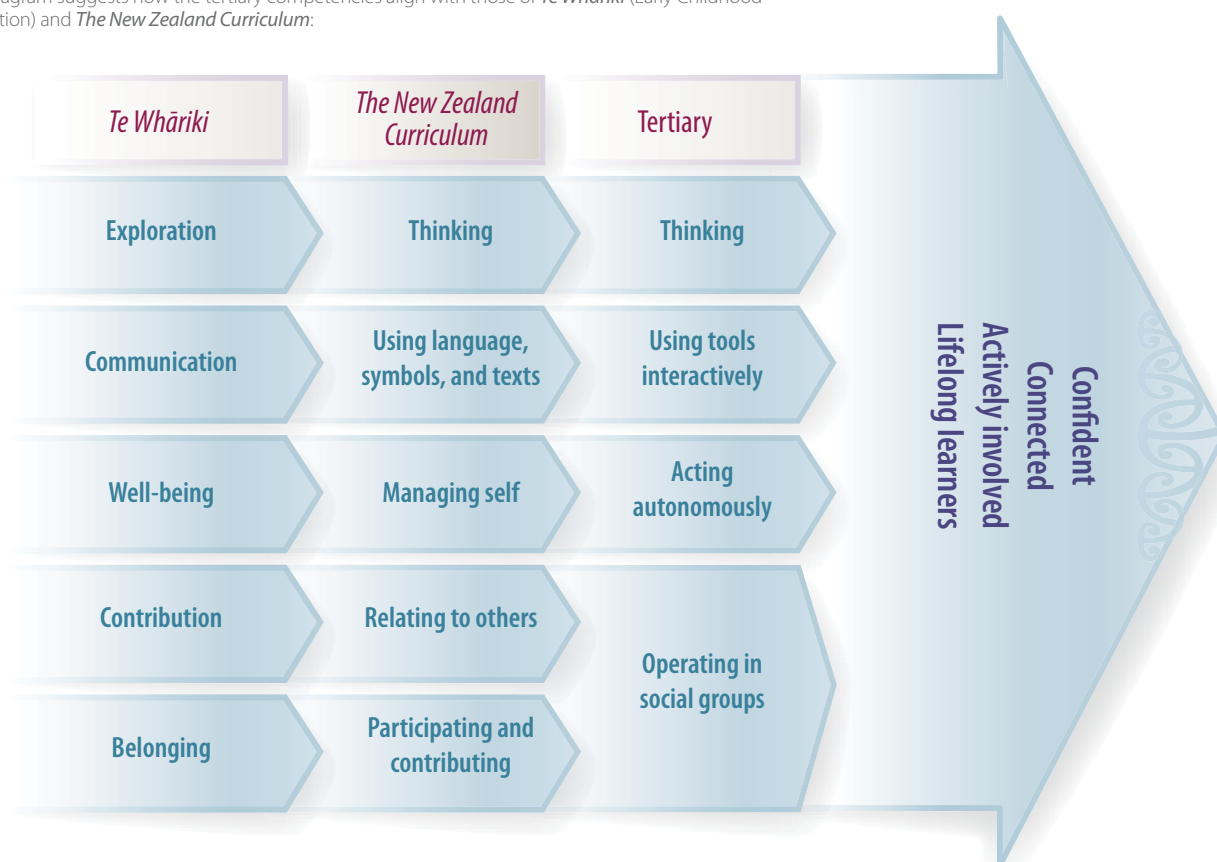
Key competencies and tertiary competencies

For students to successfully live, learn and work as members of society, the development of competencies needs to be an integral element of any programme design. Figure Six shows the competencies that have been developed for schools and tertiary providers and how these align with each other.⁷

Career management competencies have also been identified as a useful tool for educators to take into consideration when planning programmes and responding to the needs and interests of students.

Figure Six: The key competencies: Cross-sector alignment

This diagram suggests how the tertiary competencies align with those of *Te Whāriki* (Early Childhood Education) and *The New Zealand Curriculum*:




7. Ministry of Education, 2007, P42



Key competencies within the Manufacturing and Technology Vocational Pathway

Figure Seven: Elements of key competencies that can be experienced, supported and developed, whilst following the Manufacturing and Technology Vocational Pathway



Key competencies	Elements that can be experienced...	Students who experience key competencies in contexts...
Managing self Acting autonomously	self-motivation time management travel money management gear safety self-respect	are reliable, resourceful, resilient, enterprising can get to where they are meant to be, at the right time
Thinking	making sense of information, ideas and experiences developing curiosity making decisions and shaping actions	are able to ask questions can challenge assumptions or perceptions
Using language symbols and texts Using tools interactively	making meaning of codes of communication and of knowledge understanding and using symbolic systems of language – oral/aural/written/visual Using words, number and images Applying of technologies	are able to understand a range of communication codes can choose which code/notation to use at different times
Relating to others Operating in social groups	actively listening recognising different points of view negotiating sharing ideas	are able to work co-operatively as part of a team can share ideas and information
Participating and contributing Operating in social groups	active involvement contributing in a group making connections with others creating opportunities for others	have a sense of belonging and the confidence to participate in new situations can balance rights, roles and responsibilities

Contexts of learning programmes in ICT and Digital Technologies

Vocational pathways can provide the opportunity for students to have greater choice of programmes. These programmes should be broad and foundational, located within a relevant employment sector, and not locked into single industries. Partnerships between providers may be required to create more choice. Schools, tertiary organisations and ITOs should aim to provide contexts that are relevant, interesting, challenging and provide for a wide range of abilities.

Some examples of learning contexts have been provided below. This is not an exhaustive list, and is presented to stimulate further thinking and adaptation for contexts that are relevant to your students. Considerations for planning of the teaching and learning approaches related to these contexts have been outlined earlier in this document. Alongside thinking about the examples of contexts for learning, you may wish to use the following questions to check back on your planning.

In your programme of learning and delivery how are you:

- ensuring that the contexts chosen both meet the needs and interests of your students as well as a way of opening up their world?
- building on the Principles of the NZ Curriculum and Vocational Pathways?
- supporting the development of the key competencies?
- incorporating sound teaching and learning delivery approaches?
- making connections to other areas of learning and experiences?

Figure Eight: Examples of contexts for learning

Extending Human Capability – an introduction to the history of ICT development	<ul style="list-style-type: none"> • Introduce the history of human desire to extend personal capability – through myth, science fiction, actual techniques etc. • Explore the opportunities and risks that come from the desire to extend human capability.
Introduction to recent, controversial ICT developments	<ul style="list-style-type: none"> • Introduce the contemporary history of ICT developments made feasible by the development of the computer – 1980 to 2013. • Explore the technical feats, feasibility challenges and ethical debates that have arisen. • Investigate a case study of an ICT implant and prosthetic – Google glasses/surgical implants – feasibility challenges, opportunities and ethics.
Introduction to managing data and information systems	<ul style="list-style-type: none"> • Introduction to data management, data management systems, personal information ethics/requirements.
Introduction to computer programming	<ul style="list-style-type: none"> • Introduction to concepts of applied mathematics. • Introduction to programming logic, languages, algorithms. • Understand the kind of products that result from programming; e.g. Word, Google search, Smart phone apps, etc. • Develop basic skills in a programming language.

Explore 3D printing in manufacturing	<ul style="list-style-type: none"> • Explore 3D printing – ICT manufacturing techniques for product manufacturing. 3D printing of manufactured products is now feasible owing to significant technological advances. • Explore the interface between other areas of technological development and ICT that has made this possible. • Explore New Zealand capacity to make economic advances in this area.
Explore game design	<ul style="list-style-type: none"> • Explore game design and the programmes and techniques used to develop these. (Find high quality useful examples). • Explore the work of New Zealand companies and leaders in game design – Xbox/multiplayer/etc
Explore 3D ICT software programmes for animation and film making and a selection of products	<ul style="list-style-type: none"> • Explore contemporary trends in 3D film, animated film or game design. • Investigate techniques used to design and to develop new features for film and game. • Investigate the New Zealand gaming and film industries.
Explore the role of digital media	<ul style="list-style-type: none"> • Explore the role of digital media for presentation design and web site development. • Explore the use of design-based software to develop the presentation face for a range of manufactured products.
Introduction to digital media applications and software programmes	<ul style="list-style-type: none"> • Explore a range of digital media software programmes available, including their application across a selection of products. • Select several programmes and develop skills in using them, within project-based learning
The World Wide Web – explore current provision and consider future possibilities	<ul style="list-style-type: none"> • Explore the history of the World Wide Web. • Explore current provision. • Explore future possibilities.
Explore role of electronics within ICT and manufacturing	<ul style="list-style-type: none"> • Explore the history of electronics within ICT, in particular the contribution of electronics and nano technologies, to the development of ICT devices, products and systems.
Cyborgs and things Explore role of robotics within ICT and Manufacturing	<ul style="list-style-type: none"> • Explore the history of robotics within ICT, in particular the contribution of robotics and nano technologies to the development of ICT devices and systems. • Explore the consequences of new methods of manufacturing and how these alter the types of work available.

Discuss and debate privacy and copyright issues in ICT	<ul style="list-style-type: none"> • Discuss and debate privacy and copyright issues in ICT with reference to personal information, film and music.
Explore the role of good design	<ul style="list-style-type: none"> • What are generally agreed principles of good design? • Describe how 'good design' principles have been applied in an ICT related product you have researched. • Has the application of this product in situ resulted in a 'fully sustainable' impact on the environment? Justify.
Explore the relationship between cultural capital and access to digital literacy	<ul style="list-style-type: none"> • The current debate about digital literacy assumes all learners have access to digital devices. Is this the case? • The current debate about digital literacy assumes all schools can provide learners equal access to digital devices. Is this the case?
Investigate current and future trends for hardware and software systems	<ul style="list-style-type: none"> • Explore the role of hardware and software systems within large and small organisations and businesses. • What are the major components of a system? • What else is required to make this an effective system? • Learn about the ICT hardware and software system inside one business or organisation. Present your findings.
Explore the role of science fiction in development of ICT products – past or present	<ul style="list-style-type: none"> • Star Trek and other science fiction has provided inspiration for ICT product developments. • Analyse one recent example.
Consider future opportunities for ICT product development from science fiction	<ul style="list-style-type: none"> • Consider a possible future ICT product that might be developed from a Sci Fi example.
Evaluate the current status of ICT in New Zealand's infrastructure developments	<ul style="list-style-type: none"> • How does New Zealand compare with other countries in terms of our ICT infrastructure?
Explore the mathematics (and physics) involved in Computer Numeric Controlled (CNC) ICT machinery and ICT virtual tools	<ul style="list-style-type: none"> • How is mathematics (and physics) utilised in CNC, ITC machinery and ICT virtual tools? Explore an example.

Excerpts of programme design

The excerpts of learning programmes illustrate how two providers have gone about meeting the needs of their students within the Manufacturing and Technology pathway. The intention of these examples is to stimulate discussion about what a programme may look like in your area for all students. Other examples could incorporate programmes

that are designed for students to follow the Manufacturing and Technology pathway, in preparation for degree-level study and careers such as engineering technology, engineering manufacturing, mechatronics, production manufacturing, software engineering and information technology management.

Technology Luge project

For three schools in the Waikato, making a steel luge has proven a hugely engaging project for boys taking Level 1 technology. As they have learned new practical and technological skills, the students have also learned a lot about self-management, project ownership, and other vital workplace competencies. A competition is a major motivating factor.

Aim: To use the scope of the New Zealand Curriculum so that students learn to be innovative developers of products and systems.

Context of learning: It is a full-time project, each school involved builds its own NZ Curriculum level 6 programme around the luge context. The project makes use of an unused luge track built by the council about 25 years ago. The context provides an intersection between technology, science and mathematics. When specialist subject educators are required, they are drawn into the teaching and learning.

Qualification: Students can achieve NCEA Level 1.

Pathway: Technology students go on to a wide variety of further training and vocations. These include Wintec, trades and army. The self-belief, collaborative and self management skills that students learn in year 11 technology stands them in good stead for careers in other Vocational Pathways too.

For more information about the technology luge project please refer to the [Contextualised Learning Examples](#)

School of Secondary-Tertiary Studies

A collaboration between Manukau Institute of Technology (MIT) and a consortium of Counties Manukau schools aims to provide a seamless pathway from year 11 to tertiary education for students who need new purpose and clear direction. Also known as the Tertiary High School.

Aim: For students who are finding the secondary school environment isn't right for them, and would like to "continue their education in diverse, innovative and exciting surroundings" with goals that include NCEA, career and technical qualifications and employment.

Context of learning: It is a four year programme, schools recommend students for enrolment at MIT, and students remain enrolled in their home school so that they can take part in school activities. Programmes are based on a holistic approach to education, personal pathway plans and supplemental instruction, supported by the resources of a large institute of technology. This includes NCEA courses, elective courses such as information technology and MIT Certificate in Pathways to Tertiary Studies 1–3.

Qualification: Students can gain NCEA Level 3, as well as vocational/technical qualifications.

Pathway: Students can proceed along different pathways. Next steps can include: a wide range of certificate and diploma qualifications, with NCEA Level 2 being achieved along the way, NCEA Level 3 and then further study up to degree level, apprenticeships and employment.

For more information about the School of Secondary-Tertiary Studies please refer to the [Contextualised Learning Examples](#)

Design the content and approach for a learning programme.

Consider the following example, which provides a possible framework and some starters for joint planning between secondary, tertiary and ITO providers to develop a learning programme. Partners may need to work together to make sure all the areas below are adequately covered.

Figure Nine: Example of a framework for planning the learning programme

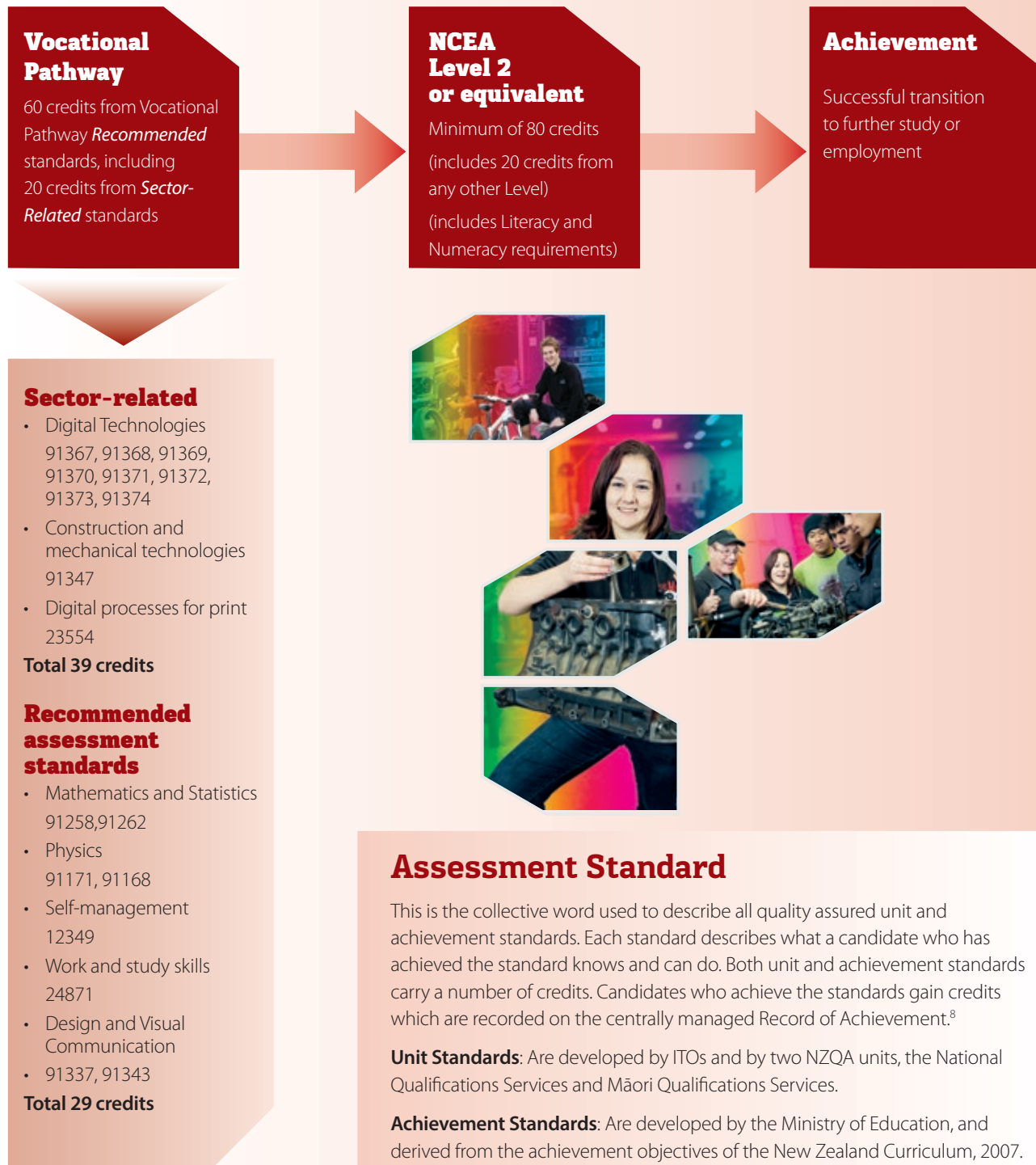
Student-centred learning and agreed learning outcomes: For students to have the knowledge, skills and competencies needed to transition to further education, training or employment.		
Learning domains and their subfields E.g. Chemistry Computer science Engineering Mathematics Materials Science Systems Science	Industry valued content Explore 3D printing – ICT manufacturing techniques for product manufacturing. 3D printing of manufactured products is now feasible owing to significant technological advances. Explore the interface between other areas of technological development and ICT that has made this possible. Explore New Zealand capacity to make economic advances in this area.	Possible contexts Explore 3D printing in manufacturing
Learning areas and their subjects To use achievement objectives Click here to go to the New Zealand Curriculum E.g. The Arts English Mathematics and Statistics Social Sciences Science Technology		
Key competencies Refer to p. 8–9 of this document for guidance	Possible teaching and delivery approaches Refer to p. 7 of this document for guidance	
Assessment links Click here to see possible Assessment Standards Also include formative assessment strategies	Learning Environment considerations Click here to find information on Safety and Technology Education	Resourcing Refer to p. 6 of this document for guidance
Pathways Consider the pathways that will open up for students by undertaking this course, for example, a contribution towards entry into Level 2/3 industry qualifications, or NCEA Level 3 as a stepping stone to industry related professional courses.		

Assessment Approaches

There are many possible assessment standards available within and across Vocational Pathways for educators and students to choose from, to complement their learning programme. The range of standards for the Manufacturing and Technology Pathway can be found [here](#).

Figure Ten provides an example of what an assessment programme could look like for one student who is following the Introduction to ICT and Digital Technologies in NZ programme at NCEA Level 2.

Figure Ten: An example of an assessment programme for one student



8. NZQA: <http://www.nzqa.govt.nz/qualifications-standards/standards/>

Vocational Pathway Award

A Vocational Pathway Award may be gained within the Manufacturing and Technology Pathway as a result of achieving in the 'Introduction to ICT and Digital Technologies New Zealand' programme. As with any NCEA qualification a vocational pathway student may also gain a certificate of endorsement or a course endorsement.

Figure Eleven: Vocational Pathway Award



Requirements for NCEA Level 2 are:

80 credits, of which:

- a minimum of 60 credits are at Level 2;
- and the other 20 credits are from Level 1 or another Level; and
- include literacy and numeracy credits at Level 1 or above.

Literacy requirement

A minimum of 10 credits through either:

- specified achievement standards available through a range of subjects and English for Academic Purposes
- unit standards (minimum of 10 credits) or unit standards – package of three literacy unit standards (minimum of 10 credits – **all** three are required).

Numeracy requirement

A minimum of 10 credits through either:

- Achievement standards – specified achievement standards available through a range of subjects (minimum of 10 credits) or
- Unit standards – package of three numeracy unit standards (minimum of 10 credits – **all** three are required).

Additional recognition of achievement available

Vocational Pathway Award

Achieves 60 Level 2 credits from the *Recommended* assessment standards for a Vocational Pathway sector, including 20 credits from the *Sector-related* standards for the same sector.

Course Endorsement

Students will gain an endorsement for a course, if, in a single {school} academic year, they achieve:

- 14 or more credits at Merit or Excellence and at least 3 of these credits are from externally assessed standards, and 3 credits from internally assessed standards.

Note: This does not apply to physical education, religious studies and Level 3 visual arts.

Certificate Endorsement

If a student gains 50 credits at Excellence, their NCEA will be endorsed with Excellence.

Likewise, if a student gains 50 credits at Merit (or Merit and Excellence), their NCEA will be endorsed with Merit.

Foundation for further learning

Figure Twelve, taken from the Vocational Pathways [information booklet](#) for the Manufacturing and Technology Pathway, shows the types of jobs that are available for young people at the different levels of education

The 'dots' in Figure Twelve show the level (or levels) of qualification usually associated with the role. Sometimes you need a specific qualification to get into a job, but in many areas you can work towards higher qualifications by learning on the job. Check out the job profiles on www.careers.govt.nz, or talk to your careers advisor to find out more.

Figure Twelve: Job opportunities in the Manufacturing and Technology Pathway

NZQF Level	2	3–4–5	5–6	7	8–10
	NCEA Level 2	Trade Certificate	Diploma	Degree	Postgraduate Degree
Aeronautical Engineer				•	•
Aircraft Maintenance Engineer		•	•		
Architect				•	•
Architectural Technician			•	•	
Automotive Electrician	•	•			
Automotive Mechanic	•	•			
Baker	•	•			
Bicycle Mechanic	•				
Biochemist				•	•
Biomedical Engineer				•	•
Biomedical Technician (Mechanical and Electronic)			•	•	
Biotechnologist				•	•
Boat Builder	•	•			
Boiler Attendant	•	•			
Brewer	•	•	•	•	
Butcher	•	•			
Cabinet Maker	•	•			
Chemical Engineer				•	•
Chemical Production Operator	•	•			
Chemist				•	•
Civil Engineer				•	•
Civil Engineering Technician/Draughtsperson			•	•	
Clothing Designer	•	•	•	•	
Clothing Marker/Cutter	•	•	•		
Clothing Pattern Maker	•	•	•		
Computer Systems Technician		•	•		
Crane Operator		•	•		
Dairy Products Maker	•	•	•		
Database/Systems Administrator		•	•	•	•
Electrical Engineer				•	
Electrical Engineering Technician			•	•	
Electrician		•			
Electronics Engineer			•	•	
Electronics Trades Worker	•	•			
Energy and Chemical Plant Operator	•	•			
Engineering Machinist	•	•			
Environmental Engineer				•	
Fabrication Engineer	•	•			
Food and Beverage Factory Worker	•				
Food Technologist			•	•	•

NZQF Level	2	3–4–5	5–6	7	8–10
	NCEA Level 2	Trade Certificate	Diploma	Degree	Postgraduate Degree
Fork-Lift Operator		•			
Furniture Finisher	•	•			
Game Developer			•	•	
Glass Processor	•	•			
Graphic Pre-Press Worker	•	•			
Importer/Exporter	•		•	•	
Industrial Designer				•	•
Industrial Spray Painter	•	•			
Information and Communication Technology Manager			•	•	•
Jeweller	•	•	•	•	
Joiner	•	•			
Lift Technician	•	•			
Light Technician	•	•	•	•	
Line Mechanic		•			
Locksmith		•			
Marine Engineer		•	•	•	
Meat Inspector		•			
Meat/Seafood Process Worker	•				
Mechanical Engineer				•	•
Mechanical Engineering Technician			•	•	
Medical Laboratory Scientist				•	
Metal Worker	•	•			
Panelbeater	•	•			
Picture Framer	•				
Plastics Technician		•	•		
Plastics Worker	•	•			
Print Finisher	•	•			
Printer	•	•			
Product Assembler	•	•			
Production Manager			•	•	
Programmer			•	•	
Project Manager			•	•	
Pulp and Paper Mill Operator	•	•			
Purchasing/Supply Officer	•	•	•	•	
Recycler/Dismantler					
Refrigeration/Air-conditioning Technician	•	•			
Saw Doctor	•	•			
Science Technician			•	•	
Screen Printer	•	•			
Sewing Machinist	•	•			

NZQF Level	2	3–4–5	5–6	7	8–10
	NCEA Level 2	Trade Certificate	Diploma	Degree	Postgraduate Degree
Software Architect			•	•	•
Systems Analyst				•	•
Tailor/Dressmaker	•	•	•	•	
Technical Writer				•	
Telecommunications Engineer			•	•	
Telecommunications Technician		•			
Toolmaker		•			
Tyre Technician	•				
Upholsterer	•	•			
Vehicle Body Builder/Trimmer	•	•			
Vehicle Painter	•	•			
Watchmaker and Repairer	•	•			
Water/Waste Water Treatment Operator		•		•	
Web Developer			•	•	
Website Administrator				•	•
Welder	•	•			
Winemaker		•	•	•	
Wood Machinist	•	•			
Wood Processing Worker	•				

Review

The purpose of this booklet was to provide you with some guidance to support you to develop learning programmes within and across the Vocational Pathways. As you continue the development of these programmes you may find it helpful to consider the questions that are posed through the booklet, including the ones on the right.

- What are you currently doing that is working well for students?
- How do you identify those students who are not doing so well, and analyse why this may be the case?
- To what extent are your programmes meeting the needs of your priority learners (Pasifika, Māori and students with special educational needs)?
- How do you currently allocate funding for off-site learning?
- How could funding from partner organisations be used differently to support the partnership approach?
- What may need to be done differently?
- How do you know what needs to be done differently?
- What can you do today?
- What can you do in the longer term?
- Who has consent to assess the Assessment Standards?
- Can this consent be developed across tertiary and secondary providers?
- How do you ensure you meet the requirements of the New Zealand Curriculum, and of industry, for 15–19 year olds?

To find out more information on Vocational Pathways, please visit our website <http://youthguarantee.net.nz/vocational-pathways/>

Appendix

PRINCIPLES

Foundation for further learning principles to help guide providers when developing or reviewing contextualised learning programmes for Vocational Pathways.

PRINCIPLE 1: Programmes of learning and courses are student-centred.

How do educators:

- 1 Explicitly plan for, deliver and assess in response to the prior knowledge and skill, and previous experiences, students bring to the course?
- 2 Use this knowledge to inform teaching decisions about what students need to learn or do next?
- 3 Design the learning environment to be inclusive for all students, including those with moderate education needs?*
- 4 Explicitly plan approaches to teaching and learning delivery that respects all students' current needs, potential, interests, desires, cultural views including world views, and ethnic/gender perspectives?
- 5 Explicitly plan approaches to teaching and learning and assessment delivery that respect the identity, language and culture of all students, ensuring delivery and assessment is conducted through respectful and caring relationships with every student?
- 6 Explicitly plan approaches to teaching and learning and assessment delivery that include a targeted focus on improving achievement outcomes for Māori and Pasifika students, students with special education needs, and students from low socio-economic backgrounds?
- 7 Explicitly investigate the literacy and language needs, and/or numeracy knowledge and skill needs of all students prior to, or at commencement of, every course, and explicitly provide relevant support, actively managing this through all course delivery and assessment?
- 8 Proactively ensure pastoral or broader social support is planned for and available as required?

PRINCIPLE 2: Programmes of learning and courses comprise coherent knowledge and skills.

How do educators:

- 1 Use the Vocational Pathway sector descriptors to guide development of programmes and courses that are educationally coherent and robust, and also situated within a broad vocational employment context?
- 2 Plan programmes that provide a coherent body of systematically organised discipline knowledge and skills, practices and competencies which progress within courses and throughout the programme?
Note: Discipline knowledge would be drawn from relevant sciences, English, technologies, mathematics, design, social sciences, arts, languages etc.
- 3 Plan courses that provide a coherent body of specialist knowledge and skills, practices and competencies from an employment sector that is embedded in a relevant and engaging context?
- 4 Deliver and assess the coherent body of specialist knowledge and skills, practices and competencies from this employment sector's particular field of practice?
- 5 Deliver and assess the coherent body of systematically organised discipline knowledge and skills, practices and competencies at regular intervals in courses throughout the programme?
- 6 Plan partnerships that effectively deliver different types of knowledge in the sites most appropriate for learning different types of knowledge and skills, practices and competencies?
- 7 Plan for and support the development of students' generic competencies, by explicitly embedding opportunities to practice and reflect on these abilities and skills throughout all courses?



* Note resource: [Universal Design for Learning](#)

PRINCIPLE 3: Programmes of learning are within a coherent learning pathway, leading to New Zealand qualifications and employment.

How do educators:

- 1 Situate course learning within broad life/world contexts, using the Vocational Pathway sector descriptions where possible?
- 2 Plan clear and authentic connections within and between programmes, within and between courses and towards next destinations?
- 3 Situate their programmes within a learning pathway that is transparent to the student, has clear and achievable next steps to study or employment and includes genuine progression links to next qualification steps?
- 4 Present their programmes and qualifications to students, their family and whānau, within current and authentic market opportunities for future employment, study or training?

- 5 Demonstrate that their programmes lead every student enrolled towards worthwhile qualifications from NCEA Level 2 to NZQF Level 4, with options for further progress?
- 6 Demonstrate that the qualifications they offer are recognised across New Zealand?

NOTE

These Principles have been developed and tested for consistency against the following documents and strategies:

Tertiary Education Strategy 2010–2015, New Zealand Curriculum 2007, Best Evidence Synthesis for Teacher Professional Learning and Development, and Best Evidence Synthesis for School Leadership and Student Outcomes, Ka Hikitia 2013–2017, Pasifika Education Plan 2013–2017, Success for All Strategy vision and work programme for inclusive education, Better Public Service Targets L2 and L4, Ministry of Education Statement of Intent 2011/12–2016/17, New Zealand Qualifications Framework, and emerging Youth Guarantee and foundation education policy.

References

Harrity, E. (2013). *Vocational Pathways: Using industry partnerships and personalised learning to improve student outcomes*. Retrieved from: http://www.fulbright.org.nz/wp-content/uploads/2013/08/oxford2013_harrity.pdf

Ministry of Business Innovation and Employment. (2012). *Medium-Long Term Employment Outlook: Looking Ahead to 2020*. Wellington: MBIE

Ministry of Education. (2007). *The New Zealand Curriculum*. Wellington, New Zealand: Learning Media Ltd.

Links

Best Evidence Synthesis for School Leadership and Student Outcomes

http://www.educationcounts.govt.nz/__data/assets/pdf_file/0015/60180/BES-Leadership-Web.pdf

Best Evidence Synthesis for Teacher Professional Learning and Development

http://www.educationcounts.govt.nz/__data/assets/pdf_file/0017/16901/TPLandDBESentire.pdf

Better Public Service Target Targets L2 and L4

<http://www.ssc.govt.nz/better-public-services>

Career Management Competencies

<http://nzcurriculum.tki.org.nz/Curriculum-resources/Career-education/Career-management-competencies>

Ka Hikitia: Ensuring Success 2013–2017

http://www.minedu.govt.nz/theMinistry/PolicyandStrategy/~/_media/MinEdu/Files/TheMinistry/KaHikitia/KaHikitiaAcceleratingSuccessEnglish.pdf

List of Assessment standards for the Manufacturing and Technology Pathway

<http://youthguarantee.net.nz/assets/Uploads/VP-Manufacturing-Technology-RD2-final2.pdf>

Manufacturing and Technology Vocational Pathway Information booklet

<http://youthguarantee.net.nz/assets/Uploads/VP-Manufacturing-Technology-RD2-final2.pdf>

Ministry of Education Statement of Intent

<http://www.minedu.govt.nz/theMinistry/PublicationsAndResources/StatementOfIntent/SOI2013/ForewordMinisterForTSE.aspx>

NZQA

<http://www.nzqa.govt.nz/qualifications-standards/standards/>

NZ Qualifications Framework

<http://www.nzqa.govt.nz/studying-in-new-zealand/nzqf/>

Pasifika Education Plan 2013–2017

http://www.minedu.govt.nz/NZEducation/EducationPolicies/PasifikaEducation/~/_media/MinEdu/Files/EducationSectors/PasifikaEducation/PEPfoldup12Feb2013.pdf

Science Safety

<http://seniorsecondary.tki.org.nz/Science/Learning-programme-design/Safety-and-ethical-considerations>

Success for All Strategy

<http://www.minedu.govt.nz/NZEducation/EducationPolicies/SpecialEducation/OurWorkProgramme/SuccessForAll.aspx>

Technology Safety

<http://technology.tki.org.nz/Curriculum-support/Safety-and-Technology-Education>

Tertiary Education Strategy 2010–2015

http://www.minedu.govt.nz/NZEducation/EducationPolicies/TertiaryEducation/PolicyAndStrategy/~/_media/MinEdu/Files/TheMinistry/TertiaryEducationStrategy2010/TE2010to2015.pdf

Universal Design for Learning

http://www.educationcounts.govt.nz/publications/special_education/education-that-fits-review-of-international-trends-in-the-education-of-students-with-special-educational-needs/chapter-sixteen-universal-design-for-learning

Vocational Pathway Award

<http://youthguarantee.net.nz/assets/VP-Award-Profile-FINAL-Amended-Version-3Sept13.pdf>

Vocational Profile builder

<http://youthguarantee.net.nz/vocational-pathways/profile-builder/>



Notes



Notes



www.youthguarantee.net.nz