

MINISTRY OF EDUCATION GUIDANCE

INTRODUCTION

This paper provides guidance from the Ministry of Education for school managers, Boards of Trustees, and curriculum leaders in relation to technology education. It outlines how the learning area of technology fits within *The New Zealand Curriculum (2007)*.

It provides overall guidance for teaching and learning, including some specific guidelines for schools to consider during the implementation phase of the technology curriculum in *The New Zealand Curriculum (2007)* during years 2008 and 2009, and for 2010 and beyond. It also provides specific guidance and suggestions for schools offering programmes for students in years 1-6, years 7-8, and years 9-13.

OVERALL GUIDANCE

Technology is one of the eight learning areas included in *The New Zealand Curriculum (2007)*. State and State Integrated schools are required to provide all students in years 1-10 with effectively taught programmes of learning in technology as part of a balanced school curriculum. The development of all learning programmes in technology should seek to align with the principles, vision, values and key competencies of *The New Zealand Curriculum (2007)*. Decision making about knowledge, skills and competencies in all learning programmes in technology, should be based on the achievement objectives of the technology curriculum in *The New Zealand Curriculum (2007)*.

The National Educational Goals (NEGs) and the National Administration Guidelines (NAGs), support the importance of technology for a balanced school curriculum. For example, the development of technological literacy is key to the development of the knowledge and skills needed by New Zealanders to compete successfully in the modern ever-changing world (refer to NEG 3).

School programmes in technology should also provide access for students to a nationally and internationally recognised qualifications system to encourage a high level of participation in post-school education in New Zealand (refer to NEG 8). Technology is now included in the canon of subjects for university entrance. Senior secondary programmes should therefore be developed, where possible, to provide appropriate pathways for students with the potential to further their technology education in the tertiary sector.

Quality teaching and learning in technology classroom curriculum should also seek to be in keeping with *The New Zealand Curriculum (2007)* including its curriculum design and pedagogical guidelines, and the NEGs and NAGs. In particular, planned learning experiences should allow for excellence to be achieved in technology through the establishment of clear learning objectives, monitoring of student performance against those objectives, and the development of learning opportunities to meet individual needs (refer to NEG 6, NAG 1).

A range of assessment practices should also be employed to gather information that is sufficiently comprehensive to enable the progress of students in technology to be evaluated and reported; to students, their parents and subsequent teachers (refer to NEG 2, 6, 7, 9 and 10, and NAG 1, 2 and 6).

IMPLEMENTATION OF THE TECHNOLOGY CURRICULUM

The Ministry of Education goals for technology education are: to develop seamless quality technology education for all New Zealand students from early childhood, and through years 1-13, as part of students general education; to raise the quality and effectiveness of teaching and learning in technology; and to promote a focus on the technology curriculum introductory learning area statement and achievement objectives, to provide consistent and coherent messages for teaching and learning in technology.

The technology curriculum in *The New Zealand Curriculum (2007)* consists of three strands (Technological Practice, the Nature of Technology and Technological Knowledge) and eight achievement objectives, to support the development of student technological literacy. All three strands of the technology curriculum in *The New Zealand Curriculum (2007)* work together to set the overall direction for learning in technology.

There is no longer a requirement for schools to provide learning experiences that cover four to six of the seven technological areas that were defined in *Technology in the New Zealand Curriculum* (1995). Instead, schools will be required to develop coherent learning programmes that reflect a broad range of contexts that draw from and cut across a variety of areas that come from communities of technological practice. Three types of transformations are associated with technology. These are the transformation of energy, information and materials.

To further increase student engagement and gain access to mentoring support networks, schools may also like to incorporate many of the technology related awards and competitions available into their technology programmes. Examples of these include Realise the Dream, CREST, Bright Sparks, the Transpower Neighbourhood Engineers Award, Young Designer Award.

The support material in this package has been provided to aid the development of understandings of the revised technology curriculum and help teachers and curriculum leaders as they implement the technology curriculum in *The New Zealand Curriculum* (2007). At this stage, additional resource material is available to support teachers in developing programmes and pedagogical strategies focused on the Technological Practice strand. Further research will be undertaken over the next three years to provide further resources for teachers focused on the two additional strands: Nature of Technology and Technological Knowledge. These resources will be available from 2010.

RECOMMENDATIONS FOR TEACHERS

When developing your implementation plans over the next three years, it is recommended that you consider the following:

In 2008–2009:

- Focusing teaching and learning on the Technological Practice strand.
- Only assessing and reporting student achievement in terms of the three Technological Practice achievement objectives.
- Exploring the Nature of Technology and Technological Knowledge strands to provide depth and breadth to students' technological practice. Using the five achievement objectives provided under these strands primarily as discussion tools.
- Beginning to explore the development of programmes that include all three strands.

From 2010:

- Incorporating all three strands into technology programmes.
- Focusing teaching and learning on all three strands.
- Assessing and reporting on student achievement using all eight achievement objectives.

To support the vision for seamless quality technology education, it is essential that technology teachers in early childhood centres and primary, intermediate and secondary schools have a shared understanding of technology education and what progression in technology learning looks like.

Working from the technology curriculum in *The New Zealand Curriculum* (2007), student achievement can be enhanced by effective assessment strategies guided by the achievement objectives. Data providing evidence of individual student achievement can then be recorded and provided to subsequent teachers to ensure 'next step learning' is communicated across different learning sites. This will support the dismantling of hurdles that exist at transition points for student learning in technology and will ultimately enhance student achievement in technology at senior secondary school and improve performance in technology standards for NCEA.

Years 1-6: Recommendations for consideration by Teachers:

- Ensure links are made to entry and destination programmes and develop reporting mechanisms to support seamless learning for students;
- Draw from their existing pedagogical strengths to ensure they provide technology learning experiences that focus on progressing student learning in technology;
- Develop their own specific knowledge and skills to support a broad range of contexts;
- Work with their local community to access available resources and expertise;
- Plan to use technology learning experiences to provide authentic contexts that allow for the development of key competencies and for supporting values education;
- Plan to use technology learning experiences to enhance student general literacy and numeracy; and
- Plan to use technology contexts that encourage links to be made with other learning areas.

Years 7-8: Recommendations for consideration by Teachers:

- Ensure links are made to entry and destination programmes and develop reporting mechanisms to support seamless learning for students;
- Draw from and expand their existing knowledge and skills to ensure they provide quality learning experiences for students in keeping with the new achievement objectives and allow for a broad range of contexts;
- Develop their pedagogical strategies to ensure effective use is made of specialist equipment, resources and facilities to support progression based learning for students in technology;
- Increase links between specialist technology and generalist classroom teachers to enhance programme planning and encourage links to other learning areas; and
- Make clear links for their students to technology related careers.

Years 9-13: Recommendations for consideration by Teachers:

- Ensure links are made to entry programmes and use reported data from these programmes to support seamless learning for students;
- Draw from and expand their existing knowledge and skills to ensure they provide quality learning experiences for students in keeping with the new achievement objectives and allow for a broad range of contexts;
- Develop their pedagogical strategies to ensure effective use is made of specialist equipment, resources and facilities to support progression based learning for students in technology;
- Work alongside other technology teachers to ensure coherency between learning experiences and coverage of a broad range of contexts as part of year 9 and 10 compulsory technology programmes;
- Work alongside teachers from other learning areas and/or subjects to ensure increased depth of student learning in technology is appropriately supported in year 11, 12 and 13 technology options;
- Make clear links for students to technology related careers and support students in their future education and/or career pathway planning; and
- Increasingly use mentors from communities of technological practice and encourage students to work with real clients as appropriate.

For further explanation of the ideas presented in this paper, please refer to the other papers contained in the technology curriculum support package.

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