INTRODUCTION

Technology invites students to resolve problems that are embedded in real-life contexts through undertaking technological practice. Such practice is informed by student-held concepts of and about technology, and students’ past experiences of resolving problems. This chapter discusses what happens when technologists work alongside students in technology; in particular the influence that this involvement has on developing students’ understandings of and about technology.

The idea that students’ educational outcomes are enhanced when an expert works alongside them is not new. Learning theories such as Anchored Instruction (Vygotsky, 1978), Apprenticeship Model (Rogoff, 1990) and Expert Knowledge Theory (Bereiter, 1992) advocate that modelling by, and interaction with, experienced practitioners is key to student learning. Both the Technology in the New Zealand Curriculum [TiNZC] (Ministry of Education, 1995) and the current learning area statement for technology in the New Zealand Curriculum [NZC] (Ministry of Education, 2007) with their sociocultural underpinnings, propose that student learning in technology is benefited when students are provided with an opportunity to work in authentic contexts, and to work with communities of technological practice outside of education. Compton and Jones (1998), and Jones and Carr (1993) uphold this assertion, when recommending that teachers offer students opportunities to work in authentic contexts so that they can experience practices that lead to the development of technological outcomes. Technology achievement standards registered on the New Zealand Qualifications Framework at Levels 2 in 2005 and Level 3 in 2006, and used to assess Year 12 and 13 students respectively, seek to examine the knowledge students attain from analysing the practices of professional technologists. These standards provide assessment tools for qualification purposes and are aligned with TiNZC (Ministry of Education, 1995). They were written in the belief that it was beneficial to have students working with communities of technological practice outside of education.

While providing students with access to technologists had therefore been widely accepted (within the technology education community) as beneficial to student learning up until this research study was undertaken, there was no New Zealand classroom-based research available to validate this.

Literature on student concepts of technology and technology education prior to this research (Raat and DeVries, 1987; Raat, de Klerk, Wolters & de Vries, 1987;
Rennie, 1987; Jarvis, 1998; Burns, 1990; Rennie and Jarvis, 1993) revealed that students who had little or no experience in technology education generally had a limited concept of technology and technology education. In contrast, students who experienced technology as part of compulsory school curricula consistently held broader more accepted concepts of technology (Mather’s, 1995; Compton, 2005). Mather’s (1995) research revealed that students’ understanding of technology could be significantly influenced when they are provided the opportunity to participate in technological activities that are underpinned by curricula based on technology education. Like Mather’s (1995) research, Compton’s (2005) findings were drawn from classrooms where students experienced technology as part of their school curricula. Findings from Mather’s (1995) and Compton’s (2005) research studies therefore provided useful baseline data for the research reported in this chapter. In saying this however, none of the research mentioned above attempted to look at the influence technologists have on student concepts of technology and technology education. This research study therefore sought to address gaps between the literature and what senior secondary students in New Zealand were being asked to do – work alongside technologists.

RESEARCH AIM AND QUESTIONS

The overall aim of this research was to determine if there is an impact on student understandings of and about technology when working alongside technologist(s). The research sought specifically to explore how connections with technologists might change students’ concepts of technology and technology education, their confidence in explaining their understanding of technology and their perception of the importance of technology education. This chapter reports on four aspects from the research:

- Shifts in students’ concept of technology
- Shifts in students’ concept of technology education
- Shifts in students’ confidence to explain concept of technology
- Shifts in students’ perception of the importance of technology education

The research was conducted within an interpretive paradigm. A mixed methods approach which consisted of a written questionnaire, followed by purposive research participant interviews was used to gather data. The questionnaire provided open-ended questions to elicit data on the first two aspects discussed in this chapter. A Likert scale for students to indicate their confidence to explain/perception of the importance for aspects 3 and 4 was used to gather data for the remaining two aspects. This data was collected over two cycles – Phase One data (baseline data) collected prior to technologists working alongside students, and Phase Two following technologists working alongside students.