

Achievement Standard

Subject Reference	Digital Technologies and Hangarau Matihiko 2.5		
Title	Use advanced techniques to develop an electronics outcome		
Level	2	Credits	6
		Assessment	Internal
Subfield	Technology		
Domain	Digital Technologies		
Status	Registered	Status date	29 November 2018
Planned review date	31 December 2020	Date version published	29 November 2018

This achievement standard involves using advanced techniques to develop an electronics outcome.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Use advanced techniques to develop an electronics outcome. 	<ul style="list-style-type: none"> Use advanced techniques to develop an informed electronics outcome. 	<ul style="list-style-type: none"> Use advanced techniques to develop a refined electronics outcome.

Explanatory Notes

- This achievement standard is derived from the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at <http://seniorsecondary.tki.org.nz>.

Further information can be found at <http://www.technology.tki.org.nz/>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Ministry of Education at <http://technology.tki.org.nz/Technology-in-the-NZC/Safety-in-Technology-Education-revised-2017>, and the Health and Safety at Work Act 2015.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* outcomes to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

- 2 *Use advanced techniques to develop an electronics outcome* involves:
- using appropriate resources and techniques to develop a functional electronics outcome
 - testing and debugging to ensure that the electronics outcome performs to specifications
 - explaining the interfaces and functions of components and systems
 - explaining relevant implications.

Use advanced techniques to develop an informed electronics outcome involves:

- identifying the behaviour and function of the electronics outcome
- testing and modifying to ensure reliability of the electronics outcome
- evaluating the choice of components and systems used
- addressing relevant implications.

Use advanced techniques to develop a refined electronics outcome involves:

- undertaking iterative improvement throughout the design, development and testing process to produce a high-quality electronics outcome
- justifying the choice of components and systems used.

- 3 Examples of *advanced techniques* may include:
- using embedded software
 - subsystem level design
 - remote control
 - advanced printed circuit board (PCB) development
 - data storage (EEPROM)
 - analogue to digital conversion (ADC).
- 4 Examples of *testing, modifying and debugging* include:
- using testing devices and testing strategies
 - testing expected, boundary and invalid inputs
 - changing board layout
 - improving component selection.
- 5 Examples of *relevant implications* include:
- social
 - cultural
 - legal
 - ethical
 - intellectual property
 - privacy
 - accessibility
 - usability
 - functionality
 - aesthetics
 - sustainability and future proofing
 - end-user considerations
 - health and safety.

- 6 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

Replacement Information

This Achievement Standard replaced AS91374, AS91375, and AS91376.

Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233