Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.
The Intended and Interpreted Technology Curriculum in Four New Zealand Secondary Schools: Does this all mean the same?

Ann Bondy

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Education
Massey University 2007
Abstract

In 1993 a new draft technology curriculum was introduced to New Zealand schools, followed by the publication of the final document in 1995. Its design and intentions required a shift in thinking within schools, in teaching and learning, and in the wider community. This had significant implications for the way schools managed curriculum implementation, for staffing in technology, and for resourcing. Professional development opportunities, funding support and support resource material were made available over a number of years as research in this area continued. Access to this support was not consistent for teachers and schools, and in some cases, not always sought. By the time the implementation of the technology curriculum became mandatory in 1999 for all students, Years 1 – 10, anecdotal evidence and some initial research showed that its interpretation and delivery in schools was varied, or no different from that of the previous workshop focused syllabus.

This research sets out to discover how technology education has been implemented across a small selection of schools in the Wellington region and to consider the way school management and technology staff in each school have interpreted and implemented it. Student responses to this implementation are also examined.

The study draws from four secondary schools, and the focus is on senior technology as this was viewed by the researcher as a level where the interpretation and implementation of technology education could be most diverse. Changes in national assessment practices also highlighted this diversity. Each school was treated as a case study involving interviews with principals, teachers and senior students, in order to examine how technology is understood and practised. The ways in which teachers and students understood technology is examined within a framework of contemporary national and international research literature.

The findings need to be considered in view of the fact that only four sites were used, the research is interpretive in nature, and makes use of case study methodology. In other words, the results cannot be directly generalised; however, readers are able to identify from the descriptions the extent to which findings transfer to their own context.
The distinctive factors that emerged from this study highlight that the teachers concerned interpreted and implemented the technology curriculum with a strong consideration of their students’ backgrounds, learning needs, abilities and aspirations. In addition, the teachers’ own experience and qualifications, along with contextual factors associated with the school, such as its decile rating, appeared to be linked with the teachers’ interpretation of the curriculum. Teachers identified a need for ongoing, robust professional development so that they could be confident in their practice, and have a common understanding of terminology presented in the curriculum and national assessment standards. Resourcing for schools in the form of facilities, materials and staffing was varied and also needed to be supported.

The study also identifies further research requirements to inform and support this curriculum area. These requirements ask for the extension of the present research to other schools, the evaluation of professional development programmes in technology, and the evaluation of the impact of school technology programmes on students’ learning and students’ future educational/work pathways.
Acknowledgements

There are too many people to name, to whom I am indebted for their input into the completion of this thesis. At different points over the last four years, friends and colleagues offered their support in that their faith and encouragement gave me the strength and resolve to see this work to an end. Above all I would like to make special mention of Professor Cedric Hall who willingly went over and above his already demanding work schedule to take on supervision of my thesis when another of my supervisors moved abroad. Cedric’s professional knowledge and consistent support gave me the confidence and determination to take this study to its conclusion. I would also like to thank Professor Wayne Edwards for his supervisory support. Of course this thesis could not have been carried out without the generosity and willingness of interview participants. They were obliging and welcoming in allowing me to conduct interviews with them. I conclude this piece with a special thanks to my children who carried on independently while their mother spent many hours in her office taking this study to a conclusion.

Dedication

I dedicate this thesis to my parents. My father, Dr. Fritz Bondy, a learned man, whose consistently positive outlook on life enabled him to overcome hardship, prejudice and a physical disability. He was my inspiration. To my mother also, whose determination and drive, she gifted to me.
# Table of Contents

Abstract ........................................................................................................ i
Acknowledgements ..................................................................................... iii
Dedication ..................................................................................................... iii

## Chapter 1 Introduction .............................................................................. 1
1.1 General aim of the research .............................................................. 1
1.2 Contextual background and relevance of the research .................. 2
1.3 The research .................................................................................... 3
1.4 Research aims and questions ......................................................... 4
1.5 Researcher position ....................................................................... 5
1.6 Outline of the thesis ..................................................................... 6

## Chapter 2 Literature Review .................................................................... 8
2.1 Perspectives on meanings of technology ...................................... 8
  2.1.1 Technological determinism .................................................. 9
  2.1.2 Social shaping of technology ........................................... 10
  2.1.3 Ecological priorities ......................................................... 12
2.2 Technology in education ................................................................. 13
  2.2.1 Technology in education in Britain ................................ 13
  2.2.2 Technology in education in New Zealand ....................... 16
  2.2.3 Challenges to teachers ..................................................... 17
2.3 The New Zealand Curriculum Framework .................................. 19
2.4 Technology in the New Zealand Curriculum ............................... 23
  2.4.1 Technology in the New Zealand curriculum – What is it? .... 24
  2.4.2 How schools implement the curriculum .......................... 27
  2.4.3 Teacher views of technology ......................................... 35
  2.4.4 Creative and critical thinking ....................................... 40
  2.4.5 Student views of technology ....................................... 40
2.5 Curriculum stocktake .................................................................... 41
  2.5.1 Curriculum project and futures in technology education .... 43
2.6 Some definitions ........................................................................... 47
2.7 Conceptualisations of the intended and interpreted curriculum ...... 48
  2.7.1 A theoretical framework ................................................. 51
2.8 Summary ....................................................................................... 53

## Chapter 3 Methodology ........................................................................... 54
3.1 Research aims and questions .......................................................... 55
3.2 Interpretive (qualitative) versus normative (quantitative) approaches to research .......................................................... 56
  3.2.1 Positivist/post-positivist .................................................. 57
  3.2.2 Interpretivist/constructivist ............................................. 57
  3.2.3 Emancipatory/critical ..................................................... 58
3.3 Case study ...................................................................................... 59
3.4 Interviews ....................................................................................... 63
  3.4.1 Interviewees ................................................................. 66
  3.4.2 Interview schedules/instruments ................................... 69
  3.4.3 Implementation of the interviews ................................... 73
3.5 Data analysis .................................................................................. 73
3.6 Validity and reliability ................................................................. 74
3.7 Ethical considerations .................................................................. 78
Chapter 4 Results ......................................................................................................................... 80
Part A – Results for Schools A and D ........................................................................................ 81
  4.1 School “A” ............................................................................................................................. 81
    4.1.1 Interview with principal ................................................................................................. 81
    4.1.2 Interview with teachers ................................................................................................. 84
    4.1.3 Interview with students ................................................................................................. 89
    4.1.4 Summary of responses from School A ........................................................................... 93
    4.1.5 Summary ideas overview from School A ........................................................................ 97
  4.2 School “D” ............................................................................................................................. 98
    4.2.1 Interview with principal ................................................................................................. 98
    4.2.2 Interview with teachers ................................................................................................. 99
    4.2.3 Interview with students ................................................................................................. 110
    4.2.4 Summary of responses from School D ........................................................................... 119
    4.2.5 Summary ideas overview from School D ........................................................................ 123
Part B – Results for Schools B and C .......................................................................................... 125
  4.3 School “B” ............................................................................................................................. 126
    4.3.1 Summary ideas overview from School B ........................................................................ 129
  4.4 School “C” ............................................................................................................................. 132
    4.4.1 Summary ideas overview from School C ........................................................................ 135
Part C – Analysis of themes across schools ................................................................................. 137
  4.5 Summary ................................................................................................................................ 141

Chapter 5 Discussion .............................................................................................................. 143
  5.1 Introduction ............................................................................................................................ 143
  5.2 Summary of results for each research question ................................................................... 143
  5.3 Linking results and literature ............................................................................................... 145
    5.3.1 Presenting the links ......................................................................................................... 146
    5.3.2 Perceptions of technology and curriculum interpretation ......................................... 146
    5.3.3 Social contexts, backgrounds and experience .............................................................. 147
    5.3.4 Staffing .......................................................................................................................... 148
    5.3.5 School physical resources ........................................................................................... 149
    5.3.6 Student learning needs and choices ............................................................................. 149
    5.3.7 Assessment ................................................................................................................... 150
    5.3.8 Identified future directions ........................................................................................... 151
  5.4 Theoretical framework revisited ......................................................................................... 153
  5.5 Recommendations for practice ........................................................................................... 154
  5.6 Further research .................................................................................................................. 156

References .................................................................................................................................... 158

Appendix 1: Technological Areas ............................................................................................... 167
Appendix 2a: School Principal Information Sheet ...................................................................... 169
Appendix 2b Teacher Information Sheet ..................................................................................... 171
Appendix 2c Student Information Sheet ...................................................................................... 173
Appendix 3a School Principal Consent Form .............................................................................. 175
Appendix 3b Teacher Consent Form ............................................................................................. 176
Appendix 3c Student Consent Form .............................................................................................. 177
Appendix 4a Principal Interview Schedule ................................................................................... 178
Appendix 4b Teacher Interview Schedule ..................................................................................... 179
Appendix 4c Student Group Schedule .......................................................................................... 181
Appendix 5: Table of Common Themes Colour Coded to Match Interview Schedule Themes ........... 182
List of Figures

Figure 2.1  Diagrammatic definitions of “technology” and “technology practice” 10
Figure 2.2  Dimensions of technology practice and experience ....................... 11
Figure 2.3  The New Zealand Curriculum Framework ........................................ 22
Figure 2.4  The intended integration between strands, areas and contexts ........... 27
Figure 2.4  Theoretical framework .................................................................. 52
Figure 3.1  Methodology overview ................................................................. 54
Figure 3.2  Case study overview ..................................................................... 60
Figure 5.1  Theoretical framework revisited ................................................... 153

List of Tables

Table 2.1  The Framework for the New Zealand National Curriculum ............... 20
Table 2.2  Characteristics of technicraft and technology .................................. 25
Table 3.1  Strengths and limitations of research interviews ............................. 64
Table 3.2  Interviewee selection ...................................................................... 68
Table 3.3  Breakdown of major research questions into specific questions on interview schedule ............................................................ 72
Table 4.1  Breakdown of responses into summary ideas – School A principal responses .................................................................................................. 94
Table 4.2  Breakdown of responses into summary ideas – School A teacher responses .................................................................................................. 95
Table 4.3  Breakdown of responses into summary ideas – School A student responses ................................................................................................. 96
Table 4.4  Breakdown of responses into summary ideas – School D principal responses ................................................................................................. 120
Table 4.5  Breakdown of responses into summary ideas – School D teacher responses ................................................................................................. 121
Table 4.6  Breakdown of responses into summary ideas – School D student responses ................................................................................................. 122
Table 4.7  Breakdown of responses into summary ideas – School B principal responses ................................................................................................. 126
Table 4.8  Breakdown of responses into summary ideas – School B teacher responses ................................................................................................. 127
Table 4.9  Breakdown of responses into summary ideas – School B student responses ................................................................................................. 128
Table 4.11  Breakdown of responses into summary ideas – School C teacher responses .......................................................................................... 133
Table 4.12  Breakdown of responses into summary ideas – School C student responses .......................................................................................... 134