

Achievement Standard

Subject Reference

Information and Communication Technology 2.1

Title

Develop and model a conceptual design in information and communication technology

Level

2

Credits

6

Assessment

Internal

Subfield

Technology

Domain

Technology – General Education

Registration date

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This achievement standard involves the formulation of a brief, and the use of planning, to develop and model a conceptual design to address an identified issue in information and communication technology.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> • Identify key factors and their implications in formulating a brief to address an identified issue. • Use planning to guide ongoing development work. 	<ul style="list-style-type: none"> • Prioritise key factors, explaining their implications and interactions, in formulating a brief to address an identified issue. • Use planning to develop, review, and revise ongoing planning to aid the development work. 	<ul style="list-style-type: none"> • Prioritise key factors, explaining their implications and interactions, in formulating a brief to address an identified issue. • Use planning to develop, review, and revise ongoing development work and to pre-empt anticipated problems and/or overcome actual problems and/or maximise opportunities.

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Use modelling media to develop and model a conceptual design and demonstrate its fitness for purpose to address the identified issue. 	<ul style="list-style-type: none"> Use modelling media to develop and model a conceptual design and demonstrate its fitness for purpose to address the identified issue and concerns of key stakeholders. 	<ul style="list-style-type: none"> Use modelling media to develop and model a conceptual design and demonstrate its fitness for purpose to address the identified issue and concerns of key stakeholders. Justify the viability of the conceptual design as a potential outcome.

Explanatory Notes

- 1 This achievement standard is derived from *Technology in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1995; Level 7, and *Hangarau i roto i te Marautanga o Aotearoa*, Te Tāhuhu o te Mātauranga, 1999.
- 2 Useful information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 1998; and in the Health and Safety in Employment Act 1992.
- 3 The *issue* needs to be identified by the student from a teacher-given context. The issue may be personal to the student, or one owned by others. This issue will generate a range of needs or opportunities for technological practice.
- 4 A *conceptual design* is a description of an intended technological outcome (product, system, or environment).
- 5 *Develop and model* includes all aspects of technological practice from the identification of the issue through to the modelling of the conceptual design. *Model* means to investigate and construct a representation to explain, explore, and test the characteristics sought in a fully developed conceptual design. Modelling can be used for ongoing evaluation throughout the development of a conceptual design.
- 6 *Modelling media* may include (but are not limited to) the following – two- or three-dimensional physical models (full-sized or scaled), computer simulations using a range of computer and audio-visual mediums, folios, OHTs, sketches with written explanatory notes.

- 7 A *brief* is a clear description of both the desirable outcomes sought and the constraints to be met by a successful technological outcome. A brief commences with a conceptual statement of the need, issues, or opportunity being addressed, and also contains the detailed specifications against which the success or otherwise of the outcome can be tested. Ideally, the brief is fully researched and defined in advance of development of the technological outcome but often, as the development work proceeds, the knowledge and understanding of the technologist improves sufficiently that refinements (usually improvements) are made to the brief and its specifications.
- 8 *Planning* is used to structure technological practice into manageable stages and establish key milestone dates and expected outcomes. Planning includes such things as identifying how key resources, which may include (but are not limited to) time, expertise, materials and finance, are allocated and used efficiently during the development of a technological outcome. Planning is critical to ensure that effective consultation with stakeholders will be carried out so that all constraints and requirements are met and/or opportunities are optimised. Tools that are used for planning will depend on the nature and the stage of the technological practice being undertaken. Planning tools include such things as plans of action, Gantt charts, flow charts, block sequence diagrams, journal notes.
- Planning* must reflect the dynamic and evolving nature of development work due to the ongoing evaluations and subsequent modifications and/or refinements. Regular reviews of planning tools should be undertaken and required changes made to ensure remaining time and resources are allocated to achieve the desired technological outcome.
- 9 Evidence of planning needs to be demonstrated throughout the student's entire technological practice.
- 10 *Key factors* are those that contribute both directly and indirectly to a specific technological practice and may include:
- broader factors, such as legal, social, cultural, political, environmental and economic factors including consideration of global and future trends, and culture of technological innovation
 - stakeholder factors, such as beliefs, ethics, values, ability to access knowledge and skills, and social position
 - knowledge and skills available that may underpin the development and use of the given technology.
- 11 *Viability of the conceptual design* refers to the capacity to meet the specifications of the brief, address possible social and environmental impact(s), meet likely future demand, and address availability of resources for its maintenance.
- 12 *Key stakeholders* are those stakeholders who have a vested interest in the identified issue.

Quality Assurance

- 1 Providers and Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against achievement standards.
- 2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference

0226