Year 9 students’ views towards their careers and technology education

Pamela Tolich

Abstract
Technology education is compulsory for all New Zealand students until the end of Year 10. After this time the students have the option to undertake further studies although it is no longer compulsory. Year 9 is usually the first year of secondary schooling and is often seen as the time when students start thinking about future directions. This research aims to ascertain Year 9 students’ views of technology education and its relevance to themselves and their careers.

Introduction
Technology education aims to develop technological literacy, incorporating “both technological knowledge and intellectual and practical components of technique and the history and sociology of technological change” (Davies, 1998, p.120). Technology education looks at New Zealand’s ever changing society and technological needs, as well as knowledge and practical skills in technological areas. It also aims to enable students to participate fully in a technological society in New Zealand, to equip students with the ‘know how’ to make informed choices about technology and to be actively involved in technology in the future (Ministry of Education, 1995). The curriculum aims to prepare students to understand, control and use technology and to be able to adapt to technological change (Lewis, 1999).

The question this research poses is how relevant do Year 9 students feel technology education is to their lives and future careers? Hendley (2002) states “there has been very little methodological investigation into pupils’ attitudes to technology” (p. 64). This research investigated the views of Year 9 students undertaking technology education, in the year before they would be expected to decide if they continued in this field.
Literature Review

Technology was identified as one of the seven essential learning areas in the National Curriculum of New Zealand: A Discussion Document, which aimed to support success in the modern competitive economy (Davies, 1998). Technology has changed as society has changed. At the time this discussion document was written, the New Zealand economy was seen to need technologists to use the resources as a means of technological development in order to move New Zealand forward economically (Lee & Hill, 1996; Mawson, 1998; Peters & Marshall, 1996).

Students’ attitudes and concepts concerning technology and technology education influence learning and the ability to develop technological literacy (Boser, Palmer & Daugherty, 1998; Jones, 1998). If students see technology as a progression of skills, perhaps influenced by their parents, rather than as a holistic subject, then this will constrain and limit their development of technological literacy (Brown, 1999; Jones, 1998; Satchwell & Dugger, 1996).

Attitudes towards technology tend to be more positive if the child knows, or is related to, someone in the field of technology. Those who have members of family in a profession related to technology have more positive attitudes towards technology (Boser, Palmer & Daugherty, 1998; Woolnough, 1990). Evidence also suggests that the existence of technical tools in the home and prior experience with these tools has a positive impact on attitudes towards technology (Boser, Palmer & Daugherty, 1998). However, Hendley’s (2002) research shows conflicting evidence. It was stated that several children found ‘food technology’ a waste of time and did not see the point because what was done at school was done at home. Jones (1998) sees students’ concepts of technology and technology education as having a direct influence on learning and attitudes towards technology. He suggests that a lot of students have negative concepts about what technology is and what technology is used for.

Research findings by Lee (1992) suggest that students intended length of stay at school will affect subject choice. Short-term students attending secondary school were found to follow a more practical curriculum, usually technological areas, whilst long
stay students were found to enrol in more academic courses. Other optional subjects like technology were found to be not as important as the ‘academic’ subjects for the long-term students (Lee, 1992).

Participants
The selected secondary school had a purpose built centre of technology, in which all Year 9 students studied creative problems. Year 9 students attending this school cycled around various technology classes and staff members. These classes had an emphasis on: Information Technology and Electronics, Food Technology and Biotechnology, and Hard Materials and Graphics. Four and a half hours was devoted to technology every six days. The selected secondary school had a decile rating of 7 and an ethnic composition of 54% NZ European, 8% Maori, 12% Chinese and 26% other ethnicities.

This research investigated two classes of Year 9 (thirteen year old) secondary students and their attitudes towards technology education in the secondary school setting. Both classes took technology, with a total of 43 Year 9 students being given questionnaires. Within the two Year 9 classes there were 28 males and 15 females.

Instrument
The following questions were used in the questionnaires given to the 43 Year 9 students. The questionnaires were handed out by the researcher after she had explained the research. Students were able to discuss their answers with their peers. At the top of every questionnaire was the NZ curriculum definition of technology (Ministry of Education, 1995). This was to ensure all students had access to the same definition and differentiated between ICT and technology education.

Questions

1. Do you have a particular purpose for taking technology as a subject?

2. When are you aiming to leave school?

3. What career or employment pathway do you wish to take?
4. Does your career or employment pathway need technology or need prior education in technology?

5. Do you think technology is relevant to you? Why?

6. Do you see technology as a valuable subject that you could use in the future, either in employment or as a life skill? Why?

Methodology

The nature of the research was explained to the students participating in this study. A questionnaire was used to support the discovery of new information (Hoepfl, 1997) as they are easy to analyse and are familiar to most people. There is less bias than other forms of questioning as there are no verbal or visual cues to influence the respondent (Statpac Inc, 2005).

The research was directed towards the attitudes of students towards technology. Results from the open-ended questions were grouped together and coded (Mutch, 2005). The concepts and variables remained fixed throughout the questionnaire (Creswell, 1994). The questions were the same for every individual participating. This research used a Likert scale to determine students’ attitudes about the degree of relevance of technology. A Likert scale presents a set of attitude statements where the students are asked to express a degree of agreement or disagreement (Trochim, 2005).

As with any research there were variables which were uncontrollable and may have affected the validity of the data gathered (Leedy 1997; Neuman, 1997; Pollard, 1985). The socio-economic background of the children could have affected their subject choice and their attitudes towards particular subjects. The parents’ expectations for their children, their social standing and their jobs may also have affected how subjects were perceived (Boser, Palmer & Daugherty, 1998; Jones, 1998).

Findings and Discussion

Question 1: Do you have a particular purpose for taking technology as a subject?

Findings were analysed and grouped into the following categories: career and job; enjoyment/fun; knowledge and skills; compulsory; future use; interest, experience;
qualifications; the ability to use skills already obtained; ability to eat food; and choice. Figure 1 shows students reasoning for undertaking technology as a subject. Only 14% (6) of students stated their purpose for taking the subject was because it was compulsory. Just over a quarter of the students (28%) stated they were taking technology because of their career or job. Another 19% (8) believed it was giving them knowledge and skills. The remaining 12% (5) believed it would be of future use. In all, 60% (25) of the students were taking technology because they saw it useful for their future lives.

![Participants reasons for undertaking technology](image)

**Figure 1: The reasons given by participants for undertaking technology**

**Question 2: When are you aiming to leave school?** Table 1 below indicates that most of these Year 9 students expected to leave school in Year 13.

**Table 1: Level when participants expect to leave school**

<table>
<thead>
<tr>
<th>Year group</th>
<th>Year 11</th>
<th>Year 12</th>
<th>Year 13</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 9</td>
<td>7% (3)</td>
<td>12% (5)</td>
<td>74% (32)</td>
<td>2% (1)</td>
</tr>
</tbody>
</table>
Question 3: What career or employment pathway do you wish to take? Why?

The Year 9 students that stated they would be leaving at Year 11 were taking careers in information technology and plumbing and one stated it was unknown what they were doing. Those students who anticipated leaving at Year 12 wanted to have a career in the following; McDonalds, Armed forces, automotive mechanic and unknown. One student stated the reason for leaving at Year 12 was due to the price of tertiary fees. These results indicate that those that are leaving school earlier than Year 13 are interested in what could be traditionally described as ‘non-academic’ or trade positions. This research suggests that there is a link between the year that students leave school and the employment pathway they are taking. Findings in this study concur with those of Lee (1992) who found that most students who are aiming to partake in a trade, apprenticeship or what they believe constitutes a technology based job or career are aiming to leave earlier than those who are seeking other qualifications or career options. Lewis (1999) writes that, “technology can be the vehicle for helping children understand the nature of work, and catching their first glimpses of careers” (p. 50).

Figure 2 shows participants reasoning behind their career choice. Many students (37%) were focussing on the value of fun and enjoyment. Seven percent of students were choosing their career based on a parent or relative which supports findings by Boser, Palmer & Daugherty (1998) and Woolnough (1990) who found that attitudes towards a subject tend to be more positive if the student knows someone in that field. They found that students who had members of their family in a profession related to technology have more positive attitudes towards technology. One fifth (21%) of students were unsure why they had chosen their career pathway.
Question 4: **Does your career or employment pathway need technology or need prior education in technology?**  74% (32) of the students stated they needed technology for their career.

**Question 5: Do you think technology is relevant to you? Why?**

Table 2 shows the findings from this question. Students were also asked to justify their answer. Those students who stated technology was ‘very relevant’ stated this was because of their career/job, hobbies, for future use and because it was fun. Those students who stated technology was ‘relevant’ referred to skills, future use, family upbringing, making things and career/jobs. Those students who stated they could ‘possibly use technology’ mentioned the ability to make things, enjoyment, use in the future, lack of motivation, degree of importance in relation to core subjects, skills, the ability to create new things for society, career/job prospects, everyday life skills, trying new things and enjoyment. The student who said technology was ‘irrelevant’ did not give a reason.
Table 2: The Relevance of Technology

<table>
<thead>
<tr>
<th>Degree of Relevance</th>
<th>Very Relevant</th>
<th>Relevant</th>
<th>Could possibly use it</th>
<th>Probably irrelevant</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>11</td>
<td>21</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

These results give a clear indication that most students thought that technology is either ‘relevant’ or ‘very relevant’ to their lives. 26% (11) of these Year 9 students believe technology to be very relevant with another 49% (21) of students believing technology to be relevant to their lives. Students at this level were very positive towards technology as 75% (32) thought it was relevant or very relevant to their lives.

**Question 6: Do you see technology as a valuable subject that you could use in the future, either in employment or as a life skill? Why?**

Eighty-one percent of Year 9 students stated technology was a valuable subject. These results support those of the previous question where 75% (32) stated technology was relevant or very relevant. Again those students who stated they did not know or gave no response were not recorded. Figure 3 indicates that most students believed technology was a valuable subject that they could use in the future, either in employment or for skills and knowledge.

![Why Technology is Valuable](image)

Figure 3: Participants’ views as to why technology is a valuable subject.
When comparing results from all six questions it becomes clear that Year 9 students were mainly focussed on their career, future, gaining knowledge and skills and having fun. This research has found that the majority of these Year 9 students have positive attitudes towards technology and that they believe technology education is relevant to them. One student suggested he/she enjoyed technology because it got me to use my brain and to develop my ideas. Apart from this statement most students discussed working with their hands, and making things.

If “technology is a gendered subject, associated essentially with males” (Lewis, 1991, p. 47) more research is needed in order to determine whether the reason these results are so positive is due to this sample having only 65% males or whether it is representative of this age group as a whole. Research shows that teacher knowledge and confidence also affects student’s attitude (Davies, 2000). With a small sample size of only two classes the influence of the teacher may also be a major contributing factor.

The school setting provided many variables. The passion, enthusiasm, and experience which teachers brought to the subject and the way the school promoted technology may have had significant effects on students’ subject choices. Students’ prior experiences in technology education could also have lasting effects on how technology is perceived and the importance that is placed on technology (Jones, 1998).

**Conclusion**

Pretzer (1997) writes, “the mission facing technology educators now is to educate the first generation of the 21st century to be neither technocrats nor techno-peasants, neither technophobes nor technophiles; to neither fear technology nor to place undue faith in it” (p. 17). Jones (1998) found that many students had negative attitudes towards technology. If the results from this research are representative of New Zealand Year 9 students there is reason to celebrate, as the reverse has been found. Students are positive about technology education. They see it as useful for their career and see it as relevant for their future lives. Further research has been undertaken into establishing Year 11 and Year13 students’ views of technology education. The results from this study will form an excellent comparison for this research.
References


