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**TEACHING BIOETHICS AS A STAND-ALONE SUBJECT
IN A NEW ZEALAND STATE SECONDARY SCHOOL**

A thesis
submitted in partial fulfilment
of the requirements for the degree

of

Doctor of Philosophy

at

The University of Waikato

by

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THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

2013

**'Potter conceived this new discipline, bioethics, as a
"bridge" between "facts" and "values."
(UNESCO, 2008, p. 15)**

*Come gather 'round people
Wherever you roam
And admit that the waters
Around you have grown
And accept it that soon
You'll be drenched to the bone.
If your time to you
Is worth savin'
Then you better start swimmin'
Or you'll sink like a stone
For the times they are a-changin'.*

*Come writers and critics
Who prophesize with your pen
And keep your eyes wide
The chance won't come again
And don't speak too soon
For the wheel's still in spin
And there's no tellin' who
That it's namin'.
For the loser now
Will be later to win
For the times they are a-changin'.*

*Come senators, congressmen
Please heed the call
Don't stand in the doorway
Don't block up the hall
For he that gets hurt
Will be he who has stalled
There's a battle outside that's ragin'.
It'll soon shake your windows*

*And rattle your walls
For the times they are a-changin'.*

*Come mothers and fathers
Throughout the land
And don't criticize
What you can't understand
Your sons and your daughters
Are beyond your command
Your old road is
Rapidly agin'.
Please get out of the new one
If you can't lend your hand
For the times they are a-changin'.*

*The line it is drawn
The curse it is cast
The slow one now
Will later be fast
As the present now
Will later be past
The order is
Rapidly fadin'.
And the first one now
Will later be last
For the times they are a-changin'.*

The times they are a-changing

Bob Dylan (1963)

ABSTRACT

This study is based on the contention that there is a lack of theoretical values education, that is, ethical thinking, ethical consideration and understanding of ethical theory, within New Zealand's schools and communities at a time when societies globally are facing significant ethical, legal, social, environmental, economic and political challenges resulting from rapid technological advances.

This project's principal aim is to explore the cognitive and affective outcomes for students interacting with a specially designed bioethics curriculum presented as a stand-alone subject within the timetable at their urban, decile six, co-educational, state secondary school. It explores the proposal that if the teaching and learning of bioethics is conducted in a student-centred context and includes the teaching of ethical theory, in addition to exploring applied bioethical situations in which learners are encouraged to generate and test their opinions, then it can engage many learners and provide them with a successful way to critique their personal value systems; develop an understanding of values systems that differ from their own; and develop the key academic and social competencies of critical thinking skills, relating to others, managing self, participating and contributing, and understanding language, symbols and text required by the New Zealand curriculum. The study proposes a constructivist view of learning as a multifaceted and continuously evolving developmental process in which new ideas are generated or assimilated based on an individual's personal values, which have cultural, ethical and spiritual dimensions.

Specifically, this investigation examines and describes the teaching and learning of bioethics through two case studies conducted in a state school environment across 78 students aged between 15 and 18 years, with a wide range of interests, backgrounds and academic abilities. This research has

adopted a triangulated mixed-methods design in which both qualitative and quantitative data were generated and merged to develop a deep understanding of affective and cognitive outcomes for students participating in the full-year, stand-alone bioethics course. Participating students demonstrated high levels of engagement with the bioethics curriculum and the narrative, discussion-based pedagogy integral to the study. Results show that all participating students, regardless of their academic histories, had a positive affective and cognitive response to the bioethics curriculum. The stand-alone bioethics curriculum taught within the two bounded case study groups proved an effective vehicle for explicit and comprehensive values teaching and learning, incorporating both theoretical–cognitive and character–behavioural aspects. Students’ values appreciation, critical thinking skills, skills of argument, attitudes and behaviour towards others, and philosophical and scientific conceptual understanding, improved through their participation in the full-year, stand-alone bioethics trial. Data and experience acquired through this study will be of relevance to teachers from a wide variety of disciplines including the physical sciences and humanities, and to curriculum managers at individual and national policy levels.

ACKNOWLEDGEMENTS

Gratitude is one of the least articulate of the emotions, especially when it is deep. (Felix Frankfurter, 1882-1965)

I extend my heartfelt thanks to the school at which my study was conducted, including the Principal and each research participant. To my collaborating teachers, thank you for your time and skills, for your generosity of spirit, your passion, enthusiasm and commitment. Working with you was a joy.

I gratefully acknowledge the supervision of Professor Alister Jones and Dr Rosemary De Luca. Thank you for your guidance and critique throughout the project.

Especially important to any journey are the people who have faith in you from the outset. To my wonderful 'family', Rob, Chess, Garreth, Adam, Vera, Kylie, Brent, Christine, Tony, Olivia and Phillip, thank you for your company, your conversations, your insights, your wisdom, and your sustaining presence throughout this journey.

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LIST OF ABBREVIATIONS

ACART	Advisory Committee on Assisted Human Reproductive Technology
ACER	Australian Council for Educational Research
ALIVE	Association for Living Values Education
ART	Artificial reproductive technologies
BEEP	Bioethics Education Project
CEC	Churches Education Commission
CEPNZ	Character Education Programme of New Zealand
CRE	Christian Religious Education
CVP	Cornerstone Values Project
DAN	Dialogue Australasia Network
EEP	Ethics Education Programme
EOC	End-of-Course
ERIC	Education Resources Information Centre
GCSE	General Certificate of Secondary Education
GENIE	Genetics Education Networking for Innovation and Excellence
HART	Human Assisted Reproductive Technology
HELP	Holistic Educational Leadership Programme
ICBC	Interchurch Bioethics Council
ISNZ	Independent Schools of New Zealand
KMO	Kaiser-Meyer-Olkin
LVE	Living Values Education
LVTP	Living Values Trust Project
MMPI	Minnesota Multiphasic Personality Inventory
NCEA	National Certificate of Educational Achievement
NSW	New South Wales
NZBC	New Zealand Bioethics Centre

NZC	The New Zealand curriculum for English-medium teaching and learning in Years 1-13
NZCF	New Zealand Curriculum Framework
NZFCE	New Zealand Foundation for Character Education Inc.
OECD	Organisation for Economic Co-operation and Development
P4C	Philosophy for children
PGD	Pre-implantation genetic diagnosis
PISA	Programme for International Student Assessment
POS	Perspectives on Science
RaVE	Religious and Values Education
REBT	Rational Emotive Behaviour Therapy
REGR	Regression factor score
SEL	Social and Emotional Learning
SJEC	Saint James Ethics Centre
SNZC	Science in the New Zealand Curriculum
SOSE	Studies of Society and the Environment
SPU	Science for Public Understanding
SRE	Special religious education
STS	Science, Technology, Society
STSE	Science, Technology, Society, Environment
TKI	Te Kete Ipurangie
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNH	University of New Hampshire
UNICEF	United Nations International Children's Emergency Fund
UK	United Kingdom
US	United States
VPNZ	Virtues Project New Zealand

CHAPTER ONE: INTRODUCTION

1.1 THE ASSERTION AND THE GROUNDS

This thesis asserts that as a fundamental component of a contemporary education, bioethics should be included as a stand-alone subject in the New Zealand secondary school curriculum. The chapters that follow ground this assertion in a variety of facts and supporting evidence. In the first instance, the argument is grounded in the unprecedented ethical, legal, economic and social issues raised by developments in science and technology. Whether at a personal or collective level, deliberation and decision making with respect to these issues can only be robust if citizens have appropriate knowledge and skills. Thus, in the second instance, the argument is grounded in the examination of the purpose of education. This includes the response of curriculum to the pervading social, cultural, technological and political environments; the provision of values education; and the development of moral reasoning and critical thinking skills. There is a worldwide trend to bring both the teaching and learning of socio-scientific issues and explicit values education into the curriculum. There are several approaches to both socio-scientific education and values development, the substantial majority of which integrate each with other timetabled subjects. Bioethics provides a useful context for both of these endeavours. To achieve these extended goals, bioethics merits the status of a subject in its own right within the secondary school curriculum. The establishment at tertiary level of the academic subject of bioethics, with its unique combination of knowledge and skills that require teaching in a consistent and unified way, as opposed to the current place of bioethics as fragmented units within a variety of disciplines in the secondary curriculum, substantiates the argument further.

Vitaly, quantitative and qualitative data collected from the trial of a model curriculum that is the focus of this project provide strong empirical evidence

supporting the argument for the inclusion of bioethics as a stand-alone subject in the secondary school curriculum. This model is based on a curriculum written and facilitated by the researcher in the six years prior to undertaking this investigation, interpreted and adapted by two collaborating teachers and taught to 78 students in two case study groups within a co-educational state secondary school over the 2010 academic year.

1.2 PURPOSE OF THIS CHAPTER

Having stated the assertion and the grounds that provide the context for this thesis, this chapter briefly describes changes in the social environment that are the background to this research project. The chapter then makes explicit the preconceptions that I bring to this research. This includes an explanation of the philosophies that anchor my views of epistemology and position my guiding assumption that education has the wide remit of nurturing young people to fulfil their potential as individuals and as fully participating members of a society that faces unprecedented bioethical dilemmas. The origins and content of the existing curriculum written prior to the investigation and that underpins the research project are described. The chapter concludes with an outline of the aims and objectives of the research and an overview of the chapters that follow.

1.3 TECHNOLOGICAL ADVANCES AND SOCIAL CHANGE

For the times they are a-changin'. (Bob Dylan, 1963)

The lyrics of Bob Dylan's *The times they are a-changing* (1963) reproduced at the beginning of this thesis were written amid the turbulent years of the United States (US) civil rights movement and the Vietnam War, during which the issues of freedom and justice were restlessly and publicly debated. Decades later, transcending the historically dominant political preoccupations of that time, the lyrics poetically capture the individual, familial and communal,

ethical, cultural, political, environmental and economic changes that developments in science and technology are initiating in contemporary society. Dylan's lyrics are a reminder that change is here and further change is coming, ready or not.

Beyond, but not excluding, the debates over civil rights and just war, new 'battles are raging' with respect to personal freedom and choice, the outcomes of which will determine the direction of society into the future. Ethical conflicts are being waged in the fields of human reproductive technologies, health care, climate change, sustainability, global financial management, nanotechnology, neuroscience, epigenetics, nutri-genomics, the development of virtual worlds, surveillance and personal privacy. The innovation of the internet—itself a technology developed and embraced since Dylan penned his song—is impacting on the very concept of knowledge and its generation, accessibility, dissemination, storage and ownership. The ethical issues relating to emerging technologies touch the lives of everyone.

Dylan (1985) thought of a hero 'as someone who understands the degree of responsibility that comes with his freedom'. Freedom is linked to responsibility and the latter raises questions about to whom we are responsible; ourselves, our community, the world, or even some Ultimate being. Bioethical debate arises when the freedom of individuals comes into conflict with community views and mores.

Change presents in many different guises and can be positive or negative; for better or worse; perceptible or imperceptible; consented to or enforced; welcomed or resisted. Increasingly, governments are consulting with the public with respect to which technologies should be embraced and which should be restricted. Popular global science educators including Lord Robert Winston (2011) and prominent New Zealand officials including Sir Peter Gluckman (2011a, 2011b) and the late Sir Paul Callaghan (2011) are extolling the need for a change in science education to encourage both

professional scientists and members of the public to engage with the ethical issues arising from developing technologies. While decisions are made at both individual and collective levels, the debate can only be robust when people are sufficiently informed and skilled to engage with the issues. The skills required need to be developed in young people, equipping them with the cognitive, social and emotional tools to enter bioethical debate at a serious and deep level.

Many in contemporary Western society live with moral ambiguity, due in measure to the loss of religious authority in society, particularly since the 1960s (Brown, 2002; Hamilton, 2008; Law, 2007). Historically, the family–school–church triumvirate functioned together to form, nurture and reinforce the emotional, social, academic, physical and spiritual needs of the developing child. I contend, and argue within the following chapter, that the breakdown of this triumvirate, together with the rise in materialism, individualism and moral relativism (Eckersley, 2004a, 2005a; Hamilton, 2008; Kasser, 2002; Law, 2007; Taylor, 1991), and the impact of the media and social networking technologies (Chang & Zhang, 2008; Guo, 2006; Postman, 1992, 1995) have left many people today without adequate evaluative skills required to engage with modern bioethical issues. Thus, people either avoid making a decision or default to an ‘intuitive’ position based on unexamined emotions; emotions that research indicates are more narcissistic and less socially/collectively concerned within a materialistic and individualistic culture (Bauman, 2001; Eckersley, 2005a, 2005b; Harvey, 2010a, 2010b; Kasser, 2002; Law, 2007; Taylor, 1991). While intuition has an important place in decision making, it should not be the sole criterion. In the contemporary technological era imbued with ethical dilemmas and with a now largely secular and plural society comprising a variety of groups of distinctive ethnic origin, cultural forms and religious beliefs, the question of how to equip children, whatever their background, to devise their own moral code, and to understand the moral codes of others, is pertinent.

Contemporary students require the opportunity to reflect on the ethical issues raised by scientific, political, commercial, environmental and social change. Such reflection should be in a positive and emotionally safe environment where students are guided in *how* to think—for example, what questions to ask; how to identify presuppositions; how to weigh up alternative solutions—not what to think. Arguing for the integration of bioethics as a stand-alone subject within the school curriculum in New Zealand, the research that is the topic of this thesis trials a model for preparing today's students for present and future ethical debate, including the balancing of freedom with equity and responsibility in a pluralistic society.

1.4 THE RESEARCHER'S HORIZON AND PRE-UNDERSTANDINGS

Assumptions structure all research, and the least we can do is to recognize this and theorize the impact of these assumptions. Better still, we can plan and articulate our starting assumptions so as to scrutinize and promote the research goals. (Banister et al. 1994, p. 50)

With my involvement in all aspects of both research and thesis, it is important that I bring myself into question along with the research itself (Malpas, 2009) and make explicit my personal values and beliefs with respect to education, science, psychology, moral development, bioethics and human flourishing. This research is interpreted through my historically affected consciousness; my bias or prejudice (Gadamer, 1975). Gadamer (cited in Malpas, 2009) argues that prejudices, far from being obstacles to understanding, are actually necessary conditions for understanding, which is 'a dialogic, practical, situated activity' (p. 5), involving a circularity of interpretive engagement. Arguing the inescapability of preconceptions, Gadamer (2003) maintains that the best one can do is to recognise that one constantly dwells and thinks within a certain horizon, and suggests making prejudices conscious by

developing historical self-awareness. Similarly, and with specific reference to qualitative research, Denzin and Lincoln (2000) assert that it is vital for researchers to endeavour to recognise the origins of their own interpretive frames by looking at the social and historical influences on their lives. Accordingly, this section represents part of the process of raising my hermeneutical consciousness; 'that mode of being that is conscious of its own historical "being affected"' (Malpas, 2009, p. 8). Narrating some events that channelled me towards the current research focus, this section describes the social and historical framework in which my educational and pedagogical prejudices and my personal beliefs are situated, and seeks to make explicit the values, assumptions and perspectives that underpin my position as a researcher within the research. From a cultural perspective, inclusion of a section such as this facilitates the 'process of *whakawhanaungatanga*, or establishing relationships' (Stucki, 2010, p. 5).

1.4.1 Teaching experience and views on learning

I was educated in the state, co-educational system. My chosen science courses at school and university developed a positivist position. Two decades as an educator, with experience at all levels from Year 1 to 13, have led me to ask fundamental questions about what educators are trying to accomplish and how this might best be achieved. I have formed personal perspectives and opinions on what material should be included in a curriculum and what methods of delivery engage students and are perceived as meaningful to them. Rejecting the notion that 'education' is simply about the economic utility of fitting an individual for a job and to be a financially productive member of society, I ascribe to the German notion of *Bildungsroman*. An extension of the literal meaning *Bildungsroman* holds that 'education is the self striving to become fully developed and directed toward the good, the virtuous, and excellent life' (Schubert, 1996, p. 48) and encompasses the broader idea of education as self-conscious life development.

My training and six years' experience as a cross-curricular primary school educator influenced my pedagogical approach as I taught mathematics, general science and physics at secondary level. Despite the restrictions of the laboratory environment, I used student-focused strategies including storytelling, role plays, oral presentations, group and class discussion, debates, art, literature and music to engage and contextualise the scientific and mathematical concepts being taught to my students.

Very early into my career as an educator, I came to appreciate that in addition to educational psychology, classroom teaching incorporated a significant degree of social work, and child and family counselling. During this time, I continued my education in psychology and counselling, undertaking intensive courses in grief counselling, couple-communication, youth and mental health. In addition to my teaching position, I have undertaken a pastoral care/counselling role at each of the secondary schools at which I have been employed.

As a counsellor, I have aligned myself with cognitive behaviour therapy, in particular, rational emotive behaviour therapy (REBT). The basic premise of REBT is that almost all human emotions and behaviours are the result of what people think, assume or believe they 'know' about themselves, other people, and the world in general (Ellis, 2001; Froggatt, 2005). Humans are meaning-making machines; an event occurs, they make it mean something and respond accordingly. Thus, a person's interpretation of the world is subject to the filter of his or her core beliefs; the set of general rules the person subconsciously holds and that underpin the conscious inference and evaluations he or she makes (Ellis, 2001). This 'meaning-making' premise of REBT aligns with the fundamental premise of constructivist educational theory, which as described by Vrasidas (2000), asserts that:

The structure of the world is created in the mind through interactions with the world and is based on interpretations ... For constructivists, learning is meaning-making. (p. 346)

Both REBT and constructivist learning theory, the dominant paradigm informing education, particularly science education, over the last four decades (Taber, 2010), will be explained further in Chapters Two and Four.

Following a temporary move out of the classroom, when in response to the reduction of medical services available to my community I established a medical practice in partnership with a general practitioner, I began to explore the emerging academic area of bioethics. My interest in bioethics was progressed from the perspective of patient choice with respect to advances in medical technologies; keeping people alive versus terminating treatment; developments in human reproductive technologies including giving birth to certain individuals versus not giving birth to others; and the dilemma of a finite health budget combined with an infinite demand for treatment (medical economics).

In 2000, I commenced a Master of Bioethics degree at Monash University. A combination of coursework and thesis, this was my first prescribed education in philosophy. I was captivated by the real-life application, the cross-curricular links and the degree of personal reflection that the discipline of bioethics offered. I contemplated the benefits of such education for young people, many of whom amid the materialism and individualism of their age appeared, in my counselling and teaching experience, to lack a sufficient opportunity to meaningfully engage with and discuss personal and social values, and to develop ethical practices. It was at this point in the early 2000s that the school in which I was teaching senior physics, general science and mathematics on a part-time basis, Wellington Independent School One, undertook a radical revamp of their humanities programme. When I was approached to establish a bioethics course at Year 12 and 13 levels as part of this new approach, I was hugely enthusiastic. I was also flattered and naïve (Stevens, 2002).

Although I was undertaking my Masters studies at this time, I was coming into the teaching of ethics from my pure science background. Thus, in my naivety and enthusiasm, I came at the teaching of ethics solely from an issues base. My classes arrived, we set ground rules about participation, confidentiality and polite consideration of opinions that differed from our own, and we discussed issues—abortion, human reproductive technology, surrogacy, euthanasia, animal rights, business and financial ethics. The students appeared to be enjoying the classes and engaging with the issues. However, when I enquired of students why they held a particular opinion, their responses were more often than not superficial and emotional. They were a ‘gut reaction’. While the students were thinking for themselves, they were not necessarily thinking well (Stevens, 2002). As Singer (1993) notes in the introduction to *Practical ethics*, ‘disagreement is good, because it is the way to a more defensible position’ (p. x). However, on most occasions, my students were not able to defend their opinions.

Sound critical thinking requires students to put their thoughts into a coherent and systematic framework. For this to happen, it is essential that students are given the opportunity to learn about the nature of both normative and meta ethics; that is, that they be provided with both the opportunity to explore action-guiding normative ethical theories and to ask questions that reflect on the practice of ethics itself. It was apparent that my students at Wellington Independent School One needed to be able to analyse presuppositions and assumptions and to *really* understand alternative perspectives from their own—not necessarily to agree with them, but to be able to acknowledge where differing beliefs stem from. For this, they required knowledge of ethical theories—lenses they could place over a bioethical issue, and through which they could evaluate alternatives. It was at this point, when I was incorporating the teaching of theoretical ethics into the course at Wellington Independent School One, that I was invited to take up the position of Director of Ethics and Religious Studies at Wellington Independent School Two, and to write and facilitate a new values education programme.

1.5 ORIGINAL VALUES EDUCATION PROGRAMME 2003–2009

The new Religious and Values Education (RaVE) curriculum for Year 7 through to Year 13 of Wellington Independent School Two was written on contract at the start of 2003. The introduction, vision, overview and strands of the curriculum were written in conjunction with a colleague, Dr Peter Vardy (2002) from the University of London, and were principally based on his paper 'Becoming Fully Human'. The curriculum was revised in 2004, 2005, 2007 and 2009.

Established for over 130 years, Wellington Two, an independent school for girls from kindergarten to Year 13, offers parents many attractive features including a standard of excellence in the academic arena, music and sport, and a wide range of extra-curricular activities. As competing independent schools were offering academic qualifications including the International Baccalaureate, which emphasise analysis of knowledge and critical thinking, Wellington Two wished to establish a new curriculum that would offer a leading edge in education. As an Anglican school, Wellington Two places an emphasis on spiritual and values education. It was decided that RaVE would be the area of focus because of:

- Wellington Two's proven academic achievements in other areas
- the opportunity to develop critical thinking that would further enhance learning across all disciplines
- the increasing importance of understanding cultural and religious differences in today's global village environment
- the increasing importance of understanding the ramifications of developments in technology.

The vision for the course included the aims that it would give real insights into key areas of philosophical, cultural and spiritual belief and be academically sound and relevant to the students at Wellington Two.

The curriculum was based on the belief that education is not only concerned with teaching people in terms of outcomes, for example, to gain employment and to be economically successful. Rather, education, as asserted earlier in this chapter, has a wider remit of nurturing young people to fulfil their potential as individuals and as fully participating members of society. Developing the higher virtues such as compassion, justice, courage, love and a search for truth was, and remains, a vital element in the traditions of Wellington Two and is perceived as essential in a broad approach to education. It was acknowledged there may be no agreement about 'what it is to be human', how to become 'fully human', 'to reach human potential' and to 'flourish', but this in itself was seen as part of the dialogue in which students should be engaged.

1.5.1 The five strands of the RaVE curriculum

The curriculum written for Wellington Two was based on a British model for the teaching of RaVE. Although under review at the time of writing this thesis, RaVE is compulsory in all British schools, both independent and state from new entrant to General Certificate of Secondary Education (GCSE) level, the equivalent of New Zealand's National Certificate of Educational Achievement (NCEA) Level One. The British curriculum comprises five strands: ethics, philosophy of religion, world religions, Christian and Hebrew scriptures, and stillness and silence. These five strands, and the principles of learning to question, critical thinking, values, inclusion and coherence that underpin them, were adapted and incorporated into the new RaVE learning area at Wellington Two, which is described in Appendix One. One significant adaptation included the ethics strand of the British model being modified to become a dedicated bioethics strand, which included the teaching and learning of ethical theory, for example, natural law, situation ethics, utilitarianism, virtue ethics, cultural relativism and subjectivism, within applied ethical contexts including human reproductive technologies, nutri-genomics,

nanotechnology, just war theory, euthanasia and globalisation. The aim of this strand was to equip students with the ability to appreciate the ramifications of developing technologies, and to recognise and defend their personal perspective towards them with academic rigour.

As the curriculum at Wellington Two was trialled, evaluated and refined, the depth of positive response from the student and parent body to the relevance and rigour of the bioethics strand, the content of which is detailed in Appendix Two, resulted in this being timetabled under its own name in Years 11, 12 and 13, rather than being timetabled as RaVE.

1.5.2 Leading to the research proposal

Through written evaluations of the Wellington Two bioethics course completed at the end of each year by Year 11 through to Year 13, the vast majority of students reported that the course made them critique their personal value systems and that, as a result of participating in the course, they felt they better understood the opinions and stances of others that differed from their own. Further, the evaluations reflected that students recognised development in their critical thinking skills and that they felt that this development in critical thinking transferred to other subject areas. That the self-reported development in critical thinking skills was transferred to other subject areas was supported by the staff, who reported that the frequency and standard of reflective and reasoned thinking demonstrated by students in their respective classes had improved. Parents too, reported development in the frequency and depth of 'dinner table' conversations, and requested bioethics sessions of their own to bring them 'up to speed' with their daughters. These were run over several evenings across different years, attracting up to 100 parents per evening.

Responses in the student evaluations completed from 2003 through to 2008 reflected the requirements of the 'New Zealand curriculum for English-

medium teaching and learning in Years 1–13' (Ministry of Education, 2007, hereafter the NZC) received in draft form by schools in 2007. The NZC (Ministry of Education, 2007), which became mandatory in all schools from February 2010, requires that certain values and key competencies be taught so that students develop the ability to 'make ethical decisions and act on them' (p. 10). The practical experience at Wellington Two was that the teaching of bioethics as a dedicated subject was able to address the teaching and development of the required competencies and values. This was particularly so with respect to developing critical thinking, developing understanding of different ethical points of view and the views of others, and providing an opportunity to participate in, and contribute to, ethical debate. In turn, participation in ethical debate encouraged the management of self and the use of language, symbols and texts.

However, this experience was within a decile 10, independent girls' school. Following interest in this curriculum, I had delivered sections of it through student seminars facilitated at a variety of independent schools across New Zealand, Australia and the United Kingdom (UK). However, these day-long seminars were not a whole curriculum delivered throughout an academic year. I acknowledged that successful facilitation in high decile independent schools with proven academic records was atypical. Whether such a curriculum would be a valuable tool for the teaching of values and the key competencies in all schools, state, integrated and independent, from all decile levels, required investigation. It is this path that led to the research project discussed in this thesis.

The introduction of the NZC (Ministry of Education, 2007) with its considered emphasis on values education and critical thinking, together with my strong belief in the importance of bioethics education for all citizens so that they may make well-informed personal choices, and seek the development of, and fully participate in, the deliberative democratic process, in addition to my personal

pedagogical preferences, provide the background for my initial research question:

How can the New Zealand secondary school programme most appropriately address the identified need to develop values and enhance emerging citizens' ability to think critically, relate to one another and to participate and contribute in democratic decision making?

As described, my experience of students' theoretical–cognitive and character–behavioural values development through participation in a stand-alone bioethics subject at Wellington Two had provided what I consider an answer to this question. Consequently, this research project trials my original bioethics curriculum as it was interpreted, adapted and facilitated by two collaborating teachers within a wider, co-educational setting.

1.6 THE RESEARCH AIMS AND OBJECTIVES

This research project aims to investigate how values education can be effectively implemented in New Zealand secondary schools. Specifically, the research aims to explore how bioethics education can be a vehicle for comprehensive values education, including teaching and learning the values aspects of the NZC (Ministry of Education, 2007), and support the development of the five key competencies explained in the curriculum document. The values and key competency aspects of this investigation include how bioethics, taught as a stand-alone subject as opposed to units within other disparate disciplines, may prepare students to make informed personal decisions with respect to bioethical issues, and prepare students to participate in democratic deliberation and collective decision making with respect to bioethical issues.

The benefits of participating in a stand-alone bioethics course reported and perceived by the students, and endorsed by teachers and the parental

community at Wellington Two across a six-year period, included the development of skills in critical thinking and logical reasoning. Students also reported critique of their personal values, an appreciation of the values frameworks that underpin worldviews that differed from their own, and the acquisition of knowledge of ethical theories and philosophical and scientific concepts. These reported benefits were observed through classroom behaviour and interaction within the bioethics class and transferred to other subject classes. Based on this experience within the specific environment of Wellington Two, the objective of this research is to investigate the nature and scale of values, competency and learning outcomes from teaching bioethics as a stand-alone subject in a wider secondary setting.

Accordingly, this research aims to investigate the efficacy of teaching and learning bioethics as a stand-alone subject within the senior timetable of a state secondary school as:

- a vehicle for providing a comprehensive values education programme, which includes the conceptual understanding of personal values and beliefs, and the conceptual understanding of alternative values and beliefs expressed by others in the community
- a vehicle for the development of the five key competencies specified by the NZC (Ministry of Education, 2007) for students 'to live, learn, work and contribute as active members of their communities' (p. 12), particularly the competencies of critical thinking, relating to others and managing self.

Trialling a bioethics curriculum with students, this research project necessarily incorporates concepts surrounding knowledge acquisition, cognitive and affective engagement, and pedagogy. Therefore, a further aim of this research is to investigate the teaching and learning of bioethics as a stand-alone subject as an elucidator of effective pedagogies for bioethics and values education, and for student engagement and re-engagement.

An objective of this thesis is to provide a thick description of the research undertaken; tracing the evolution and development of an action or phenomenon under observation, furnishing its context, including the intentions and meanings that organise it (Denzin, 2001; Geertz, 1973a, 1973b; Ryle, 1968). With accounts of my background and the background to the research project having been described, ensuing chapters will progressively refine the focus of the thesis to the description and analysis of two case studies. Beginning with a discussion of the purpose of education and the responsiveness of curriculum to the social and political environment, the literature review chapters that follow continue the thick description and progressive focus by placing this research project within the contemporary literature. The literature review concludes with a statement of the specific research questions.

1.7 OVERVIEW OF THE THESIS

Three questions appear fundamental to organised education:

- What do we want students to learn?
- How will they learn it?
- How will we know whether we have been successful?

The first question is predicated on the question ‘what is the purpose of education?’ for it is how we answer this question—the clear articulation of what we are trying to do and why we think it matters that we do it—that will determine what is included and what is left out of the curriculum (McCutcheon, 2002). This thesis considers these fundamental questions in relation to bioethics. Accordingly, these fundamental questions are elemental to the curriculum, values education, bioethics education and narrative literature reviewed in this thesis (see Chapters Two and Three); to the interpretivist methodology applied (see Chapter Four); to the design and implementation of the bioethics curriculum at the heart of the research (see Chapter Five); to the outcomes of the case studies undertaken (see Chapters

Six and Seven) and to the conclusions and implications that are drawn from the research (see Chapters Eight and Nine).

In my experience, the cross-curricular specialisation of bioethics offers an ideal opportunity for educating students in the fullest sense, including developing and inter-relating the values and key competencies of the NZC (Ministry of Education, 2007). This experience is supported by responses from the overwhelming majority of the over 800 students to whom I have personally taught bioethics as a stand-alone, full-year subject. This research project moves beyond personal experience within the atypical high decile environment of independent schools to test the stand-alone bioethics curriculum, the model, within a wider state secondary school environment.

CHAPTER TWO: EDUCATION, CURRICULUM, VALUES AND CONTEMPORARY CULTURE—A LITERATURE REVIEW

First, some people fear that ‘values education’ is likely to be authoritarian and didactic and therefore, in the long term, ineffective. Second, others fear that if children are encouraged to make up their own minds about ethical values, there will be little agreement about core values, and that children will adopt a relativist position on values, according to which all choices for action are equally ‘good’ and all immune from criticism. (Philosophy for Children, 2012a)

2.1 PURPOSE OF THIS CHAPTER

As described in Chapter One, I have developed an approach to the teaching and learning of bioethics. Before attempting to design this approach, it was necessary for me to consider what bioethics is and how it fits both within formal education and the wider scope of social education. This is the first of two literature review chapters, the purpose of which is to position this research project inside contemporary discussion of these areas. Beginning with the broad field of curriculum and educational theory, this chapter focuses on values education and present day social values.

In investigating bioethics as a vehicle for values education, this thesis begins with the premise that education itself is a moral activity. The question of what the purpose of education is precedes any decision making with respect to curriculum content, teaching and learning strategies, and methods of assessing the degree and nature of learning (McCutcheon, 2002). This chapter establishes a position on the purpose of education in section 2.2. Section 2.3 discusses curriculum, epistemology and constructivist learning theory: how the nature, elements and practice of curriculum change in

response to socio-political context is discussed in section 2.4. The trend towards explicit values education both within the New Zealand setting and internationally is traced in section 2.5. Continuing the discussion with respect to the recognised need for explicit values education, section 2.6 explores the pervading values of materialism and individualism within contemporary Western society. Including a discussion of the influence of marketing and media, section 2.6 offers a broad perspective of culture and explains how a materialist individualist culture, together with the dominant philosophy of relativism, may define an individual's values and influence personal decision making. Section 2.7 defines values education and describes existing values and ethics education curricula available to schools in New Zealand. The section includes a discussion of teaching both through and about values, and the character-behaviour and theoretical-cognitive strands of values education are distinguished. Section 2.8 concludes this first literature review chapter and prepares the way for the discussion of bioethics as a vehicle for comprehensive values education in Chapter Three.

2.2 THE PURPOSE OF EDUCATION

In summary, the broad mission of education is to foster young people who are knowledgeable, responsible, healthy, caring, connected and contributing. (Weissberg & O'Brien, 2004, p. 86)

As Weissberg and O'Brien (2004) summarise, education is not simply concerned with teaching people in terms of 'outcomes', for example, to obtain a good job and to be economically successful. Rather, education has a wide remit of nurturing young people to fulfil their potential as individuals and as fully participating members of society (Bruner, 1986; Mill, 1867; Pring, 2001, 2005; Vardy, 2002). This concept is not new to education. How to educate the whole child and to encourage him or her to learn, work and contribute to his or her fullest potential has been a continuing challenge throughout history,

and more recently, as the world has become more complex and communities more fragmented (Elias, 2003).

On 1 February 1867 during his inaugural address as he was installed as Rector of Aberdeen University, and before the recognition of the equal status of women and men in society and thus women's equal entitlement to education, and the advent of inclusive language, John Stuart Mill (1867) said:

Universities are not intended to teach the knowledge required to fit men for some special mode of gaining their livelihood. Their object is not to make skilful lawyers, or physicians, or engineers, but capable and cultivated human beings ... Education makes a man a more intelligent shoemaker, if that be his occupation, but not by teaching him how to make shoes; it does so by the mental exercise it gives and the habits it impresses. (pp. 4–5)

In a similar though more contemporary vein, Richard Pring (2005) echoes Mill's sentiments and writes that 'central to one's personal development through education must be a grasp of those key ideas through which is made possible an understanding of what it is to be human' (p. 34). During his inaugural lecture as Professor of Educational Studies at Oxford on 8 May 1991, Pring related the story of the principal of a high school in the outskirts of Boston:

Being a large school there was a sizeable intake of new teachers every year. To these teachers, the principal wrote the following letter:

Dear teacher,

I am a survivor of a concentration camp.

My eyes saw what no man should witness:

Gas chambers built by learned engineers.

Children poisoned by educated physicians.

Infants killed by trained nurses.

Women and babies shot and burned by high school and college graduates.

So, I am suspicious of education.

My request is: help your students become human.

Your efforts must never produce learned monsters, skilled psychopaths, educated Eichmanns.

Reading, writing and arithmetic are important only if they serve to make our children more human. (Pring, 2001, p. 111)

Pring (2001) uses this example to argue that what makes sense of the curriculum in educational terms, 'is that it is the forum or the vehicle through which young people are enabled to explore seriously (in the light of evidence and argument) what it is to be human' (p. 111). In an analogous manner, the German notion of *Bildung* described in Chapter One holds that education goes beyond simple knowledge instruction and includes fully developing all aspects of a person such that the person will be motivated to pursue and be 'directed toward the good, the virtuous, and excellent life' (Schubert, 1986, p. 48).

Aiming to develop intellectually reflective young people who are committed to lifelong learning, the NZC (Ministry of Education, 2007) seeks a quality education curriculum that results in students who relate with their peers and adults in respectful and socially skilled ways, and who contribute ethically. In this way, the curriculum for New Zealand primary and secondary schools recognises that the education system has the task of preparing students for the social roles they will inherit in adulthood. This goal goes beyond simple mastery of certain academic skills that equip a young person for employment, and involves the education of the whole child including social and emotional skills. Such a holistic view of education necessarily has an impact on the nature, substance and practice of curriculum.

2.3 THE NATURE, ELEMENTS AND PRACTICE OF CURRICULUM

Curriculum theory, research, and practice must be seen holistically, as inquiry into human nature, knowledge, values, society, reason and pedagogy. (Schubert, 1986, p. 48)

Along with the purpose of education, the nature of curriculum has engaged educators and academics throughout history. On the surface, it is easy to conceive of curriculum as the official documents published by a country's Ministry of Education, which describe subject content and achievement aims and objectives. The NZC (Ministry of Education, 2007) is an example of such an official document. However, a deeper consideration reveals that 'curriculum' is not a simple concept, but one that 'can also have multiple layers of meaning' (Bell & Baker, 1997, p. 1). As curriculum became a field of academic study in itself, particularly over the last century, a plethora of definitions has flourished. Beyond the official documents, generally organised into subject areas, that specify knowledge to be mastered by students, the definition of curriculum has widened to include all of the experiences students have under the guidance of teachers. Thus, the planned, taught, experienced, learnt, assessed and hidden curricula have been described (Begg, 1994; Pinar et al., 1995).

Basing his argument on analysis of the works of Rugg (1927), Tyler (1949), Taylor (1979), Schwab (1983), Schubert (1986), Ornstein (1987), Brann (1989), Reid (1992) and Brezinka (1997) within the area of education and curriculum from the past eight decades, Dillon (2009) contends that questions of curriculum may be classified into three broad orders concerning its nature, its elements, and its practice. Acknowledging that definitions and conceptions of curriculum are varied and divergent, Dillon determines the nature of curriculum using seven constitutive elements: the teacher; the students; the

subject matter; the 'where and when' (the 'milieu'); the aim; the how; and the results. The practice of curriculum includes the planned, the implemented and the experienced aspects of curriculum, in addition to the assessment and improvement of the curriculum, and 'questions of how everyday practitioners of curriculum ought to think as they go about their curricular activities' (Dillon, 2009, p. 349). Essential to the constitutive elements of curriculum, particularly the practice element with its planned, implemented and experienced components is the concept of epistemology; assumptions about knowledge and how it can be gained.

Schubert (1986) portrays curriculum as *currere*: 'a striving for self-knowledge via an individual's 'interpretation of lived experiences' (p. 33). This notion of a person's capacity to conceptualise and reconceptualise his or her life within his or her current and historical situation, through the sharing of autobiographical accounts with others (who are similarly striving for understanding), and through the acquisition of existing knowledge including experience of the arts and literature, links to the central tenets of constructivist learning theory and cognitive behaviour therapy, which I signalled in Chapter One, and to interpretivist methodology, which is to be described in Chapter Four.

2.3.1 Constructivist learning theory

Drawing on the developmental theories of Piaget (1977), Vygotsky (1934/1986, 1978) and Kelly (1991), constructivist theory implies that learning is an internal and active process during which individuals construct meaning and interpret new information through their previous knowledge and experiences (Birisci & Metin, 2010; Bulman, 2005; Hunter & Krantz, 2010). New ideas are accommodated or assimilated according to what an individual already knows. Personal thoughts and beliefs that result from prior learning become the base from which a person interprets new experiences and constructs or updates his or her reality. Within constructivist learning theory,

each learner's subjective experiences, independent of the teacher, have a unique meaning (Boghossian, 2006): 'it is both the student's learning experience and her perceptions of those experiences that have educational value' (p. 715). Within constructivism, learning depends on introspection and involves an individual's internal mental states.

Recognising that individuals are situated in and constituted by their social and cultural contexts (Zembylas, 2005) constructivist learning theory, like REBT, acknowledges multiple, socially constructed perspectives and realities (Hunter & Krantz, 2010). Socio-constructivism emphasises the interaction between the emotional and the cognitive (Zembylas, 2005). As Gergen (1994) states, socio-constructivism 'emphasizes that knowledge is constructed through the interplay between an individual's knowledge, attitudes and values, on the one hand, and social interaction in a socio-cultural context on the other' (p. 34). Thus, constructivism acknowledges the essential influence of individual perception and the cultural and situational contexts associated with information on effective acquisition and application of knowledge (Tennyson, 2010). Constructing knowledge means that students are active participants in the learning process through making meaning of their experiences.

2.4 CURRICULUM IN HISTORICAL TIME AND SOCIO-POLITICAL CONTEXT

Curriculum evolves in tandem with the political and socio-economic environment of the times (Pinar et al., 1995; Schubert, 1986). The political, social, economic, geographic, technological, scientific and communication environments in which human beings have lived throughout history have not remained static and corresponding alterations in curriculum are evident. Just as the curriculum field of the 1990s was a very different one from the field in place in the 1960s (Pinar et al., 1995), so the curriculum field for the second decade of the twenty-

first century is different again. Describing the trend towards participatory democracy and the need to prepare citizens for individual and collective decision making, this section traces the developments of the key competencies within the new New Zealand curriculum and prepares the way for the discussion of changes in social values and values education.

2.4.1 Active citizens: The move to participatory democracy

Technological and scientific developments have not only increased knowledge and the way it is disseminated, but continue to influence the determination of what knowledge it is desirable for citizens to have. In the letter to all schools that accompanied the draft 2007 curriculum (reproduced in Appendix Three), the then Minister of Education, the Hon. Steve Maharey stated:

The pace of social and economic change is faster than ever before. We live in a world of globalization, cultural diversity and rapidly changing technologies. There is increased specialization and flexibility in the workplace; there are new social roles and new forms of self-expression ... For New Zealand to be successful on the global stage ... we need to become a nation of achievers—capable, knowledgeable, caring, active, and open to opportunity.

Arguing that a democracy requires citizens 'who recognise the need to balance individual rights with societal rights', Ross, Bondy and Kyle (1993, p. 157) state that schools provide an ideal context for learning how to live in democratic society. For Ross et al. an important function of education within a democratic society is to foster social bonding and to develop citizens who are compassionate and co-operative and, who, through an awareness of the connections individuals have to one another, have a sense of collective identity.

Fully participating as members of contemporary society includes the obligation to participate in the deliberative democratic process. A number of governments globally recognise that as biotechnology develops, society as a whole needs a way to decide which developments should go ahead and which should not. A guiding principle of the New Zealand government's Biotechnology Strategy (Ministry of Research, Science and Technology, 2011), for example, is:

Partnership and participation—work in partnership with the sector and involve citizens in public policy and ethical issues, through open information and participation processes that acknowledge diverse community interests. (p. 4)

In order to facilitate the public's involvement and contribution to policy decisions, the New Zealand government has appointed a number of councils and committees whose remit is to consult with the public about bioethical issues. One example is the Advisory Committee on Assisted Human Reproductive Technology (ACART), which sits between the government and the people of New Zealand and formulates advice and guidelines for the regulation of assisted human reproduction. Required to undertake extensive public consultation before issuing advice or finalising guidelines, ACART (2009) includes in its guiding principles that the needs, values and beliefs of Māori, and the range of different ethical, spiritual and cultural perspectives in society, should be considered and treated with respect.

However, debate and the consultative democratic process can only be robust when people are sufficiently informed and skilled—that is, educated—to deliberate the issues. As the Science Advisor to the Office of the Prime Minister of New Zealand observes:

Whereas in the nineteen eighties, the science was complete when the scientific paper was published, now the science is not complete until the scientific paper is published, the public understands its

implications, and accepts the conclusions reached from that body of work. And that's a very different set of processes. (Gluckman, 2011a)

The emerging trend towards public consultation and the importance of participatory and deliberative democracy reinforces the need for all citizens to be able to critically assess bioethical issues. While the move to deliberative and participatory democracy is a thread in this thesis, it is acknowledged that this is a developing area; irregular, selective and far from established at the time of writing. For example, the recent addition of a screening test for Down Syndrome into the routine prenatal blood tests administered to expectant mothers in New Zealand was undertaken without public consultation. An important question to be asked is how prospective parents are being prepared to make a decision about their and their unborn child's future. It is important that the public be sufficiently informed and equipped to comment on and cope with all developments whether formally consulted or not. Further, young people educated in the manner advocated and modelled in this thesis may be equipped to argue for and insist on the kind of consultation implied in the phrase 'participatory and deliberative democracy'.

2.4.2 Key competencies and the New Zealand Curriculum

The culmination of one of the most extensive consultation exercises ever undertaken by the Ministry of Education, and itself an example of the participatory democratic process in action, the NZC (Ministry of Education, 2007) became mandatory in all schools from February 2010. The result of a comprehensive review of the previous curriculum statements and curriculum framework, and consultation with many thousands of stakeholders including teachers, students, parents and academics, the NZC establishes the direction for teaching and learning in New Zealand classrooms in the twenty-first century (Sewell, 2007, p. 4). How the curriculum for New Zealand schools has evolved between 1961 to the NZC (Ministry of Education, 2007), mandatory from 2010, is tabulated in Appendix Four.

The Programme for International Student Assessment (PISA), launched by the Organisation for Economic Co-operation and Development (OECD) in 1997, was a springboard for the development of the NZC, with its stated values and key competencies. New Zealand is one of the 28 member countries and four non-member countries to take part in the programme. PISA (OECD, 2005) acknowledges the complex challenges of today's world, including:

Globalisation and modernisation; developments in sophisticated technologies leading to changes in how knowledge is accessed and perceived; developments in sophisticated technologies leading to the creation and manipulation of life; the increasing diversity within communities; and the need for communities to balance economic growth with environmental sustainability, and prosperity with social equity. (p. 4)

The aim of the programme is to monitor the extent to which students who are nearing the end of their compulsory education have acquired the knowledge and skills deemed essential for full participation in today's knowledge societies. Thus, the focus of the PISA project is not so much to assess content knowledge, as to assess the ability of young adults to use their knowledge and skills to meet real-life challenges (Sturrock & May, 2002, p. 3).

The ability to apply knowledge to meet life's individual challenges and to fully participate on a societal level requires the mastery of certain skills and competencies. The NZC (Ministry of Education, 2007) identifies five key competencies necessary for students 'to live, learn, work and contribute as active members of our communities' (p. 12). The five key competencies are:

- thinking
- using language, symbols and texts
- managing self
- relating to others

- participating and contributing.

How the key competencies identified by the NZC (Ministry of Education, 2007) evolved between 1993 and 2007 is tabulated in Appendix Five. Essentially a set of behaviours, these competencies are underpinned by values.

2.5 VALUES EDUCATION

Because it is by holding these values and acting on them that we are able to live together and thrive. (Ministry of Education, 2007, p. 10)

Beginning with a discussion of values education in international curricula, this section backgrounds changes in values education in New Zealand from the 1970s to the present day.

2.5.1 Values education in international curricula

Inclusion of cultural and moral values was at the forefront of international curriculum reform independently but simultaneously undertaken in New Zealand, Australia, the UK, the US and numerous OECD countries throughout the late 1990s and early 2000s (Ministry of Education, 2002, p. 28). Curriculum reform in the UK brought significant alteration to the religious studies programme compulsory in all British schools, state and independent, from new entrants to GCSE level, in conjunction with the introduction of civics. This reform has been followed by the 'Open minds: A competency-based curriculum for the 21st century' project, which emphasises emotional intelligence. Social and emotional learning (SEL), character education, service learning and citizenship education have become a focus in the US and other countries. These subjects emphasise responsible decision making, self-awareness, self-management, social awareness and relationship skills. A number of values education projects culminated in the release of the

'National framework for values education in Australian schools' in 2005. Reflecting Australia's 'commitment to a multicultural and environmentally sustainable society where all are entitled to justice' (Australian Government, Department of Education, Science and Training, 2005, p. 4), the 'Nine values for Australian Schooling' are care and compassion; doing your best; Fair Go; freedom; honesty and trustworthiness; integrity; respect; responsibility; and the grouped understanding, tolerance and inclusion. Within these international curriculum projects, polls of parents and community leaders have indicated a clear consensus on what it is that children should know and be able to do. In turn, this defines what parents and community leaders want schools to teach.

Adapting a list from Elias (2003, p. 6) to include the wording of the NZC (Ministry of Education, 2007, pp. 8–12), I have identified that common expectations across the New Zealand and international curricula include that young people will:

- Be fully literate. This involves students being able to benefit from and make use of language, symbols and texts in a variety of forms.
- Understand science, mathematics and technology at levels that will prepare them for future developments and strengthen their ability to think critically, creatively and reflectively.
- Be good problem-solvers.
- Take responsibility for personal health and well-being.
- Develop effective social relationships including the ability to work in groups and the ability to understand and relate to those from different cultures and backgrounds.
- Be compassionate and caring people who exhibit concern and respect for others.
- Appreciate how their society works and be prepared to take on the roles that are necessary for future progress in social, cultural, economic and environmental contexts.
- Develop good character and make sound ethical decisions.

The latter six points refer to aspects of education variously referred to as character education, service learning, civics, citizenship education, social-emotional learning or values education.

2.5.2 Values education in New Zealand

Values education in New Zealand has had a 'chequered career' as powerful social and economic forces have influenced the curriculum landscape (Keown, Parker & Taikiwai, 2005, p. 65). Including a section entitled 'Moral, spiritual and values education', the Johnson committee's 1977 report on health and social education provoked intense debate about the ways in which to approach values issues arising from the extensive social changes of the 1960s. The Johnson report considered values education to be a partnership between home and school. As early as 1977, the Johnson report was recommending that schools provide opportunity for the discussion of controversial issues and recognised 'that schools have the resources and the people to support the home in helping young people to learn values for themselves in a world of bewildering choice' (Keown et al., 2005, p. 65). Recognising a spiritual dimension in education, and affirming the suggestion made at the 1974 Educational Development Conference that 'the search for meaning, purpose and identity in life is necessary for the health of the individual and community' (Ministry of Education, 1977, section 2.4.2), the Johnson report supported investigation of fundamental life questions including, for example, 'who am I?', 'why am I here?', 'where have I come from?' and 'where am I going to?' within the curriculum. Values education, the Johnson committee concluded, should include the opportunity to address philosophical and spiritual questions of meaning and purpose without becoming enmeshed in particular religious viewpoints or dogmas, and taking particular care to respect and understand differences between people in a pluralistic and multicultural society (Syms, 2011).

Although some aspects of values education were assimilated into the Form One to Four Social Studies syllabus published in 1978, and the Johnson committee's recommendations led to noteworthy developments in the health and outdoor education syllabus published in 1985, the committee's recommendations concerning moral, values and spiritual education were impeded by controversy and were not adopted (Keown et al., 2005). Snook (2000) cites opposition expressed towards the proposals by a number of churches, the business sector (including the Employers' Federation) and other groups, including the Concerned Parents Association, that claimed to speak on behalf of parents, as the source of the opposition and controversy.

The 1980s saw broad review of the curriculum for New Zealand schools. A number of curriculum statements, frameworks and syllabi that progressively recognised knowledge, skills, and attitudes and values, as three equally important aspects of learning within the curriculum emerged. Beginning in November 2000 and presented to the Minister in 2002, the Ministry of Education's Stocktake report reviewed the previous decade's curriculum developments and their implications for teaching and learning. In contrast to the situation some two and half decades earlier that saw the adoption of values education in the curriculum constrained, and illustrating how curriculum evolves in tandem with social and political change, feedback from the education, business and academic sectors consulted during the New Zealand Department of Education's (2002) Stocktake criticised the existing curriculum documents (with the exception of the then very recent Health and Physical Education statement) for giving insufficient attention to values. They also criticised the existing statements for not providing clear expectations of what schools should do to promote and support community values (Ministry of Education, 2002, p. 30). As a result, and reflecting the 1987 Curriculum Review, the Ministry of Education's Stocktake report recommended that the values outlined in the New Zealand Curriculum Framework (NZCF) (Ministry of Education, 1993) and the parallel translated Te Anga Marautanga o

Aotearoa documents current at the time should be modified and made explicit.

Acknowledging that curricula are underpinned by values, the Stocktake report recognised the ability for curriculum policy to promote positive attitudes and values from within schools. Sector feedback supported the Ministry's assertion that values education was critical. This was not only because good attitudes and values improve the climate and morale of the classroom environment and, therefore, aided effective teaching and learning, but also because attitudes and values 'have an important role in helping students to understand philosophical questions about their world and their participation in it' (Ministry of Education, 2002, p. 28). In this way, the Ministry of Education articulated a behavioural and a cognitive aspect to values education. The values of honesty, reliability, respect for others, respect for the law, tolerance (rangimarie), fairness, caring or compassion (aroha), non-sexism, and non-racism implicit in the 1993 NZCF and learnt through students' experience of the total environment, rather than through direct instruction, transitioned through the Stocktake report into the values to be made explicit within the current curriculum.

Recognising that the national curriculum needs to be flexible enough for schools to reflect the values of their local communities, the Stocktake report recommended that the values to be promoted should not be presented as an exclusive list (Ministry of Education, 2002). This has resulted in the values presented in the NZC (Ministry of Education, 2007, p. 10) being more like clusters of values that may be expanded to suit a given school community's philosophy and ethos. However, while providing flexibility, the values clusters stated in the NZC recognise that certain skills, attributes and dispositions are considered necessary for all citizens in New Zealand. These include encouraging students to value: excellence, (by aiming high and persevering); innovation, inquiry and curiosity (by thinking critically, creatively and reflectively); diversity (as found in our different cultures, languages and

heritages); equity (through fairness and social justice); community and participation for the common good; ecological sustainability (which includes care for the environment); integrity (which involves being honest, responsible and accountable, and acting ethically); and respect, for themselves, others and human rights. The tables in Appendix Six trace the evolution of values in the New Zealand curriculum from the 1993 NZCF to the NZC (Ministry of Education, 2007) through the 2002 Stocktake, and compare the values of the NZC with the 'National framework for values in Australian schools' (Australian Government, Department of Education, Science and Training, 2005).

Two traditions are apparent with respect to moral or values education: the authoritarian tradition and the liberal tradition (Law, 2007). Within the liberal tradition, a useful and relevant values education requires educating citizens to develop the skills required to properly discharge their responsibility to think independently and critically about right and wrong. This includes having knowledge of a range of worldviews and the values that underpin them, and to be able to enter into reasoned discussion about the strengths and weaknesses of such worldviews. This thesis makes a case for a liberal form of values education delivered through the academic discipline of bioethics, which is embedded in philosophy and science and that equips young people with the skills associated with independent critical thinking. The next step in building this case involves an exploration of values in contemporary Western culture, including contemporary New Zealand culture, and how these values may affect citizens' decision making and behaviour.

2.6 VALUES IN CONTEMPORARY CULTURE

It's the way in which those values are communicated that matters. The Liberal will encourage the child to think independently. That doesn't mean without guidance or correction. (Law, 2007, p. 65)

This section considers values within contemporary Western culture; how these values may have changed, particularly since the 1960s; what may have influenced such change; what represents authority for students in contemporary society; and how changes in social values, and therefore behaviour, have contributed to the observed expansion of values education. One proposition that underpins this thesis is that today's youth are led by the pervading cultures of materialism (consumerism), individualism and relativism. Perceiving 'culture' as the ideas, customs and social behaviour of a particular people or society (Oxford Dictionary, 2012), including the prevalent social symbols that are considered meaningful and the role that the market economy and advertising have had in establishing these symbols, this section describes how materialism, individualism and relativism may be defined as forces that shape how people view the world and their place in it. This section concludes by describing how the pervading social culture may define a young New Zealander's values and impact on ethical decision making at both the individual and communal levels.

A person's values underpin his or her decisions and behaviour, and affect others within society. An individual's values are formed and informed through the beliefs, history and traditions of family of origin and/or family of nurture, culture and society. However, substantial changes in the life experiences of children in Western society in the current and immediate past generation have altered the proportions to which these factors have influence on values formation (Weissberg & O'Brien, 2004). The family-school-church triumvirate and affiliation to social institutions that traditionally nurtured and reinforced the emotional and social needs and development of children have substantially weakened (Harris, 1998; Law, 2007; Layard, 2005; Vardy, 2002, Walters, 2011). Simultaneously, there has been an alteration in family dynamics with changes in social views giving rise to an increased number of single parent and blended families (Layard, 2005; Weissberg & O'Brien, 2004), and economic and social pressures leading to a significant rise in the number of families with both parents in full-time work (Carr-Gregg, 2008;

Eckersley, 2011). While it has been shown that both heredity and family of origin factors influence an individual's behaviour, research including, for example, that undertaken at the University of Virginia (Turkheimer, 2000) demonstrates that it is neither genes nor family environment that accounts for a substantial portion of the variation in complex human behavioural traits. Rather, it is the peer group that is the largest determining factor with respect to behaviour. This includes such behaviours as whether someone is a smoker or demonstrates criminal tendencies (Harris, 1998).

The influence of the peer group has escalated in association with the unparalleled ability to connect through digital technology. In addition to connecting the peer group in unprecedented ways, the development of the digital media has altered relationships with time and space, with people referencing themselves more globally and to social cultures outside their immediate physical contexts and direct frames of reference (Bradley, 2003). Electronic technology has also facilitated access to unprecedented amounts of information, both reliable and dubious (Postman, 1992, 1995). The abundance of information, its fluidity and its transfer through digital media have led commentators, including Manuel Castells (2000), to predict that many young people of the current and future generations will be innovative, problem orientated, highly mobile and risk takers; rule breakers who will have far less time to maintain traditional connections with family and community but who will be far more connected to global networks and affinity groups. There are clear ramifications for values development within this prediction. As the influence of family and community lessens, the opportunity for inter-generational values education diminishes. Simultaneously, the effect of social media on values determination magnifies. Therefore, values education within learning institutions where the peer group is gathered becomes more important.

Easier access to the media in a variety of genres with the associated influence of advertising has contributed to the rise of materialism and

consumerism (Carr-Gregg, 2008; Elliott, 2003; Hamilton, 2008; Law, 2007; Postman, 1992, 1995; Turkheimer, 2000). The rise in the materialist consumer culture has affected individuals' values, perception of personal identity and social behaviour (Eckersley, 2004a, 2005a, 2005b, 2008, 2011; Elliot, 2003; Hamilton, 2008; Kasser, 2002; Law, 2007; Somerville, 2010). Beginning with a discussion of the influence of liberal thinking championed during the 1960s, these changes in life experience and values formation will now be examined.

2.6.1 The 1960s: A cultural shift

*Your sons and your daughters
Are beyond your command
Your old road is
Rapidly agin'.
(Bob Dylan, 1963)*

While some academics suggest the Enlightenment and its rejection of religious authority in favour of evidence-based science and reasoned independent thinking as the cause of the observed moral decline in Western society (MacIntyre, 1985; Gray, 1995), others assert a more contemporary cause through the cultural shift of the 1960s. Particularly in the 1960s, citizens in Western cultures were encouraged to liberate themselves from the long-standing religious authorities and traditions of the past, which were increasingly depicted as repressive and domineering. Increasing emphasis was placed on personal autonomy and freedom of thought and expression and in this way, it was during the 1960s that the core Enlightenment value of daring to question authority and think for oneself came powerfully to the fore (Brown, 2002; D'Souza, 2002; Hamilton, 2008; Law, 2007).

While Law (2007) notes that 'hardly a week goes by that some political pundit doesn't lay responsibility for the West's alleged moral decline on the anti-

authoritarian attitudes of 1960s hippies and liberals' (p. 12), Hamilton (2008) offers a less colloquial commentary and incorporates the concurrent rise of the market economy:

The defeat of conservatism by the legitimate demand for self-determination thus had a shadow side—the preoccupation with self. When this new individualism became validated by the culture of the market the shadow developed into full-blown narcissism, captured in terms such as the 'me generation'. The preoccupation with self-received political and social blessing and acquired a moral rationale. (p. 227)

Hamilton (2008) discusses how in a time when people have never had more freedom to shape themselves in the way they choose, they have also never been subject to so many pressures telling them what is desirable. For Hamilton, the paradox is that following two centuries of political and individual freedom, modern consumer life deprives citizens of their inner freedom through their pursuit of material goods, endless choice and pleasure.

2.6.2 A perspective on culture

Utilising different lines of scientific and political research including time-trend analyses and cross-sectional studies, and therefore allowing a form of triangulation on the central question of trends in young people's health and well-being, Eckersley (2005a) claims that contemporary Western culture is 'fraudulent' (p. 157) in its promotion of cultural images and ideals that are contrary to human needs and common realities. Eckersley (2005a, 2005b, 2008, 2011) argues cogently for the greater examination of cultural influences on social and individual health and well-being, and thus places the fundamental issue of 'how we are to live' into the realm of wider culture. Beyond the ethnic and racial definition prevalent in social determinants research, culture needs to be assessed in a broad sense to include the system of meanings and symbols that shape how people see the world and

their place in it in both a social and spiritual sense; which give meaning to personal and collective experience; and that determine the values that citizens uphold (Eckersley, 2005a, 2008). Eckersley's argument echoes that of Hood (1998) who advocates for a broader view of culture within the education curriculum to acknowledge the influence of the media. Hood states that 'in today's world a young person has exposure to culture every minute of his or her life through radio, television, movies, advertising, cinema and the internet' (p. 125).

2.6.3 The impact of materialism and individualism on values development, decision making and behaviour

Materialism and individualism are two of the best researched 'isms' of modern Western culture (Eckersley, 2005a). Also referred to as consumerism, materialism may be defined as the pursuit of wealth and material goods; of a lifestyle based on the consumption of market goods and services (Eckersley, 2005a, 2005b; Hamilton, 2008; Law, 2007). Auerbach, McWhinnie, Goldfinger, Abela, Zhu and Yao (2010), following Belk (1985), define materialism 'as the belief that an individual's worldly possessions are the greatest source of life satisfaction' (p. 117). This self-gratification through the pursuit of money and possessions is linked to individualism. Individualism places the self at the centre of a framework of values and beliefs and champions the right of each individual to autonomy. Hamilton (2008) argues individuals persist in the pursuit of greater wealth and consume at ever higher levels because they do not know how better to answer the question 'How should I live?' This, he argues, is because consumerism has infected the culture and organisation of citizens' lives to such a degree that the market has become the primary means of generating needs, as opposed to a mechanism through which people's genuine needs may be satisfied. Satisfying these manufactured needs has become life's purpose (Eckersley, 2004a, 2004b, 2005a, 2005b, 2008; Elliott, 2003; Hamilton, 2008). Many areas of personal and social life were beyond the purview of the market only

a few decades ago. In contemporary times, however, these areas have become infused with the market's values and, accordingly, how individuals think about them has been transformed. 'Choosing a mate, education and entertainment, for example, have become increasingly commodified and are thus considered in terms of their capacity to deliver pleasure' (Hamilton, 2008, p. 14). Similarly, it can be argued that human life itself is being commodified, for example, through human reproductive technologies, which allow the creation and manipulation of the embryo (Somerville, 2007; Stevens, 2003).

As the culture of materialism and individualism has strengthened, so has the tendency to value personal interests more highly than overall social welfare (Auerbach et al., 2010; Belk, 1985, Eckersley, 2004a; Kasser, 2002; Taylor, 1991). Disproportionately valuing material possessions and extrinsic goals such as financial success, outward appearance and social recognition are associated with reduced well-being, including depression, anxiety, and fewer pro-social behaviours (Auerbach et al., 2010; Kasser, 2002; Kasser & Ryan, 2001). Research has also suggested that an individualistic and materialistic value system may be linked to increased risk-taking behaviours including, for example, school truancy, vandalism, early sexual behaviour, violence (including weapon carrying) and greater consumption of alcohol, cigarettes and drugs (Auerbach et al., 2010; Carr-Gregg, 2008; Eckersley, 2004a, 2005a, 2005b, 2008; Kasser, 2002; Kasser & Ryan, 2001). A shift in attitudes towards sexual activity, a significant rise in the abuse of alcohol and other legal and illegal substances, the substantial rise in mental illness, particularly depression, among youth and the rise in crime are all pointed to as evidence for the negative impact on well-being, values and personal decision making resulting from Western society's current pervading ethos of individualism and materialism (Carr-Gregg, 2008; Eckersley, 2004a, 2005a, 2005b, 2011; Law, 2007; McCutcheon, 2006). Bauman (2001) maintains that contemporary individualised society, where a sense of insecurity and contingency has intruded into daily life, has resulted in a spread of impulsiveness and a decline in self-control. Individualism leads to increased difficulties with

interpersonal relationships including people being seen as the means to attaining a materialistic end (Bauman, 2001; Kasser, 2002). Eckersley (2005a, 2011) asserts that a culture of materialism and individualism is a more aggressive, less connected, and distrusting culture that weakens bonds and group identity, in comparison to a community-orientated culture. Auerbach et al. (2010) and Forbes, Zhang, Doroszewics and Haas (2009) demonstrate an increase in risk-taking and anti-social behaviours (including aggression) in societies, including China, where the trend to materialism and more individualistic values is eroding traditionally collectivist values.

Despite overall improvements in nutrition, housing and educational opportunities, declining morbidity and mortality rates for children under the age of 15, together with a greater gender, ethnic and racial equality and tolerance for minority groups within society over recent decades, general well-being of youth in a number of Western countries including New Zealand, Australia and the US appears to have declined (Carr-Gregg, 2008; Eckersley 2001, 2005b, 2009; Twenge, 2006). For example, approximately 40 per cent of the over 10,000 Australian students from new entrants to Year 12 (equivalent to Year 13 in New Zealand) surveyed by Bernard, Stephanou and Urbach (2007) displayed low levels of social and emotional well-being, with 42 per cent reporting that they worried too much; 35 per cent reporting that they lost their temper frequently; and 48 per cent reporting that they found it difficult to calm down when upset. Generally, 18 per cent reported they were lonely and 20 per cent reported that they had recently felt depressed and hopeless for a week or more and had ceased participating in their routine activities as a result. Using the Minnesota Multiphasic Personality Inventory (MMPI), Twenge, Gentile, DeWall, Ma, Lacefield and Schurtz (2010) identified a continual deterioration in the mental health of 63,706 tertiary students between 1938 and 2007, and 13,870 secondary students between 1951 and 2002. Psychological problems reported included moodiness and irritability; restlessness; dissatisfaction; feelings of isolation, sensitivity and/or sentimentality; and fatigue and sleep disturbance. Twenge also found

unrealistic positive self-appraisal, narcissism, over-activity and low self-control (Twenge & Campbell, 2009; Twenge et al., 2010).

Results from a series of research studies undertaken over a three-year period by the University of New Hampshire (UNH) indicate that members of Generation Y (defined by UNH as those born between 1980 and 2000) have a greater sense of entitlement than previous generations (Harvey, 2010a, 2010b; Harvey & Martinko, 2009). An inflated sense of entitlement is considered a component of narcissism. While a sense of entitlement is present in members of every generation, these levels appeared 25 per cent higher among Generation Y, who were between 10 and 30 years of age at the time of the research, in comparison to respondents aged 40 to 60, and a significant 50 per cent higher than those over age 61. Acknowledging that there is probably an instance of over-confidence and high self-perception in every generation as they pass through their late teens and their early to mid-twenties, the UNH research team have defined four different traits exhibited by Generation Ys including a perception towards inflated self-perceptions (they think and speak very highly of themselves); very high (unrealistic) expectations based on these self-perceptions; the tendency to exhibit chronic levels of disappointment when unrealistic expectations go unfulfilled; and a deep-seated resistance to criticism or negative feedback. Any negative feedback is frequently rejected offhand as 'your mistake, not mine' (Harvey, 2010a). Self-serving attribution biases including blaming others for negative outcomes are associated with anger and frustration, which affect social relationships (Harvey & Harris, 2010; Harvey & Martinko, 2009). Harvey (2010b) asserts that a strong sense of entitlement together with the tendency to externalise fault and inability to learn and improve from mistakes impacts on ethical decision making and ethical behaviour, trending Generation Ys to obtain rewards they feel they are entitled to through unconventional, unethical means.

A 2011 publication from the internationally recognised Dunedin Multidisciplinary Health and Development Study, a longitudinal study of a complete birth cohort of 1,037 children born in Dunedin in a single year between 1972 and 1973 (with 96 per cent retention) indicates that 'childhood self-control predicts physical health, substance dependence, personal finances and criminal outcomes' in adulthood, irrespective of intelligence or social class (Dunedin Multidisciplinary Health and Development Study, 2011, p. 2693). Self-control is an umbrella construct that includes measures of delay of gratification, self-regulation, conscientiousness, willpower and impulsivity. A low self-control measure predicts early mortality, psychiatric disorders and unhealthy behaviours such as over-eating, smoking, unsafe sex, drunk driving, non-compliance with medical regimes, unemployment and law breaking. This complements laboratory-based experimental behaviour studies that evidence an association between performance on self-control tasks including delaying gratification and behavioural proxy measures of health, wealth and crime (Moffit et al., 2011, p. 2,693). The study notes that self-control is malleable and may be taught and learnt. This, together with the results of the other studies outlined above, have significance for the need for, and the content and delivery of, comprehensive values education.

The philosophy of individualism and the associated idea that gratification of personal needs should come before all else have implications for personal values formation and modes of thinking. In turn, personal values, beliefs and ways of thinking have implications for the decision-making strategies employed and the choices made by citizens within society. These decision-making capabilities are especially important with respect to bioethical issues, particularly the development of enhancement technologies, including neuro/cognitive enhancement and embryo enhancement. As evidenced by the rapid growth in surgical cosmetic enhancement, consumerism is reaching beyond the acquisition of things to the enhancement of the person (Eckersley, 2005a).

For Somerville (2007), consumerism, which she defines as 'buying goods solely for the sake of buying and having them', is 'a treasured value in a technocratic society' (p. 228). With respect to bioethics, Somerville (2007) maintains that:

Our most intimate personal interactions are being transformed into transactions. Commodification indisputably happens when human embryos are created for the purpose of using them as the source of therapeutic products. It also can be present when we pass on life to our children if that occurs through services made available by the 'fertility industry'. (p. 229)

Callaghan (2011) comments that 'thinking today is the action of the future'. Culture's role in defining what gives meaning to life and the factors that contribute to this meaning, including 'autonomy, competence, purpose, direction, balance, identity and belonging' (Eckersley, 2005a, p. 158) are, as Eckersley (2005a) points out, especially 'important to young people as these attributes are the destination of the developmental journeys they are undertaking' (p. 159). It is for these reasons, and because of the recognised need to develop skills in critical thinking, management of self and relationships with others, that curriculum reform to include values education and the development of key competencies, so that citizens may make ethical decisions and act on them, has occurred within New Zealand and OECD countries over recent years.

Society's 'consciousness of choice' (Sacks, 1997, p. 176) was enhanced during and from the 1960s, but as already indicated, this was not always in a positive way. As this thesis focuses on the established requirement for schools to explicitly undertake values education, the following section will consider how individualism, materialism and the ethos of choice, with their consequent impact on value systems, have been enhanced and exploited in contemporary Western society by the marketing and advertising industries.

2.6.4 The role of marketing and advertising in determining contemporary culture and defining social and individual values

Advertising and its powerful impact on values systems is transitioning from not only telling someone what he or she wants, but also who he or she is in terms of physical and intellectual characteristics and social relationships (Droga, 2008; Eckersley, 2005a, 2005b, 2011; Elliott 2003;). Many young people today learn who they want to be not through their parents or teachers, but through advertising (Elliott, 2003) and this image is then reinforced through the peer group. Droga (2008) states that 'brands have become a reflection of who we are or who we want to be' (p. 23), while Hamilton (2008) argues that self-definition and the persona presented to the outside world, an identity previously determined by our place in the community, is now offered to us through the market place.

In today's environment, it is virtually impossible for individuals to defend themselves against the invasion of their private spheres by commercial messages and the marketing culture (Hamilton, 2008). The number of exposures to advertising varies in academic articles according to how 'exposure' is defined, including whether or not a person consciously acknowledges the advertising. However, it is estimated that taking into account billboard, transport, television, radio and magazine advertising, naming rights to buildings, sports facilities and public spaces, supermarket receipts, public bathroom walls, email and website advertising encountered during computer use, stationery, clothing and footwear insignia and so on, the average person in Western society is exposed to approximately 3000 advertisements each day (American Academy of Pediatrics, 2006). Neither the bottom of golf-holes, nor outer space has escaped being colonised by the marketing and advertising industry. Sporting venues, universities, school sports uniforms and newsletters, hospitals, public and private buildings, landmarks, public transport and skylines have all become sites for the promotion of products (Hamilton, 2008). As a result, the production and

consumption of culture have become imbued with commercial values and marketing messages. Brands have become the most powerful means of forming and spreading culture.

Cultures tend to be unnoticed and indiscernible to those living within them because they comprise deeply internalised assumptions and beliefs that make their effects difficult to distinguish (Eckersley, 2005a, 2008). Thomas (2007) describes how marketers have captured the ultimate consumer, the toddler, and thus demonstrates how consumerism, and the notion of fulfilment and gratification through external means, has become a wallpaper of life, constantly and unavoidably present, from cradle to the grave. Within an individualist, consumerist society, choice is an ultimate good. However, the market has given citizens an imagined agency that actually makes them all the more vulnerable to manipulation by forces so pervasive and natural to the contemporary landscape that they are significantly unaware of them; they are invisible to individual consciousness. Hamilton (2008) argues that founded on 'nothing other than our own desires' (p. 220), the moral view that has escorted individualism and affected individual and societal values and decision making is a secular relativism.

2.6.5 The moral stance of relativism

In association with the rise of a materialist and individualist culture centred on the gratification of personal desires has been the development of the moral stance of secular relativism (Hamilton, 2008; Law, 2007; Sheehy, 2006). Secular relativism in contemporary Western culture is an unexamined position, borne out of a lack of knowledge of different cultural, ethical and spiritual worldviews, including a lack of awareness that different established theories exist. Sheehy (2006) notes that to hear the relativist view that something may be right or good for you, but is not okay for me is now commonplace. Rather than being seen as a difficulty to be overcome, or recognising an opportunity to explore whether the values that underpin the

differing views are, in fact, opposing, this is stated simply as a fact. 'That may be your truth but it's not mine' is an expression of a basic philosophy that the standards or principles by which a person makes moral judgements or evaluations are relative to that individual or the society into which she or he is acculturated and all opinions are equally valid. Law (2007) refers to this as the privatisation of morality. Within such a relativist culture where all opinions are considered equally valid, with no view better or worse than any other, there is little need to substantiate one's argument, or require substantiation in the arguments of others. The simple sharing of an opinion, which much like the initial opinions of students at Wellington One are given without defence or critique, is adequate. Technology including Twitter, text message, social network sites and online opinion polls, encourage and enable rapid opinion sharing, frequently in a limited, 'sound-bite' number of characters. An unexamined, passive acceptance of relativism negates exploration of any possible existence of objective moral standards, or consideration that while there may be a number of possible responses to a situation, some responses may be more appropriate than others. This kind of relativism may therefore be distinguished from a respect for the views of others in a pluralistic society, as respect implies knowledge, critique and understanding of alternative views.

McCutcheon (2006) observes that 'the task of educating (and therefore of humanising) is much more difficult in an age where the implied assumption is that there *is no objective reality*. It was easier in the days when young people rebelled against their elders because that rebellion at least required a rejection of something.' A decade into the twenty-first century, the kind of relativism described is now widely recognised as a dominant philosophy of Western societies (Bloom, 1988; Law, 2007; Thompson, 2001). As a consequence of relativism, philosophers including Hamilton (2008), Law (2007), Thompson (2001) Vardy (2002) and Webber (2003) assert that a culture of politically correct non-judgementalism has arisen.

2.6.6 Secularisation of Western society: The loss of communal values?

Considerable academic discussion (Brown, 2002; Eckersley, 2008; Hamilton, 2008; Law, 2007; Rachels, 1999; Somerville, 2007) and popular media comment (Bennett, 2002; Sacks, 1997) assert that one of the critical factors contributing to moral decline and the rise in individualism and relativism has been the rapid secularisation of society, particularly since the 1960s. As Jorgensen and Ryan (2004) note, 'the transmission of shared values, attitudes, and skills from one generation to the next has been a traditional aspect of teaching within society even before formal schooling was involved' (p. 224). It is recognised that throughout history, and especially during the last century, not all families attended church. Atheist and agnostic parents have raised children with clear moral values. However, a proposition underpinning this thesis is that the pervading influence of the Christian church on shared values and attitudes within Western society, including New Zealand, was greater prior to and during the first half of the twentieth century than at present. For example, many of life's milestones including birth, marriage and death were traditionally marked in a church, and it was socially and legally difficult to do otherwise. On a weekly basis, Sundays were marked, if not by attendance at synagogue, mosque or church, then by closure of retail outlets and public amenities including swimming pools, museums and cinemas.

Referencing the rapid decline in church attendance in the UK over the last 50 years, which is mirrored in New Zealand, Law (2007) asserts three critical effects that the decline in established religion has had on society. These effects are the increased fragmentation of society, resulting in a weakened sense of communal ties; the loss of clear unambiguous guidance on how to behave, including well-defined moral habits such as honesty, integrity and self-control, drilled into citizens through the old religious framework; and the loss of a place in which to explore existential questions such as why one exists, the purpose of human life, and the nature of a good life.

That young people still ask such existential questions and yearn to have a forum in which such questions may be explored and discussed, is supported by the exponential growth in numbers of British students choosing religious education at GCSE level, New Zealand's Year 11, NCEA Level One equivalent (Haigh, 2006). A compulsory subject in the British curriculum until 1988, parents may now, upon provision of a specific rationale, be permitted to withdraw their child from the subject. Despite this, increasing numbers of students are including religious studies as one of their subjects for their state qualifications (McKemey, 2010). Within most British schools, even those of special character, religious studies is considered an 'academic, open, plural and inclusive discipline' (Syms, 2011, p. 8). No comparable opportunity exists for state school pupils in New Zealand. While a forum to explore such questions may exist in faith-based schools, this does not meet the needs of the significant majority of young people who attend state schools. A proposition of this thesis is that a bioethics curriculum provides a forum for all students to begin the exploration of fundamental life questions and to develop an understanding of the plurality of moral views within New Zealand society. It also provides an opportunity to explore personal values and to be exposed to and to internalise and assimilate values. This opportunity contributes to negating the second of the effects articulated by Law (2007), that is, the loss of behaviour guiding moral habits such as honesty, integrity and self-control previously encouraged through a religious framework.

As long ago as 1989, a study by social psychologist Hugh Mackay reported that young Australians aged between 10 and 18 years believed moral values were declining and that unless they had a knowledge of the values that underpin a variety of religious traditions, they found it difficult to identify an accepted moral code within society. Eckersley (2008) reflects Law's (2007) argument noting that the pervading values of materialism and relativism, together with the rapid rate of change across so many aspects of modern life including the secularisation of society, reinforce the tendency towards

personal isolation and alienation, making the individual more vulnerable and society less cohesive. Even when people grasp what values matter, they may have difficulty living by them due to a lack of cultural reinforcement and encouragement.

In New Zealand, Jorgensen and Ryan (2000) note a tendency towards relativism in the responses of 38 secondary (science, biology, English and humanities) and 24 primary pre-service trainee teachers surveyed to establish what they believed to be important components of a general process for making ethical decisions and what they believe to be important in the teaching of ethical decision making. The pre-service teachers were given a list of factors and were asked to score each factor on a five-point scale from 'not important' to 'extremely important' with respect to making ethical decisions. The factors to be ranked were background information, cultural background, the laws of the country, costs and economics, religious beliefs, personal morals and personal ideas. The teacher trainees were then asked to rank the same factors for how important they felt each of these factors were for the *teaching* of ethical decision making in the classroom. They then scored their confidence in making personal ethical decisions on a scale from 'very confident' to 'totally lacking confidence'. Finally, the trainee teachers were asked to use the same 'very confident' to 'totally lacking confidence' scale to rank their confidence in using a given model on bio-decisions in the classroom.

While the trainee teachers surveyed could describe different perspectives within an ethical dilemma, they did so without analysis or taking a position. In Jorgensen and Ryan's (2000) observation, the trainee teachers did not appear to understand how relativism and simple description 'stymie debate' (p. 231) and the development of value judgements that are action guiding and precede sound ethical decision making. 'Comments made ... indicate a tendency towards relativism, where rights and wrongs are determined by

individuals and should not be challenged by others' (Jorgensen & Ryan, 2000, p. 231).

2.6.7 Seeking values-based education: The perception of values in religious and secular education

As will be discussed in this section and threaded throughout the remainder of the chapter, the legacy of the church versus state secular education lingers in New Zealand today, and affects the education being sought by parents for their children. This thesis reports on the trial inclusion of bioethics as a stand-alone subject within the curriculum as a vehicle for values education. While not advocating for the inclusion of religious education, the threads of religious education feature in a number of ways. This begins with the opportunity that timetabled religious education provides for the inclusion of bioethics in a curriculum, including, as described in Chapter One, for the formation and delivery of the curriculum upon which this research is based. In addition, it would appear that religious education by definition is perceived to incorporate values education and, therefore, to impact on values formation, reflecting religious studies 'as both an integral and a distinguishable part of values education' (Hill, 2004). This is evidenced through the increasing demand for values-based education provided at integrated special character schools in New Zealand (Susan Apathy, 9 February 2012, personal communication; Mark Larson, 8 February 2012, personal communication; Wane, 2011).

In an education special issue entitled 'Why faith schools are hot (and parents will do almost anything to get their kids enrolled)', *North and South Magazine* (November, 2011) examines the observed trend towards increasing numbers of parents, many with little or no connection to the church, seeking the values, discipline and academic results perceived as being offered by schools of special character. Pat Lynch (2011), chief executive of the Association of Integrated Schools pinpoints 'strong academic results and parents wanting a values-based education for their children—even if they're not particularly

religious themselves' (p. 43) as two factors driving the trend. In her article, 'Brand Catholic: A (not so) private education', Joanna Wane (2011) asserts that 'people are seeking out faith-based schools for their spiritual dimension, filling what's perceived as a values vacuum in modern society' (p. 42). This notion is supported by Mark Larson (8 February 2012, personal communication) Executive Director of the Association of Integrated Schools, New Zealand, who perceives demand for places in schools of special character as generated by parents wanting education based on a philosophy of values and their children being with peers whose families hold similar values. Pointing to the anecdotal evidence of lengthening waiting lists, Larson, who oversees all non-Catholic integrated schools, was unaware of any academic research that quantifies the increasing demand for education within special character schools: 'We are so busy keeping up with the demand that there hasn't been time to rigorously investigate why the demand is there in a scholarly way' (Mark Larson, 8 February 2012, personal communication). This view is supported by Wane (2011) who cites a number of Catholic secondary schools having several hundred names on their waiting list many of them non-Catholics vying for the five to 10 per cent of places set aside as a 'non-preference' quota. Growth within the Catholic education sector is certainly evident, with Catholic schools accounting for 15 per cent of the total student population in 2011, up by a quarter since 1996.

The increased demand for places in integrated schools of special character is multifactorial. In addition to parents desiring the perceived values-based, quality education, other factors include a rising birth-rate and the arrival of new immigrants with religious roots (Hill 2004). Current economic conditions are also placing integrated schools under pressure. Integrated schools receive government funding and therefore charge small fees in comparison to the independent school sector. However, the fact that integrated schools may charge fees offers them the opportunity to reduce class sizes, an opportunity not available to state schools.

As the traditional means of teaching and reinforcing values have fragmented, and the negative outcomes resulting from impulsive, risk taking and often anti-social behaviour have increased, the demand on schools to provide and promote values education has amplified. Such 'values education' is frequently interpreted as being associated with tolerance and social justice, including desirable ways of relating to others; good manners, anti-bullying, antidiscrimination. However, this is too narrow a view of values education.

2.7 DEFINING VALUES EDUCATION

Thus, in discussing values education, we are thrown right into the heart of the philosophical discussion of ethics. (Snook, 2000)

This section discusses how comprehensive values education may be defined, including implicit and explicit teaching and learning. A summary of values education programmes existing within New Zealand schools distinguishes the behavioural and cognitive strands of values education, and illustrates how the research curriculum differs from other programmes currently available.

As a focus for this thesis is values education and values within the curriculum, it is important to define the term 'values'. The NZC (Ministry of Education, 2007) defines 'values' as:

Deeply held beliefs about what is important or desirable. They are expressed through the ways in which people think and act. (p. 10)

The NZC recognises clusters of values and certain skills, attributes and dispositions that are considered necessary for all citizens in New Zealand 'because it is by holding these values and acting on them that we are able to live together and thrive' (p. 10). Acknowledging that the list of supported values is neither exhaustive nor exclusive, the NZC promotes flexibility and invites each school to consider and consult with its community about what

additional values, skills, attributes and dispositions children need to flourish in their future (Doig, 2009).

Based on Halstead and Taylor's (2000) influential definition (also utilised in the UK), the 'National framework for values education in Australian schools' (Australian Government, Department of Education, Science and Training, 2005) offers two definitions of 'values':

The principles and fundamental conviction which act as general guides to behaviour, the standards by which particular actions are judged as good or desirable (p. 8).

And from Hill (1994):

The ideals that give significance to our lives, that are reflected through the priorities we choose, and that we act on consistently and repeatedly (p. 8).

In 2004, Hill stated his preferred definition of values as:

The priorities individuals and societies attach to certain beliefs, experiences, and objects, in deciding how they shall live and what they shall treasure.

For Hill, a value is not simply a cognitive state, but includes a motivational aspect. In this way, Hill distinguishes *knowing* the good to be desirable and *desiring to do* good. As this definition acknowledges both the cognitive and the motivational/agency aspects of values, and because the definition includes mention of both individual and societal values, Hill's preferred definition of values is adopted in this thesis. Hill notes (2004) that this definition has several significant implications for the way values education is conducted. Firstly, it implies that there *is* a cognitive component and that value priorities can be described and justified through reason. Secondly, the inclusion of words such as 'experience' and 'treasure' invoke the affective and volitional. 'To speak of "experience" requires that we encourage students

to feel “what it is like” to act out, or live by, the values being commended. Empathy needs to be awakened through such teaching strategies as drama, role plays, simulations’ (Hill, 2004, p. 4).

Hare (1981) distinguishes two levels of moral reasoning: the everyday intuitive level and the more reflective critical level. There is more to an individual’s value system than simple intuition and emotion. If students are to be encouraged to truly explore their own values and those of their community, they must be facilitated into ‘listening’ to their own responses and questioning where these come from. This involves drawing a student’s attention to an emotional ‘gut reaction’ as compared to a response based on critical thought (McCutcheon, 2002). The process of teaching and learning in values education requires the articulation and critical assessment of thoughts. An important thread of this research, expanded in forthcoming chapters, is experiential, student-centred pedagogy with respect to values education where concepts, rather than being abstract, are concrete and include agency and relationships.

2.7.1 Implicit and explicit values education

Values education is an extensive, complex and multifaceted field (Hill, 2004, 2005; Keown et al., 2005). Gilbert and Hoeppe (1996, p. 60) and similarly Hill (2004, 2005) distinguish a number of different ‘types’ of values each with its own associated concepts and ideas. Aesthetic values are related to ideas and concepts such as beauty and symmetry; economic values are related to ideas and concepts such as efficiency and productivity; intellectual values are related to truth and clarity; political values to justice and freedom; environmental values are related to notions such as ecological harmony and sustainability; and moral values are related to ideas and concepts of right actions towards other people including respect, care and integrity. Moral values may be informed by religious values, although are not necessarily so.

In *Values in the New Zealand curriculum: A literature review of values in the curriculum* Keown, Parker and Tiakiwai (2005) identify three challenges 'facing those who seek to develop a well thought out yet practical approach to values in the curriculum'. These are:

- 'the challenge to develop an approach to values in the curriculum that is able to transcend the deep ideological divisions that divide various camps in the values education community'
 - 'the challenge to develop an approach to values in the curriculum that is able to do justice to the contrasting of values of the range of cultural communities in New Zealand society'
 - 'the challenge of addressing values in the curriculum in a way that is perceived as practical for all schools' teachers and for all learning areas'.
- (p. 141)

Through the teaching and learning of theoretical ethics within immediately relevant applied situations, this thesis asserts that when comprehensively taught, bioethics education can address each of these challenges. Accordingly, the curriculum trialled at the centre of this research aims to test this assertion.

2.7.2 A summary of values education programmes available in New Zealand

Resources to assist with values education in general subject areas may be found on sites such as the Ministry of Education's TKI. In addition to these, a number of values education programmes and curricula, many of which existed before the implementation of the NZC, and a number of which are international, are available to and operative within New Zealand schools. Detailed in full in Appendix Seven, which describes the background of each programme including the country of origin, the philosophical base, the mode of operation, resources and training and the relative penetration within New Zealand schools, these 10 programmes are Cornerstone Values; the Living

Values Trust Project (LVTP); Living Values Education (LVE); the Character Education Programme of New Zealand (CEPNZ); Churches Education Commission (CEC) and Christian Religious Education; the Virtues Project; Habits of the Mind; the Values Exchange; Dialogue Australasia Network (DAN); and Philosophy for Children (P4C).

The majority of the 10 available programmes acknowledge education as a holistic endeavour. However, eight of the 10 programmes deliver only one or other of the character-behavioural and cognitive-theoretical aspects identified as essential to holistic values education as defined in section 2.7. For example, distinguishing these behavioural and cognitive aspects of values education, the Cornerstone Values Project demonstrates how it emphasises the behavioural. The project founders then determined that what they:

Were really talking about was ‘character’ and not ‘values’ and ‘character education’ and not ‘values education’. ‘Values education’ is about the quality of students’ thinking, character education is about the quality of students’ behaviour. (Heenan, 2008)

Seven of the 10 values education programmes focus purely on the development of the character-behavioural aspect of values education. Three programmes (Cornerstone Values, LVE and the Virtues Project) acknowledge the cognitive thinking skills together with the social and emotional skills that students are exposed to during processes such as conflict resolution and thinking situations through. Similarly, the intention of the values exchange is to have students think cases through. However, these eight programmes do not include explicit academic/intellectual teaching and learning of values, for example, the teaching and learning of ethical theory, leading to an understanding of the principles that underpin different moral codes. Rather, the focus of seven of the 10 programmes available to schools is on assisting students to develop values so that they may engage with their peers, their family and those with whom they live in the community responsibly, honestly,

respectfully and compassionately. These four values are common across the programmes that list stated values. Teaching values such as these within these eight programmes is achieved implicitly through modelling, rather than through explicit teaching, as now required by the NZC. Of the 10 listed programmes, only the curriculum framework of the DAN and the pedagogy and content of the P4C programme explicitly teach ethical principles and the skills of philosophical argument and critical thinking defined as essential to a comprehensive values education within this research thesis. As Jorgensen and Ryan (2004) state:

To move from an understanding of 'value' to that of 'ethics' is not easy. The two terms are often used interchangeably in education documents. Values are a statement about the beliefs and attitudes that determine personal behaviour. Ethics overlap with this when values determine beliefs as to what is right and wrong. ... The curriculum request for ethical decision making implies an understanding of what ethics actually are: the philosophical standpoint and the view of society in general. (p. 226)

My original curriculum, later adapted by the collaborating teachers within this investigation, arose from a similar philosophy to that upon which the DAN framework is based; that is, a commitment to developing contemporarily relevant, intellectually rigorous values education that incorporates cultural and religious perspectives through a non-partisan approach. Further, the research curriculum frequently employs an adaptation of the discussion-based community of enquiry, which is at the heart of the pedagogy of Philosophy for Children. The social dimension of the community of enquiry, where a plurality of views are expressed incorporates the character-behavioural dimension of values education. The bioethical questions that are the subject of the community of inquiry incorporate the cognitive-theoretical aspects.

Teaching bioethics requires the consideration of controversial issues. In addition to understanding the science and technology involved, consideration

of bioethical issues requires teaching and learning of meta ethics—the study of the origin and meaning of ethical concepts—in addition to normative ethics—the more practical task of arriving at moral standards that regulate right and wrong conduct within society. As Stoyles (2009) notes, teaching ethics goes further than values education for behaviour; it is asking students to develop awareness of and within social context. An example of introducing and teaching an ethics programme into schools occurred in New South Wales in 2010.

2.7.3 The St James Ethics Centre ethics trial in New South Wales primary schools

The New South Wales-based St James Ethics Centre (SJEC) trial of teaching and learning ethics in primary schools represents the closest available example of introducing ethics-based values education into the curriculum as a discrete subject. As in New Zealand, the New South Wales Education Act makes provision for secular state schools to set aside one hour per week for special religious education (SRE) if they so choose. Parents can opt their children out of the SRE classes. However, while providing for the supervision of these students, Department of Education and Training policy stipulates that students are not to have access to lessons at the same time, including lessons in ethics, values, civics and/or general religious education. Accordingly, schools permit the students who opt out of SRE to participate in activities including silent reading, watching DVDs, colouring-in, playing games on the library computers and picking up playground litter. While the exact number of students who opt out is not known because statistics are not collected, it is thought that prior to the trial approximately 100,000 students are supervised each week (Suttle, 2010). Following a campaign driven by the Federation of Parents and Citizens' Association of NSW and the Sydney-based SJEC to establish an ethics-based alternative to SRE classes, Premier Nathan Rees approved a 10-week pilot ethics course that was duly facilitated in 10 NSW public primary schools in the second half of 2010.

Developed by Philip Cam, the ethics classes are facilitated by trained volunteers. Including a community of inquiry format, sessions covered during the pilot included fairness; lying and telling the truth; ethical principles; graffiti; thinking about animals; intervening in nature; virtues and vices; children's rights; and the question of what is necessary for a person to have a good life.

An independent evaluation of the trial commissioned by the Department of Education and Training reported that the format of the pilot classes helped students discuss and understand the principles of ethical decision making, and provided an appropriate framework for ethics-based classes to be introduced more widely in state primary schools as an alternative to SRE classes (Bachelard, 2010; Suttle, 2010). Following the pilot, the ethics programme was established in a greater number of NSW schools in 2011 and continued in further expanded form in 2012. The success of the pilot programme has led to the Humanist Society in Victoria proposing an ethics-based curriculum including subjects such as the environment, philosophy, science and world citizenship be introduced into that state for children from prep to Year 6. The SJEC ethics programme has also had an impact on proposed contents of the Australian draft national curriculum currently under construction with Professor Cam co-authoring guidelines on incorporating ethics.

2.7.4 Teaching both through and about values

The language of the NZC (Ministry of Education, 2007, p. 10) indicates schools must now teach both *through* values and *about* values. Stating that values are fundamental (paragraphs 1, 2 and 3); need to be evident in all aspects of school life (paragraph 5); that students must learn specific knowledge about values (paragraph 6); and that students must develop specific values competencies (paragraph 7), the NZC recognises that there is both a theoretical and an applied aspect to values and values education.

Schools must articulate and model the values from the NZC document, in addition to values agreed upon by the school community. Further, schools must provide appropriate and sufficient opportunity for students to put these values into practice within their school and community environments.

There are opportunities within the classroom to teach the values of cooperation, patience, tolerance, integrity, authenticity and honesty, and many schools have explicit programmes on bullying or discrimination, respect for property and the environment. While these are valid and extremely important issues, a values education programme that is restricted to behavioural–socialisation issues omits the cognitive–theoretical area essential to a comprehensive values education (Hill, 2004; Keown, 2009). Philosophers, educators and commentators such as Eckersley (2004a, 2004b, 2005a, 2005b, 2011), Gluckman (2011a), Hamilton (2008), Law (2007), McCutcheon (2002), Somerville (2007), Vardy (2002) and Winston (2011) may be used to support the argument within this thesis that there is a lack of ethical thinking and ethical consideration within New Zealand’s community and within New Zealand’s schools, at a time when we are facing significant challenges to the question of what it is to be fully human.

For Julian Savulescu (2012), the greatest challenges of this century include climate change, environmental degradation, the use of technologies for destructive purposes including nuclear weapons and biological weapons, and global poverty and inequality. Savulescu (2012) argues that each of these problems is a symptom of choices that humankind has made. Therefore, when society confronts new possibilities, for example, those presented through artificial reproductive technologies (ART), neuroscience, and human–machine interfaces, citizens need to determine what values will govern decisions with respect to these new technologies and possibilities. Contemporary materialist and individualist society does not dispose citizens towards thinking about the long-term future, or society as a whole. Society needs to be able to challenge these moralities and dispositions if the

challenges of this century are to be faced; challenges that are not created purely through new technologies or science, but through the ethical choices that are made with respect to them (Savulescu, 2012).

2.8 SUMMARY

Underpinned by values and occurring in historical time and in political context (Pinar et al., 1995), curriculum adapts to changes in the cultural, social, geographic, technological, scientific and communication environments. In the contemporary environment, curriculum includes the requirement to teach and learn certain skills and competencies that will equip students to apply knowledge to meet life's individual challenges and to fully participate on a societal level, as advances in science and technology impact on the cultures prevalent in society and initiate unprecedented ethical and legal dilemmas. Given that individuals make choices within their personal lives, and given that each citizen has the opportunity and some would argue, therefore, the responsibility, to participate in the deliberative democratic process, it is important to ensure that all citizens have the intellectual and emotional competencies to engage with ethical issues and to make ethical choices.

To date, the New Zealand government drives to develop a standardised, secular approach to values education have culminated in the values education framework outlined in the NZC (Syms, 2011). It is incumbent upon schools and their teaching staff to pro-actively pursue the development of a curriculum that reflects to the fullest extent the current and future environments in which students find, and will find themselves, to challenge their evolving personal and social perceptions, and to equip them to move forward successfully in their lives with the necessary confidence, knowledge and skills. However, the process through which such values education is achieved is currently left to individual schools and/or individual teachers. While the current situation may acknowledge a plurality of views within New Zealand society and allow individual schools to reflect their particular

community, the current situation has implications for the delivery of a consistent standard of values and ethics education to all citizens.

A variety of values education programmes are available to secular state schools. However, these are predominantly character–behaviour focused and utilised by primary schools. While the character–behaviour aspect is a vital part of values education, the curriculum trialled at the centre of this research argues for a comprehensive definition of values education including the academic teaching and learning of ethical theories and principles that underpin the plurality of philosophical, cultural and spiritual responses to bioethical issues.

As demonstrated in this literature review, there is scope for increasing the structure, consistency and academic rigour of values education so that students are enabled to think ethically and to ‘make ethical decisions and act on them’ (Ministry of Education, 2007, p. 10), as the NZC requires (Hill, 2004, 2005; Keown et al., 2005; Law, 2007; McCutcheon, 2002; Stevens, 2009a, 2009b; Stoyles, 2009; Syms, 2011). Values education within this thesis includes values clarification; not the teaching and learning of specific values, but the teaching and learning of frameworks and strategies for thinking about issues, predicaments and choices that involve values. My personal and anecdotal experience is that the teaching and learning of bioethics provides a model for comprehensive values education. Therefore, through robust inquiry, this research project seeks to explore the theoretical proposition that bioethics education can provide a conceptual framework that addresses the social, emotional and academic needs of children, and the fragmentation that typically characterises schools’ responses to these needs.

The bioethics curriculum at the centre of this research seeks to encourage students to think independently and to make their own moral judgements based on the teaching and learning of normative, applied and meta ethics; the principles that underpin a wide variety of ethical theories and ways of

thinking. The traditional Western philosophy that is both implicit and explicit in this curriculum is, in part, an articulation of tested theories, frameworks and strategies for critical thinking and argument. Most young people in New Zealand today are educated in schools that largely reflect Western epistemologies—Western ways of knowing. However, the bioethical curriculum trialled in this thesis also embraces the appreciation of diversity and accommodates this in some of its content in ways that meet the NZC requirement to honour the Treaty of Waitangi, reflect the diversity of contemporary New Zealand society and value ‘the histories and traditions of all its people’ (Ministry of Education, 2007, p. 9). The trialled bioethics curriculum offers a model that provides a consistent approach to teaching and learning values frameworks. The research curriculum also seeks to engage young people in the free and open exploration of the existence of predispositions to individualism and relativism in contemporary Western culture. Thus, it seeks to equip students to engage in consultative bioethical debate at a robust, critical, academic level, acknowledging the important role of, but going beyond simple intuition (Hare, 1981; McCutcheon, 2002).

In order to initiate this process, a definition of bioethics as it is used in this thesis is required. It is also necessary to explore the link between bioethics education and values education, and to describe where bioethics education is currently situated in education, both globally and within New Zealand. These topics, together with a discussion of narrative-based pedagogy as a bridge to learning values and ethics through context and meaning making, are addressed in the following chapter.

CHAPTER THREE: TEACHING AND LEARNING BIOETHICS—A LITERATURE REVIEW

Topics addressed by bioethics have a long past but a short history.
(Lolas, 2008, p. 121)

3.1 PURPOSE OF THIS CHAPTER

Continuing the progressive focus of the rationale for including bioethics education as a stand-alone subject within the secondary school curriculum, this second literature review chapter opens with a brief overview of the evolution of bioethics as an academic discipline (section 3.2). Section 3.2.1 defines the term 'bioethics' and clarifies how the term is used within this thesis. Through an account of the origin of bioethics with discussion of socio-scientific issues in science and technology education, section 3.3 describes bioethics' current location as an integrated topic within other academic disciplines at the secondary school level. Examining the development and availability of resources for teaching bioethics both internationally and within New Zealand, section 3.4 also describes the experimental establishment of an optional 14-lesson bioethics course at a co-educational high school in China. Section 3.5 substantiates the case for the current research through discussion of the analogous introduction of technology as a stand-alone subject into the New Zealand curriculum, and the constraints and limitations of teaching bioethics as a unit within another discipline. Section 3.6 of the chapter considers the importance of narrative, both as an approach to bioethics itself and as a pedagogical tool within bioethics and values education. Drawing the arguments and the critique of the literature presented in the previous and current chapters together, this chapter culminates in a summary of the themes identified in the literature, leading to the research questions.

3.2 HOW THE DISCIPLINE OF BIOETHICS HAS EVOLVED

Bioethics is constructed from but not reducible to existing professions or fields. (Kopelman, 2006, p. 620)

This section provides the background for the evolution of bioethics as an academic discipline from the 1920s to the present day. The assertion that innovative, informed and inclusive moral reasoning is required within professional settings and society as scientific knowledge is gained and new technologies are developed, threads throughout the stages of the evolution described.

The first documented use of the term 'bioethics' may be traced to theologian, philosopher, Protestant pastor and educator Fritz Jahr (Sass, 2008). Writing in 1927, Jahr published an article entitled 'Bio-Ethik: Eine umschau uber die ethischen beziehungen des menschen zu tier und pflanze' ('Bioethics: A review of the ethical relationship of humans to animals and plants') in the German science journal *Kosmos* (Lolas, 2008; Lolas, 2009; Sass, 2008). Jahr developed his argument in part from the work of Rudolf Eisler (1909). Eisler's concept of Biopsychics, which Jahr (1927) summarised as 'soul science for all life forms' (p. 2), acknowledges the complex and additional role of psychological forces in determining behaviour over and above mechanical reflexes and drives. For Jahr (1927), 'it is only a small step from here to Bio-Ethics, that is, the assumption of moral duties not only towards humans but to all living things as well' (p. 2).

Contending that new scientific knowledge required new moral and cultural reasoning, Jahr published a number of articles from 1927 through to 1938, in which he argued for the professional identity of the academic discipline and moral attitude, conviction and conduct of bioethics. Jahr based his argument on, among other things, his contention that bioethics 'has legitimate

obligations in professional settings, in the public sphere, and in education, consultancy, public morality and culture' (Sass, 2008, p. 282). For Jahr, bioethics required competency and commitment in education and consultation, and he contended a moral and professional obligation on ethicists to become involved in public dialogue and education. Basing his claim on respect for individual values and on a nondirective, interactive pedagogy of inquiry, which is paralleled in this research project, Jahr (1930) asserted that:

Different attitudes and convictions including their benefits and mistakes have to be presented evenhandedly and without bias ... Instead of tendentious manipulation of attitudes, pupils should be given every opportunity to develop their own attitudes and convictions, that is, give them objective material for developing their own attitudes and convictions later. (p. 201)

Commenting during turbulent political and social times where his views were strongly against the prevailing socio-cultural climate, Jahr had little immediate or long lasting influence on the development of global bioethics (Sass, 2007). It was not until the 1971 publication of *Bioethics: Bridge to the future* by Van Rensselaer Potter that the term 'bioethics' resurfaced, and Potter is popularly credited with coining the word. For Potter, a cell biologist, the term 'bioethics' incorporated the study of ethical issues involving things within the biosphere: that part of the Earth's crust, water and atmosphere in which living things, and all that supports those living things, exist. Thus, for Potter, the term 'bioethics' expressed his ecological ethic; his contention that we must behave ethically towards the biosphere as a whole, not just to other human beings (Kuhse & Singer, 2006).

Humankind has reflected philosophically on life, its meaning and the relationship between people, their environment and other living creatures, throughout the centuries. Many cultures have extensive histories of contemplation about beginning and end of life issues, including how to tend to

the premature or disabled newborn, or to the elderly or mortally wounded. The Hippocratic Oath, which probably dates from the fourth century BCE, demonstrates that physicians in ages well before the modern day contemplated the dilemmas posed by such issues (Meilaender, 1996). Citing a number of changes in beliefs and thought that occurred during the Thirty Years' War and the Peace of Westphalia, along with the simultaneous revelations in science that destabilised the traditional understandings of humankind's place in the cosmos, Engelhardt (1986) traces the background of bioethics to a crisis in values at the time of Luther. Acknowledging the history of philosophical reflection, Willmott and Willis (2008) cite a number of 'sociological and scientific changes' (p. 99), including the Nuremberg war crimes trials, the increased questioning of moral authority with respect to both traditional religions and the medical establishment, and the development of environmental awareness in the years following World War II (WWII), as laying the seeds for the emergence of bioethics as a discipline in its own right.

In New Zealand, the development of bioethics was appreciably influenced by the landmark 1987 Cartwright Inquiry, which became a catalyst for the establishment of a comprehensive national system for ethical review of research (Anderson, 2005). The ensuing two and a half decades have seen the establishment of various regional and national ethics committees, formulated and operating under comprehensive guidelines and Acts of Parliament, which determine and oversee nationally consistent ethical standards in research and the provision of health services. The passing of the Human Assisted Reproductive Technology Act (HART Act) in November 2004 resulted in the formation of the ACART. Required to undertake extensive public consultation before issuing advice or finalising guidelines to the government on the regulation of assisted human reproduction, ACART has guiding principles that include that the needs, values and beliefs of Māori and the different ethical, spiritual, and cultural perspectives in society should be considered and treated with respect (ACART, 2009).

From 2001 until its disestablishment due to budget restraints in 2009, Toi te Taiao, the Bioethics Council of New Zealand, was charged with consulting the New Zealand public with respect to the ethical, spiritual and cultural aspects of biotechnologies. Through structured public engagement and feedback, Toi te Taiao was to ensure that new technologies were both understood and that adoption and use of them within New Zealand had 'regard for New Zealanders' values' (Toi te Taiao, the Bioethics Council of New Zealand, 2009).

Over the last four decades, and as evidenced by the establishment of bioethics departments offering bioethics degrees in universities around the world, bioethics has developed into an academic discipline in its own right. Two decades ago, observing that bioethics education had moved beyond the boundaries of universities, Thornton, Callahan and Lindemann Nelson (1993) noted the 'engrossing, lively and intellectually stimulating character' (p. 28) of the issues that distinguish bioethics, and that lend themselves to debate in the media. With the growth of the internet and the advent and uptake of social media networks and avenues for social comment including blogs and tweets, the media now extends well beyond the printed newspapers, television, radio and public opinion polls of the early 1990s. Consequently, the penetration of bioethical issues through the media and into citizens' everyday lives has increased.

As bioethical issues are increasingly introduced and discussed through the media, many citizens 'feel they instinctively "know" bioethics' (Thornton et al., 1993, p. 28). However, many journalists, lay-people and academics (including Engelhardt), have come to understand bioethics as concerned solely with the ethical issues arising from developments in biotechnology and medical science. Given the history of the Hippocratic Oath, the involvement of Nazi physicians in eugenics, genocide and human experimentation programmes during WWII, through to the Cartwright Inquiry in New Zealand, it is easy to

see how this focus has occurred. While a valid subset definition, to define bioethics as concerned with biotechnologies and medical science alone narrows the reality and diversity of bioethics and the meaning intended by both Jahr (1927) and Potter (1971).

Lolas (2008) defines bioethics as 'an umbrella term covering different attempts to humanize the scientific enterprise, the practice of the health professions, and the respect for human rights in economics, politics and social research' (p. 120). While broader than a biomedical definition, Lolas' definition remains human-centric, excluding the inter-species, environmental, biosphere dimensions. A result of this evolution in the understanding of the term 'bioethics' particularly over the last four decades is the contention of some, including Levinson and Reiss (2003), that no single definition of the term 'bioethics' can be given.

3.2.1 Defining bioethics within this research project

While the majority of the international and national literature reviewed confines bioethics to areas related to biotechnology and medical science, for the purposes of this thesis, I am aligning with Sass (2008) who argues that the terms 'bioethics' and 'medical ethics' should not be used as synonyms. The term 'bioethics', when used throughout this thesis, coincides with the broader, cross-disciplinary, cross-species definition intended by both Jahr (1927) and Potter (1971). Eight plus decades on from Jahr and four decades on from Potter, with corresponding developments in science and technology challenging the law, commerce and society, the term 'bioethics' as used within this thesis also includes ethical questions that neither Jahr (1927, 1930) nor Potter (1971) could have envisaged. At each point that it is used within this thesis, the term 'bioethics' refers to Jahr (1927) and Potter's (1971) holistic definition of bioethics as a discipline that combines scientific and technical knowledge with a knowledge of human value systems, including cultural and spiritual values, with respect to all living things and systems that

support those living things within the biosphere. Bioethics is an interdisciplinary area of study incorporating the physical and social sciences, philosophy, theology, law, commerce and politics, and the value systems that underpin these.

3.3 TRACING THE ORIGINS OF BIOETHICS EDUCATION THROUGH VALUES IN SCIENCE AND TECHNOLOGY EDUCATION

Taking the need for the school curriculum to include development of scientific literacy as a starting point, this section draws together academic and social discussion with respect to socio-scientific issues, post-normal science and values education. This section describes how these discussions align with bioethics education, including the development of affective and cognitive skills necessary for informed debate, and individual and collective decision making with respect to the use and application of science and technology.

The notion of science teaching as a values-free and objective discipline championed throughout the 1960s and still prevalent a decade ago (Hodson, 2003; Levinson & Turner, 2001) has been challenged. Hodson (2003) noted that 'traditionally, science education has dealt with established and secure knowledge, while contested knowledge, multiple solutions, controversy and ethics have been excluded' (p. 664). Developments in science and technology (for example, reproductive technologies) and their impact on the social and physical environments (for example, climate change) have increasingly courted public controversy as they have been aired in the media. Postman (1992, 1995) contends that sound-bite news excludes content, reprioritising entertainment value over accurate, full and balanced information that invites intellectual involvement and rational argument. Thus, a poor understanding of the science involved within these controversial issues as evidenced within the media and general population has led to calls from those within the science community, including science educators, to develop

'scientific literacy' within the public (Callaghan, 2011; Gluckman, 2011a, 2011b; OECD, 2006; Roberts, 2007; Tomas, 2010; Winston, 2011).

While definitions of scientific literacy vary (Tomas, 2010), a number of themes common to most definitions may be identified (Tytler, 2007). These include fostering a positive disposition towards science; encouraging the ability to comprehend and utilise scientific ideas; and educating future citizens across their lifetime and regardless of their career choices (Roberts, 2007; Tomas, 2010). Ratcliffe (2008) notes that scientific literacy requires attention to both content and process, where content refers to the facts to be learnt and process to the manner in which what is learnt is applied. Jones, McKim and Reiss (2010) include 'being discerning, knowledgeable and responsible in understanding science in its political, environmental, historical, social, cultural and economic settings' (p. 1) within their definition of scientific literacy. Thus, scientific literacy incorporates subjecting scientific developments and their applications to rational criticism. This approach involves the skills associated with critical thinking, including an understanding of where values and beliefs are founded. Therefore, purposeful scientific literacy includes the multidimensional aspects of moral growth and incorporates character education and consideration of emotive belief systems along with the development of cognitive reasoning and moral reasoning (Zeidler & Keefer, 2003).

Noting the proliferation of science advisory positions to governments globally, Gluckman (2011a), the Science Advisor to the Office of the Prime Minister of New Zealand, acknowledges the ethical dilemmas raised by advances in science and technology and contends that a new discipline of 'post-normal science' will emerge to be taught alongside the 'pre-professional', traditional science. First used by Funtowicz and Ravetz in 1991, the term 'post-normal science' refers to a discipline that acknowledges the practice of science as a social endeavour influenced by social, cultural, political and spiritual values, while allowing citizens a practical level of scientific and technological

understanding. To illustrate the distinction, Gluckman uses the question of whether methamphetamines are dangerous to one's health or not. This is an example of linear science where the issue can be worked through, the evidence can be described and essentially a 'yes' or 'no' answer may be obtained: for example, 'yes, methamphetamines are safe' or 'no, methamphetamines are not safe; this is why they are not safe; and this is the degree of damage they can do'.

In contrast to such linear, evidenced-based and describable knowledge, the system being considered within post-normal science is complex. Gluckman (2011a), like Sadler and Zeidler (2004, 2005) and Sadler, Zeidler, Simmons and Howes (2005), offers genetic engineering; environmental issues including climate change; and human biology including techniques resulting from advances in human reproductive technologies including stem cell technology and cloning, as examples of such complex systems raising controversial or socio-scientific issues. Not only is the science involved in such issues complex, but also what makes it more so is that it involves probabilities and risk, and in many cases, the systems involve interplay between science and human value systems. That is, in post-normal science, the boundaries between science and values are not clear cut and the issues are, therefore, controversial in nature. A controversial issue is one where uncertainty and disagreement are acknowledged between vigorous advocates for opposing views, and where a single solution to the issue is not clear to all reasonable people (Hermann, 2008). That is, a controversial issue is one where more than one view on the issue is rationally defensible (Hand & Levinson, 2012) and where reasoning based on science alone is insufficient to resolve the conflict (Oulton, Dillon & Grace, 2004b), which exists due to differing cultural, ethical and religious beliefs and understandings. In this respect, a controversial or socio-scientific issue is a bioethical issue.

Significant for this thesis is the link between civics, or values education, and scientific literacy. As Gluckman describes (2011a):

It is exactly like an element of civics. If you think about the world we live in now, all the challenges we have, science and technology are at the heart of their solution. In many cases, science and technology are at the heart of the problem as well.

Cowie, Jones and Otrell-Cass (2011) identify student participation and achievement in science as 'a social justice and equity matter because of the role science and its technological applications play in defining many of the key issues and opportunities facing society today' (p. 347). Accordingly, Cowie et al. state it is vital that every student acquires a general understanding of how science is conducted and how science and technology intersect with the challenges and possibilities facing society.

For Hodson (1999), the prime objective of scientific literacy should be to produce active citizens who strive for social justice and who act in the best interest of the biosphere. Thus, Hodson's vision of scientific literacy overlaps with concepts within the definition of bioethics.

While a consensus regarding what constitutes scientific literacy is yet to be achieved, common themes appear when justifying why scientific literacy is important (Tomas, 2010). These include developing an appreciation of science as a significant human endeavour that enables the solving of practical problems ranging from those encountered in ordinary daily life to problems on a global scale; developing an appreciation of science and technology as important cultural activities, which in turn impact on the nature of contemporary culture; and to assist in making informed decisions with respect to personal welfare and health, including preparation for participation in deliberative democratic processes and the making of individual and collective decisions on socio-scientific issues. These themes wholly reflect themes within bioethics.

Concurrent with the movement in values education, and as the impact on environmental, economic, political, legal, social and personal relationships within society resulting from developments within science and technology have become more evident, educational authorities across the globe have moved to incorporate discussion of socio-scientific issues into their curricula. Curriculum strands, including Science, Technology, Society (STS) and then Science, Technology, Society, Environment (STSE), emerged in Britain and America throughout the 1900s and into the early 2000s.

More recently, the 2006 revision of the GCSE science syllabus for 14- to 16-year-olds in England and Wales resulted in a decrease in the extent of prescribed factual content in favour of an increased emphasis on 'the nature of scientific endeavour and the place of science within broader society' (Willmott & Willis, 2008, p. 99). The new series of A-level science and biology courses instituted in 2008 as a result of these changes emphasise important elements of bioethics (Willmott & Willis, 2008). The UK national curriculum for 11- to 14-year-olds has also undergone significant revision, and alterations were enacted across all subject areas at the start of the 2008 academic year to increase the flexibility and real-world relevance of material delivered. Specifically included within the science aspect of the UK national curriculum for 11- to 14-year-olds, is examination of the ethical and moral implications of using and applying science (Willmott et al., 2008, p. 100). Teachers in Japan, China, India, Singapore and the Philippines have also included discussion of ethical and social issues raised by developing biotechnologies in their classes (Macer et al., 1996; Jones et al., 2007).

Similarly, recognising a developing need to prepare students for the present and future impact of scientific and technological advances, Australian secondary school state and territorial science curricula have evolved to include the exploration of controversial issues, particularly social and cultural issues associated with population growth, food, health and resource

allocation. The study of bioethical issues is also facilitated through other subjects including Studies of Society and the Environment (SOSE). The primary purpose of the SOSE learning area is 'to help young people develop the ability to make reasoned and informed decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world' (Tasmanian Government, 2004).

Replacing the individual state and territorial curricula, the new national curriculum for Australian schools, currently under construction, will recognise the 'complex environmental, social and economic pressures, such as climate change, that extend beyond national borders' and 'pose unprecedented challenges' (Australian Curriculum, Assessment and Reporting Authority, 2010, p. 5). To prevail over these challenges, 'Australians must be able to comprehend and use scientific concepts and principles, and approach problem solving in new and creative ways' (Australian Curriculum, Assessment and Reporting Authority, 2010, p. 5). The draft curriculum states that young Australians will require a 'wide and adaptive set' of knowledge, understanding and general capabilities 'to meet the changing expectations of society and to contribute to the creation of a more productive, sustainable and just society' (Australian Curriculum, Assessment and Reporting Authority, 2010, p. 6). Including critical and creative thinking, ethical behaviour, personal and social competence, and intercultural understanding, these general capabilities are comparable to the key competencies of the NZC.

Parallel with changes in international curricula, the Ministry of Education updated the New Zealand science curriculum with the release of 'Science in the New Zealand curriculum' (SNZC) in 1993. Appendix Eight details how the SNZC, emerging from within New Zealand's burgeoning culture of ethical awareness as prompted by events such as the Cartwright Inquiry (1988), aimed to develop students' understanding of the different ways people influence, and are influenced by, science and technology. Through the SNZC document, which promoted an understanding that scientists work within social

and cultural frameworks, together with the development of students' awareness of the personal, community, and global implications of the application of science and technology, it is acknowledged that the heritage of the provision for bioethical teaching and learning within school-based science education is earliest in New Zealand (Willmott & Willis, 2008, p. 100). However, it has taken some time for exploration to begin and an even longer time for terms such as 'ethics' and 'bioethics' to be used within schools either orally or in written text. Phrases such as 'the teaching of controversial issues' (with particular reference to within science) and 'socio-scientific issues' convey the gradual assimilation of this aspect of science literacy into the curriculum. While the use of these phrases is still common (for example, in the title of Mary Ratcliffe's article in the December 2008 issue of the *New Zealand Science Teacher* journal), the use of the terms 'ethics' and 'bioethics' is gradually emerging within school-based education, as evidenced, for example, by the publication of 'Human ethics guidelines for schools' (for school projects that involve people) in the *New Zealand Science Teacher* (De Luca & Cooper, 2009).

3.4 THE STATUS OF BIOETHICS EDUCATION IN 2012

This section explores the current status of bioethics education in secondary schools. The development and availability of resources in the wider international context is described in section 3.4.1. Section 3.4.2 describes the experimental establishment of an optional, 14-lesson bioethics course at a large co-educational secondary school in Beijing. Section 3.4.3 focuses on the current situation of bioethics education in New Zealand secondary schools, and outlines resources available in both the education and wider socio-political settings.

3.4.1 The current international situation

As the discussion of bioethical issues has emerged within society in general and education in particular, so too has the development of resources for the exploration of, and teaching and learning about, these issues. Internationally, websites to support and resource secondary school teachers have been established. Principal examples of these in 2012 include from Britain, BioethicsBytes, Genetics Education Networking for Innovation and Excellence (GENIE), the Nuffield Council on Bioethics, and the Wellcome Trust; the Bioethics Education Project (BEEP); from the US, the University of Iowa Bioethics Outreach Programme; and from the Asia-Pacific region, UNESCO and the allied Eubios Ethics Institute. Appendix Nine details these resources more fully and explains how to access them.

Recognising the ethics of science and technology as one of its five priority areas, the United Nations Educational, Scientific and Cultural Organization (UNESCO) aims 'to strengthen the ethical link between scientific advancement and the cultural, legal, philosophical and religious context in which it occurs' and to 'act as a standard-setter on emerging ethical issues, to disseminate information and knowledge and to help Member States build their human and institutional capacities' (Calderbank & Macer, 2008b, p. vi). Standards set include the *Universal Declaration on the Human Genome and Human Rights* adopted by the UNESCO General Conference in 1997 and endorsed by the UN General Assembly in 1998. This was followed by the *Universal Declaration on Bioethics and Human Rights*, adopted by the UNESCO General Conference in 2005. This declaration asserts that:

23. (i) In order to promote the principles set out in this Declaration and to achieve a better understanding of the ethical implications of scientific and technological developments, in particular in young people, States should endeavour to foster bioethics education and training at all levels as well as to encourage information and knowledge dissemination programmes about bioethics. (ii) States

should encourage the participation of international and regional intergovernmental organizations and international, regional and national non-governmental organizations in this endeavour. (UNESCO, 2005, p. 11)

Shortly thereafter, in 2006, following the UNESCO Asia-Pacific conference on bioethics education (Ewha Ladies University, Seoul, July 26–28), the *Joint Plan of Action for Regional Networking in Bioethics Education: Towards Better Bioethics Education*, was adopted by the 46 member countries. Goals for bioethics education agreed upon by delegates together with other members of the UNESCO Asia-Pacific regional network on bioethics are categorised according to ‘knowledge’, ‘skills’ and ‘personal moral development’. Within the category of knowledge, goals include understanding the breadth of questions that are posed by advanced science and technology; developing cross-disciplinary content knowledge; and being able to integrate the use of scientific facts, ethical principles and argumentation in discussing cases involving moral dilemmas. Skills goals include those with respect to making informed choices and being able to undertake a risk–benefit analysis. These goals involve the development of critical and creative thinking skills and the development of foresight so that possible risks of science and technology may be evaded. Personal moral development goals incorporate the reflective process, values clarification and values analysis including understanding better the diversity of views of different persons; developing an understanding and respect for different cultures and values; and being able to take different viewpoints, including from biocentric, ecocentric and anthropocentric perspectives. A presenter at the 2006 conference, I was a member of the working group that developed the educational goals of the Joint Plan. Similar goals were already embedded in the curriculum I had written and was delivering at Wellington Two. The research curriculum adapted from this original incorporates these goals.

Acknowledging the wider social-political setting, the UNESCO *Joint Plan* identifies a number of target groups for bioethics education including the public; educational institutions including primary schools, high schools, and universities, including students in the health science, general science and technology faculties as well as non-science majors; government officials and ministers; media and journalists; and the legal profession and administrators. Agreed action included that researchers and educators work together across cultures to produce and compile materials that can be used for teaching bioethics at a variety of levels, and that these teaching materials be made openly available for free download from the internet. Details of available UNESCO materials may be found in Appendix Nine.

The Australian government's original biotechnology site provided a range of interactive, worksheet, video, animated and audio resources, information texts and support notes for teachers designed to fit with the then current Australian state and territory science curricula, and to cross-over into SOSE. Evolving from this site in tandem with the development of a national Australian curriculum for schools, the science education resource pages (<http://education.techyou.edu.au/>) associated with the Australian government's new TechNyou site (a site relevant to the wider socio-political setting including industry and commerce) updates and extends the support and resource materials available to teachers.

The education.techyou page defines ethics as:

The rules or standards that govern the way people behave and their decisions on the 'right' thing to do. It asks basic questions about what is right and wrong, how we should act towards others and what we should do in specific situations. (Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education, 2012)

The TechNyou site suggests a number of ethical approaches, or frameworks. These are grouped according to whether the approach may be considered action based (whether or not actions in a particular circumstance are ethical); agent based (where the emphasis is on the person rather than the action performed); or situation based (described as ‘a broader perspective that takes into account other factors such as time, place and culture’) (Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education, 2012). The three ‘action-based’ approaches are listed as ‘principalism’, which uses benefit-maximising and harm-reducing principles; ‘consequentialism’, defined using the utilitarian principle of ‘the greatest good for the greatest number’; and ‘non-consequentialism’, described as deontology and as referring to rights and responsibilities. The single ‘agent-based’ approach is described as ‘virtue-based’ and as acknowledging ‘character traits over consequences’. The three ‘situation-based’ approaches listed are ‘casuistry’, which considers ‘each situation to be completely unique’; ‘feminist’, which ‘concentrates on communication, consultation and sensitivity’; and ‘geo-cultural’ where the focus is on ‘cultural, special and time-specific contexts’ (Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education, 2012). In this way, but without using the terms employed within philosophy and ethics, the site identifies the principles of beneficence (try to do good) and non-maleficence (try to avoid harm); the ethical theories of utilitarianism, virtue ethics, cultural relativism and situation ethics; and the feminist approach to ethics. The term ‘bioethics’ appears only in the TechNyou glossary where it is defined as ‘the study of the ethical and moral implications of applications of biomedical research and biotechnology’ (Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education, 2012). The TechNyou glossary is almost exclusively scientific and, at the time of writing this thesis, did not include definitions of philosophical terms implicit in the material on the site. For example, while the concept of utilitarianism was implicit in the TechNyou education material, no explicit definition of the term is given.

An innovation of the Australian government's education.technyou site is the area concerning commercial outcomes and ethics, and in this respect, the education.technyou site is the only resource that I have been able to identify that approaches discussion around the pervading materialist, individualist cultures of contemporary Australasian society. This section of the education.technyou site recognises the issues inherent in developing products for commercial use, where the goal is generally to make a profit and that in a world with decreasing resources and where many people suffer through hunger and deprivation the development of non-essential consumer products may be viewed as unethical.

In summary, aims and objectives for programmes that develop scientific literacy and for programmes in bioethics education are available internationally. Hardcopy and electronic resources for bioethics education, particularly bioethics education within the setting of the secondary level science classroom or tertiary level health science settings, are gradually being developed with many of these being made freely available on the internet. The literature reviewed describes resources produced for the teaching and learning of bioethics within the context of other disciplines. As will be described in the following section, available resources may not be directly applicable to the teaching of bioethics as a discrete subject, or within a given cultural setting. Further, the definition of bioethics and the definition and range of ethical theories and principles used within the resources reviewed is less comprehensive than this stand-alone bioethics trial contends is necessary for comprehensive bioethics education.

3.4.2 Introducing bioethics into a secondary school curriculum as a stand-alone subject: A Chinese experience

This section reviews the only example of the introduction of bioethics as a stand-alone subject, apart from the curriculum at the centre of this investigation, that I have been able to find. In addition to providing information

relevant to the aims, objectives and establishment of this course, this section describes the response of teachers and the affective and cognitive outcomes observed for participating students, against which results of this study may be compared. This section also relates the use of the UNESCO-Eubios Institute resources described in section 3.4.1 and Appendix Nine to establish a bioethics course at secondary level, and describes how the taught curriculum changed in response to student feedback and engagement.

Founded on 2 November 1901 and thus one of the oldest public secondary schools in China, the High School Affiliated to Beijing Normal University identifies the provision of a solid foundation in ethics, critical thinking, physical health and artistic perception, as fundamental to the education of attending students (High School Affiliated to Beijing Normal University, 2012). In September 2003, the high school introduced bioethics as one of the 24 optional courses available to Senior II students (age 17) in the final semester of the academic year. Students received a brief introduction to each of the 24 optional courses, which also included subjects such as calculus, literature, Japanese, painting, and dance, and were invited to select their course of choice. Over 200 of the 705 students elected bioethics. Restricted by the size of classroom accommodation, staff squeezed 50 students in during the pilot year (Jinhua, 2008, p. 77).

The pilot course involved 14, 80-minute lessons run every Wednesday between 3:25 pm and 4:45 pm. While teachers from the department of biology were the primary facilitators of the course, teachers from politics and English, along with specialist guests from other institutions, including the Beijing Normal University, took an active part in the programme. As the course was unique, with 'no domestic precedent and relevant experience' (Wang, 2008, p. 74) the teaching staff used a pre-print copy of the UNESCO-Eubios Institute's *Bioethics for informed citizens across culture* (Macer, 2004b) as a base. Presenting teachers chose their topics based on their areas of expertise and interest, and their familiarity with the students (Wang,

2008, p. 74). Lessons in the pilot bioethics programme were entitled: Making Choices, Diversity and Bioethics; Genetic Privacy and Information; Brain Death; Organ Donation; Ecotourism; Genetically Modified Food; Palliative Care; Euthanasia; Testing for Cancer Gene Susceptibility; Animal Rights; Sustainable Development; and About Life.

Evaluation of the lessons, including consultation with participating students, resulted in a modification of the topics covered and resources used when the bioethics subject was offered again in the same optional slot of the third semester timetable, in 2004. Some chapters of the original textbook, for example, ecotourism, were found to be outside the cultural and economic experience of the Chinese students. As a result, participating teachers began to compile teaching materials that accorded more closely with Chinese conditions (Jinhua, 2008). In addition, some students reflected that they did not like the depressing topics including, for example, palliative care, while others felt the topic of testing for genetic predisposition to cancer was not closely connected with their personal experience and daily lifestyles. Ethical issues related to embryonic stem cell research and cloning were popular topics. Students also expressed an interest in contemporary topics including drug use, and the SARS and Avian Flu epidemics. Therefore, based on the feedback from students, the curriculum content was adjusted for the following year to become: Introduction of Bioethics; Genetic Privacy and Information; Brain Death; Organ Donation; AIDS and Ethics; Human Research and Ethics; Genetically Modified Food; Euthanasia; Animal Rights; Treasure Life and Refuse Drugs; Human Plague; What to Do before the Clone?; and Assisted Reproductive Technology. Wang (2008) explains that the topics selected for inclusion were chosen because students reflected that they were of relevance to their lives, and therefore of higher interest. This supports, through experience, the use of relevant, authentic scenarios in the bioethics curriculum adapted for use in this current study. The curriculum underwent further revision in 2008, assimilating the topics of antibiotics and the emerging water crisis (Fu Xinyue, 27 March 2012, personal communication).

Pedagogical practices were also altered following the 2003 pilot, with teachers moving away from the traditional lecture style presentation, to incorporate a number of student-centred activities. This change reflects a shift through experience, towards the pedagogy advocated by the curriculum at the centre of this stand-alone bioethics trial. As Jinhua (2008) describes:

We devised a variety of teaching methods, including analysing cases, discussing, collecting questionnaires, demonstrating PowerPoint files, watching visual materials and role play as teaching aids. So these means make up for the shortcomings of teaching theory simply and make the teaching course more lifelike and visual. Furthermore, through these methods, the students can combine knowledge with social life. (p. 77)

Bioethics was not a subject within the examination system and the purpose of the project was not to gain a high score. However, students were assessed through their participation in the lectures and on the quality of three written essays. As a non-examined subject, the teaching staff were concerned to investigate whether the teaching and learning of bioethics was beneficial to students and whether it influenced 'their behaviour, life view or value view' (Jinhua, 2008, p, 77). In addition to the positive feedback given by participating students themselves, the teachers and senior management team at the high school noted a number of benefits for students in participating in the bioethics course, which included skills gained from the free discussion in the classes; having a number of teachers from a variety of academic disciplines facilitating different topics offered students the opportunity to learn different teaching styles; and in addition to discussions with teachers and classmates, students were exchanging ideas with their parents, 'making family education a part of school education' (Wang, 2008, p. 75):

By studying bioethics, students not only get to know the most sophisticated science and technology, but also receive a profound life education. They begin to realize the significance of science,

society and life ... Bioethics enables students to learn 'how to behave, how to understand, how to co-exist, and how to survive', which paves the way for their lifelong development. (Wang, 2008, p. 73)

Benefits for the participating teachers were also noted. These included assisting teachers to understand their students and to appreciate that students are eager to know more about society and to express their ideas about reality; obtaining and developing new materials and heightening the prospect for their professional development and advancement; and through the internationally collaborative environment, the implementation of the bioethics curriculum provided a constructive opportunity for teachers to communicate and work with foreign educators. Several of the teachers involved in the course have published papers and/or presented at UNESCO Asia-Pacific Bioethics Roundtable conferences. In 2008, the bioethics curriculum was described as 'a featured subject of the school' (Wang, 2008, p. 74). The school's principal Mr. Liu Hu (2005) has written 'a paper 'Bioethics, a new curriculum of life education' published in the *Fundamental Education References*, an academic magazine of the Chinese Ministry of Education' (Wang, 2008, p. 76). Stating that the bioethics curriculum promotes the school's educative vision of STS, Wang (2008) observes that participating teachers have transferred what they have learnt from the bioethics course and 'have begun to transmit the thinking of bioethics on purpose' (p. 76).

Between 2010 and 2012, the bioethics course underwent a further revision with a greater emphasis being placed on ecological ethics to enhance students' environmental consciousness (Fu Xinyue, 28 March 2012, personal correspondence). Moving from a broader bioethics context to a focus on ecological ethics has specialised the course content. Topics covered in the current 14-lesson ecological ethics course include forest, sea, wetland, pm2.5, alien species, and ecological agriculture. Feedback from the students

has not been as positive towards this more exclusively environmental course in comparison to the broader bioethics course (Fu Xinyue, 28 March 2012, personal communication).

Several points stand out from the 14-week bioethics course introduced and taught at the High School Affiliated to Beijing Normal University between 2003 and 2010. These include how the course content was adapted in response to the relevance of the topics as perceived by participating students within their cultural context; the adaptation of teaching methods away from a traditional lecture style to include more student-focused, 'life like and visual' activities (Jinhua, 2008, p. 77); the social nature of the bioethics course in which participating students were observed to share topics from class with their peer group and family; and the intrinsically interesting nature of a broad bioethics curriculum. The example of the introduction of a discrete one-semester bioethics course into a Chinese high school also provides a comparison beyond the Western setting of this research.

3.4.3 The current New Zealand situation

This section outlines existing opportunities to integrate the teaching and learning of bioethics into the curriculum within New Zealand classrooms, and describes the development and availability of resources to support this integration. Rather than being dedicated to the teaching and learning of bioethics per se, existing opportunities to teach bioethics reside within already established subject areas. In this way, supporting resources are designed to facilitate integration of bioethical thinking into another subject area, particularly science and technology. Bioethical content and teaching methods, therefore, are confined within the parameters and subculture of the host subject (expanded further in Section 3.5).

The opportunity to consider ethical issues is now embedded in several ways within New Zealand's national secondary school qualification, the National

Certificate of Educational Achievement (NCEA). The requirement to consider the ethical aspects of developing biotechnologies has become established in the NCEA Level 3 biology curriculum. However, the exploration of controversial issues is neither new to the school curriculum in New Zealand, nor restricted to the disciplines of science and/or technology. History, social studies and health consider politics, poverty, race-relations and relationships between the sexes. Film, poetry and novel studies within English frequently include subject matter of a bioethical nature (for example, the use of the movie *Gattaca*, or the use of Margaret Atwood's (1985) novel *The Handmaid's Tale*). Unit and Achievement standards, which invite students to compare and contrast ethical theories within two applied issues (for example, abortion and euthanasia), are also available in religious studies, and health and physical education.

Planned to support the introduction of bioethical thinking into existing science and technology curricula within New Zealand, a bioethics teaching and learning toolkit has been established by a team of educators predominantly based at the University of Waikato. Rather than facilitating the production of entirely new, stand-alone bioethics units, the toolkit is designed to 'allow for the adaptation and extension of already existing education resources' (Jones et al., 2007, p. 40). The toolkit supports 'teaching and learning of ethical issues associated with a specific science or technology topic' (Biotechnology Hub, 2009) through consideration of five ethical frameworks:

- rights and duties
- weighing the benefits/harms of the consequences
- autonomy and the right to choose
- considering whether the outcome is 'virtuous' or not. A virtue is something that the community accepts as being 'good' or 'right'. For example, honesty is a virtue
- multiple perspectives in recognition that ethical considerations are often closely related to cultural and spiritual values (Biotechnology Learning Hub, 2009).

Through its visual design, the toolkit promotes the uniquely New Zealand metaphor of the *kete*, or kit of knowledge, with the *kete*—the flax basket—representing the particular topic being considered on the interactive site (Jones et al., 2007).

New Zealand's Ministry of Education Te Kete Ipurangie (TKI) website (www.tki.org.nz/) makes available links to bioethics resource sites including the Biotechnology Learning Hub, Toi te Taioa (the Bioethics Council), the interactive British BEEP website, and Bioethics in the Classroom. This last site directs the enquirer to accessexcellence.org, an US-based site. The Access Excellence site provides a rationale for including bioethics in the classroom programme as an excellent vehicle to generate interest and establish the relevance of science, and supports the contention that the ambiguities of moral and ethical viewpoints challenge critical thinking and problem solving. This site includes suggestions for teachers to implement bioethical discussion, particularly within science, and links enquirers to the Woodrow Wilson Foundation Biology Institute. Resources on the Woodrow link include 'Bioethics—an outline for a high school course' and 'Using fairytales to promote retention of ethical principles'. The 'Introduction to types of ethical systems' resource describes and explores the strengths and weaknesses of ethical relativism, divine command theory, utilitarianism, deontology and virtue ethics. While a number remain relevant, the resources on this site were written in 1992, are US- rather than New Zealand-based, and utilise Arthur L. Caplan's definition of bioethics within the narrow area of medical ethics. These limitations imply the need for up-to-date resources that are relevant to the New Zealand context and encompass the broad, cross-disciplinary definition of bioethics advocated in this stand-alone bioethics trial.

Accompanying the resources developed in the educational setting are resources available within the socio-political setting. Within New Zealand, government bodies such as ACART and non-government bodies such as the

Interchurch Bioethics Council undertake education of the public and also consult with them to gauge reactions to innovations (for example, to genetically modified organisms). Similarly, the Nathaniel Centre for Bioethics—the Catholic bioethics centre—publishes material including a quarterly journal and is available for consultation on bioethical issues. Established in 1988, the aims of the New Zealand Bioethics Centre (NZBC), based at the University of Otago, include stimulating informed public debate, and providing a consultation and resource service for health professionals and others in the community. Principally involved in tertiary teaching and research, the NZBC does not supply resources for teachers at this time, but is available for consultation. Each of these public education and consultation organisations has been established in response to the growing awareness of the ethical issues related to science, technology, the environment, health, law, politics, and commerce, posed for society. The resources produced by each of these agencies address science and technology in a scholarly manner, cover the variety of the legal, social, health, political, commercial and environmental issues that may be posed by any given bioethical topic, and are based on a plurality of philosophical, cultural and spiritual perspectives.

While the topic areas and resources described provide an opportunity to integrate bioethical thinking into an existing subject, or in the socio-political setting to apply ethical thinking to a particular issue, this does not allow for comprehensive teaching and learning within the discipline of bioethics itself. The following section will establish the case for exploring the teaching and learning of bioethics as a discrete subject within the secondary school curriculum.

3.5 TEACHING BIOETHICS AS A STAND-ALONE SUBJECT: A CASE FOR THE CURRENT RESEARCH

Much of the literature available on the teaching of bioethics is concerned with graduate or postgraduate tertiary level courses. However, over the last 15

years, academic articles and research have established the importance of teaching bioethics at secondary school level (Anderson, 2005; Calderbank & Macer, 2008a, 2008b; Dawson, 1999; Jones et al., 2007; Jones, McKim & Reiss, 2010; Levinson, 2003, 2004b, 2006a). Such studies also show that bioethics is taught as a unit within the framework of other academic subjects. This marks a significant difference from its presence as a stand-alone subject in the tertiary sector.

Reflecting the global situation, the teaching of bioethics in New Zealand schools is currently integrated within other academic disciplines, principally, though not exclusively, science and technology. However, as Kopelman (2006) states, bioethics is informed by, but is not reducible to, other academic disciplines. Bioethics has its own unique set of skills, which require teaching in a consistent and unified way, as opposed to a component approach via incorporation within other subjects. Initially taught solely as a component of other academic subjects within the syllabus, it would now be considered inappropriate to teach technology this way in the contemporary curriculum. Building the case for teaching bioethics as a stand-alone subject, the following section will discuss the introduction of technology into the curriculum and parallel this with the current status of teaching and learning bioethics.

3.5.1 The analogy of introducing technology into the curriculum: From integrated units to a stand-alone subject

A review of the introduction of technology as a discrete subject is apposite not only for the process, but also because technology education, encompassing as it does, biotechnology, material technology, information and communication technology, electronics and control technology, process and production technology and food technology, has considerable overlap into the area of bioethics. As Jones (2007) states, 'probably the most compelling reason for studying technology is that it is a major and, some

would argue, a determining feature of the world we inhabit' (p. 273) Technology is a value-laden activity where ideas are generated, assessed and selected on perceived worth (Forret, 1997; Jones, 2007). Reflecting developments in science, developments in technology determine the features of the world citizens inhabit now and in the future. Education must therefore prepare citizens to understand, assess and deal with 'the technical, social, political and economic issues that underlie technological process' (Jones 2007, p. 273), and to actively participate in the decisions that are made with respect to the development and control of technology.

The teaching and learning of technology was initially included in a number of existing subject areas, as is the current situation with bioethics. Under these circumstances, it was identified that the teaching of technology was not being undertaken in a coherent way. Jones (2007) noted that inclusion of technology within a number of subject areas developed a limited range of skills, process and knowledge resulting from a narrow perspective, and that consequently, students lacked the broad knowledge they required to engage successfully with technology in society. Similarly, it may be argued that teaching and learning bioethics as a unit within other subject areas limits students' understanding, particularly of theoretical ethics, necessary for them to successfully debate the issues and contribute to decision making in society.

Those advocating for the teaching of bioethics within the science disciplines recognise the potential to develop students' higher thinking and decision-making skills; the potential to develop a student's worldview and moral reasoning including the opportunity to understand other people's perspectives; and the potential to prepare students as future citizens. Yet, despite the discussion of the concept of scientific literacy as early as the mid 1960s when Pella, O'Hearn and Gale (1966) identified the ethics that control the scientist in his or her work, and the interrelationships between science and society and science and the humanities as three elements of scientific

literacy (Baker, 2004), traditional emphasis on understanding facts and concepts appears to have persisted within the majority of science educators at the chalk face (Parkinson et al., 2011; Tomas, 2010; Tytler, 2007). As Baker (2004) notes, 'science teaching is dominated by work in the laboratory and characterised by an emphasis upon secure and known outcomes' (p. 7). Levinson (2006b) contends 'that learning about socio-scientific issues is epistemologically very different from learning about science bringing in two distinct pedagogies' (p. 39). Jones et al. (2010) observe that while the importance of including socio-scientific issues within science and technology curricula is acknowledged, all too often this moves little beyond the rhetoric and actual classroom approaches and learning outcomes have remained unchanged.

The skills and knowledge required to teach the sciences differ from those required to teach ethics; something teachers themselves acknowledge (Grace, 2006; Levinson, 2001, 2003, 2004b). Literature arising from independent research, including that reported by Hall (1998), Jones (2007), Levinson (2001), Levinson and Turner (2001), and Macer et al. (1996) as illustrative samples, indicates that science teachers recognise the need for a different type of knowledge, that of philosophy and ethics as opposed to scientific knowledge and, therefore, feel inappropriately qualified and under-resourced to be addressing ethical issues within their lessons. Science teachers also feel pedagogically challenged. That is, while pedagogical practices for discussion and other methods useful in the teaching and learning of ethics such as story-telling, drama and role play are established in the humanities and social sciences, they are not established in the normal secondary school science laboratory and classroom. Further, science teachers express that dealing as it does with concrete descriptions and explanations, the introduction of ethical discussions where there may be no clear solutions to an issue, is incompatible with classroom science teaching. Perceiving science as 'value free', many science teachers also reflect that

they consider it inappropriate to consider values and ethics within science lessons.

In their evaluation of teaching and learning of the then new British AS course in Science for Public Understanding (SPU), Osborne, Duschl and Fairbrother (2002) found that science teachers experienced difficulty in breaking free from the 'modes of interaction with students which are acquired by teaching standard science courses' (p. 9). The broader nature of SPU material made new demands on teachers' background knowledge, including the need for a basic understanding 'of the fundamental ideas of ethics, risk and the nature of science' (p. 14). New demands were also placed on teachers' pedagogic techniques, including the ability to facilitate inclusive discussions that engaged all students in critical thinking about socio-scientific issues, and how to explicitly teach construction and evaluation of argument. Developing teachers' capabilities to deliver the SPU course material was identified by Osborne et al. (2002) as the most significant recommendation of their research.

Levinson's (2001) paper expresses concerns from science teachers that they are not trained to teach ethics. The reverse is also likely to be true; that is, that science teachers, as was found of technology teachers (Jones, 2007), would be concerned about non-science teachers incorporating the scientific aspects of bioethics into their lessons. Likewise, teachers of other disciplines including English, economics, classics, geography, history and art, may feel insufficiently trained to teach the scientific and technological aspects required for scientific, technological or bioethical literacy. This situation reflects Goodson's (1985) contention that teachers are subjective rather than objective about teaching and learning within their perception of a subject area. Thus a 'subject subculture' develops including an agreed belief regarding the nature of the subject; how the subject should be taught; the role of the teacher; and the role of the student and what might be expected from them (Paechter, 1995).

Paechter (1995) pointed out that a teacher's belief about what is important for students to learn in their existing subject was transferred to technology education. Given that 'subcultures are consistent and often strongly held' (Jones, 2007, p. 280), it is reasonable to expect that this will also be the case with bioethics education, and that the subcultures from which the teachers come will directly influence the way they structure their bioethics lessons and develop classroom strategies. It is understandable that when teachers enter an area of uncertainty in their planned activities, they will revert to their traditional teaching and subject subculture. Given the cross-curricular nature of bioethics, there is a multitude of subcultures that may affect bioethics teaching and learning. Further, given the lack of an existing bioethics subject subculture, as was the case with the introduction of technology (Jones, 2007), other subjects' subcultural impact on bioethics classroom practice may be very complex. Subcultural impacts will include the teachers' subject backgrounds; their concepts of teaching and learning generally; their concept of bioethics itself; and their concepts of teaching and learning within bioethics education. As Osborne et al. (2002) state, 'changing the cultures that form and mould teachers is, unfortunately, a much harder task than simply changing the curriculum' (p. 10).

What the research conducted with respect to the introduction of technology as a new subject implies, is that if bioethical learning outcomes are seen to be desirable for students, a clear understanding of the nature and breadth of bioethics and bioethics education is required. Recent research into the teaching of controversial issues within New Zealand science classrooms identified the need to move teachers away from a focus on scientific content and towards the appropriate use of strategies and approaches that support an ethical inquiry (Saunders, 2009). This supports the previously described international research that indicates that when feeling unsuitably qualified and resourced to address ethical issues within their lessons, science teachers will resort to their traditional subject subculture and transfer what they believe is

important for students to learn in their existing subject (Hall 1998; Jones, 2007; Macer et al., 1994; Osborne et al., 2002; Paechter, 1995). Therefore, it is contended in this research that to leave bioethics education within the science classroom would restrict both the content covered and how this content was delivered.

3.5.2 Teaching bioethics: Current constraints and limitations

It is acknowledged within the literature that engagement in bioethics requires ethical strategies (De Luca, 2010; Jones et al., 2007; Levinson, 2003; Ryan, 2008; McKim, 2010; Reiss, 2010; Saunders, 2009), including the ability to argue rationally (Reiss, 1999, 2003) and reach an ethical conclusion, and that in order to accomplish this, the teaching of controversial issues should be underpinned by a strong theoretical base (Levinson, 2006a; Reiss 2003). The ethical principles, frameworks and approaches to ethical decision making discussed in the literature I have reviewed are:

- consequentialism, with utilitarianism occasionally being named specifically
- risk–benefit analysis
- deontology (described as following absolute rules and duties)
- goals, rights and responsibilities
- virtue ethics (described as being based on the moral character of the person)
- multiple perspectives
- autonomy
- justice
- duty of care
- feminist ethics.

No single resource included all of the above frameworks or approaches. One site, the US-based Woodrow Wilson Foundation Biology Institute (described previously in section 3.4.3) mentioned divine command theory. A significant

majority of sites amalgamated ethical principles and ethical theories beneath the heading of 'approaches' or 'frameworks'. Many examples of frameworks suggested for teachers to use while discussing socio-scientific or bioethical issues in their science classroom did not make explicit and formally articulate reference to ethical concepts at all. For example, Iowa State University provides professional development courses for tertiary educators and teachers at senior secondary school level, in addition to online resources for teaching bioethics (<http://www.bioethics.iastate.edu/>). In 'Teaching Bioethics', a resource provided on the Iowa State University website, Genevieve Nelson (2004) of the National Health Museum outlines a process for incorporating bioethics into the biology classroom. This process identifies 'certain steps' that 'are common to all bioethical discussions' including articulating the dilemma; identifying the stakeholders; presenting possible solutions; ranking the possible solutions; and explaining why a choice seems like the best one (Nelson, 2004). This final step considers what personal values may be involved in making the best choice, and encourages the teacher to ask the student if they are 'entirely satisfied with this choice' and if not why not (Nelson, 2004). This process aligns with that encountered by teachers and students who use the New Zealand-based Values Exchange social network website (see section 2.7.2), which is also based on individual personal values.

While the Iowa State resource and the Values Exchange provide a framework for discussion and the sharing of opinion, they do not provide a framework for teaching and learning within ethics. As De Luca (2010) argues, meaningful teaching and learning of ethics in science and technology classrooms 'must both encompass the ethics and the science and connect the two' (p. 87). That is, teaching and learning of ethics in science and technology, and therefore of bioethics, has an applied dimension. In addition to being able to balance the benefits and risks of science and technology, a bioethically mature person is able to recognise the ethical concepts explicit and implicit to an issue, and can compare and contrast the different arguments that can be used (Macer 2008).

Developments in technology and the acquisition of new knowledge stimulate questions about the nature of the human condition, the nature of a good life and how humans ought to live. These are deeply philosophical questions. In order to engage with them, a certain level of philosophical understanding is necessary. This goes beyond the level of ethical frameworks and concepts that have been presented in the reviewed literature. For example, the BEEP site, links to which are provided on the Ministry of Education's TKI site, states that there is no single way in which ethical debates about bioethics can be unambiguously resolved to reach firm decisions. Ethical conclusions are valid if: they are based on reason; they are based within a well-established ethical framework; and they rest on a reasonable level of consensus arising from genuine debate (Reiss, 2010). Yet, while valid, some ethical conclusions are more practical and appropriate than others in a given situation. The BEEP site discusses only consequentialist, deontological and cost–benefit analysis approaches to decision making and offers no definitions of ethical terms in the glossary, which is exclusively scientific. The curriculum that is at the centre of this stand-alone bioethics trial offers a model that teaches comprehensive ethical theory, critical thinking and decision making, and that, therefore, seeks to fill the gaps identified.

Within the literature I have reviewed, there is an absence of published accounts of formal teaching and critique of ethical theory when a bioethical issue is explored within science and technology in New Zealand schools. There is frequent mention of discussions and multiple viewpoints and some acknowledgement that students (and citizens) require an 'informed and defensible view on issues raised by applications and implementations of biotechnology' (Jones et al., 2007, p. i). However, I have not been able to find any clear statements of the importance of rigorous teaching and critique of ethical theories, including natural law, divine command theory, situation ethics, Kantianism, proportionalism, utilitarianism and virtue ethics, nor any resources that support the thorough teaching and critique of such ethical

theory within the applied contexts covered at secondary school. The stand-alone bioethics trial provides such a critique.

The teaching and learning of 'argument' is also recognised as an important component of socio-scientific and bioethics education (Tomas, 2010). Within the literature reviewed, developing skills of argument included participating in discussion (small group and whole class), and participation in oral presentations where students learnt on the job the importance of providing evidence to support their viewpoints and to evaluate the rigour of claims made and evidence provided by others. Hand and Levinson (2012) observe that discussion of controversial issues is appreciably improved when students are equipped with skills to analyse and evaluate arguments. In their mixed-methods empirical study of the then pilot AS level Perspectives on Science (POS) course within 26 secondary schools and further education colleges across the UK in the 2006–2007 and 2007–2008 academic years, Hand and Levinson (2012) state that 'while it was recognised by the participants that analytical and argumentative skills could be refined in and through discussion, what they emphasised was the value of explicit instruction in these skills prior to engaging in discussion' (p. 621). No frameworks or approaches for teaching controversial issues, socio-scientific issues, or bioethics critiqued included formal teaching of philosophical argumentation, including how to identify and structure premises; to distinguish valid and sound arguments; to recognise particular forms of argument, including the Sorites paradox and horrible result slippery-slope arguments; and the necessity to define how terms are being used. Based on the researcher's original model, the curriculum trialled in this investigation includes instruction on skills of philosophical argument.

Tensions with respect to content and timetable pressure are also evident in the literature on teaching bioethics. Acknowledging that teaching about ethics is an important part of the science and technology curricula, Reiss (2010) believes that 'teaching about ethics should be only a small part of the science

and technology curricula in terms of the time allocated to it' (p. 16). Citing work of researchers between 1992 and 2000, Oulton, Dillon and Grace (2004b) identified a number of barriers to curriculum development in bioethics education including the complexity of the issue; teachers' lack of familiarity and knowledge about the topic; lack of time to deal comprehensively with the topic; and the pressure of more accountable aspects of the curriculum, as ethics was not an assessed part of the curriculum at this time.

The key competencies, skills and values development required by the NZC are 'more complex than those required of the outcomes-based policies of the past', and consequently, require 'sophisticated approaches' to curriculum content, delivery and assessment (Brough, 2008, p. 16). As Jones and Bunting (2012) observe, high stakes assessments and exit qualifications at the secondary level indicate very directly what is valued and affect what is emphasised in the classroom. While this has the potential to create opportunities for innovation, it more often constrains what is taught and how it is delivered. The impact of external assessment on what is delivered in the classroom; the question of how the development of the cross-curricular key competencies and values clusters, and students' ability to 'make ethical decisions and act on them' (Ministry of Education, 2007) are to be assessed; and how the degree of fit between a school's delivered curriculum and the Ministry of Education's intended curriculum will be measured and assessed are significant issues raised by the NZC (Brough, 2008; Hipkins, 2006, 2007, 2009; Jones et al., 2012).

Teaching bioethics as a unit within science gives students an opportunity to explore and develop skills in a topic relevant to bioethics, and, when provided, begins exploration of frameworks for ethical decision making. However, studying a bioethics topic within a particular academic discipline is different from studying bioethics (Iltis, 2006, p. 639). While a good understanding of the science is necessary, a sound base of philosophical, cultural and religious knowledge is also necessary in order to adequately and

rigorously comprehend the issues and perspectives involved. The reason many bioethical issues are challenging and controversial is not because of the science itself, but because of their social, legal, cultural, personal and psychological impacts. Beane (2005) observes that life's problems do not come neatly compartmentalised into separate learning areas and that a subject-based curriculum fails to address many contemporary issues.

The use of the term and the concept of bioethics are still in their infancy within primary and secondary education. Further, the interdisciplinary scope of the concept of bioethics is not widely understood. For example, in 'Bioethics education in New Zealand: A literature review', Ryan (2008) defines bioethics as 'ethical thinking within the specific context of science' (p. 10). The definition provided within the Bioethics Toolkit that 'bioethics involves using an ethical approach to make decisions about biological issues' (Biotechnology Learning Hub, 2009) confines bioethics to biology, as does the BEEP (2009) site where 'Biological/Biomedical sciences + Ethics = BIOETHICS'. As justified earlier in this chapter, such definitions of bioethics are limiting.

It is not the aim of bioethics 'to narrow [the] subject matter, make it more manageable and promote greater expertise in a narrower field' (Kopelman, 2006, p. 620). Rather, as a discrete discipline at tertiary level, bioethics aims at 'expanding the subject matter' demonstrating its interdisciplinary nature 'and seeking additional expertise' (Kopelman, 2006, p. 620). There is a strong argument for this to be the aim for bioethics taught at secondary level also.

The current status of bioethics as a learning area within another academic subject such as general science, technology, religious studies, physical education or health begins ethical discussion with respect to specific controversial topics, but does not comprehensively teach the now established, discrete academic discipline of bioethics. Teachers recognise the need for a different type of knowledge; that of philosophy and ethics in the

case of the science and technology teacher; and that of science in the case of the humanities teacher. Feelings of being inadequately qualified with respect to bioethics content and teaching methods, together with issues of time and an assessment driven curriculum, currently constrain comprehensive bioethics teaching and learning at secondary school level. This research project investigates whether the teaching and learning of bioethics as a stand-alone subject within the curriculum can address some or all of these issues.

3.6 PEDAGOGICAL PERSPECTIVES: NARRATIVE AS A BRIDGE TO LEARNING VALUES AND ETHICS THROUGH CONTEXT AND MEANING MAKING

As accounts of what happened to particular people in particular circumstances and with specific consequences, stories have come to be viewed as a basic human strategy for coming to terms with time, process, and change. (Herman, Jahn & Ryan, 2008, p. ix)

Teaching bioethics within science or technology or humanities classes may, and in all probability does, lead to collections of unsequenced activities. However, it is not sufficient for bioethics to be piecemeal (Iltis, 2006). While preferable to include bioethical discussion within another discipline rather than not include it at all, sequenced, regular, well-designed lessons enhance academic, social and emotional learning (Payton et al., 2000). Inextricably linked with the strong case that is being developed for comprehensive bioethics education as a discrete discipline, is the issue of pedagogy. This section will discuss the method and practice of teaching bioethics through the use of narrative- and student-centred discussion elemental to the stand-alone curriculum at the centre of this research.

Beginning with a general discussion of effective pedagogy and the concept that knowledge is constructed that underpin this research, this section

concentrates on the use of narrative in affective (moral) and cognitive (academic) teaching and learning. A discussion of the established theoretical and applied area of narrative ethics in section 3.6.2 leads into an exploration of narrative in education (3.6.3) and a comparison of logico-scientific and narrative ways of thinking (3.6.4). The importance, not only of the content of a narrative, but how it is delivered, is discussed in section 3.6.5. The chapter concludes with a discussion of narrative within bioethics (3.6.6) and relates this to the research curriculum (3.6.7).

3.6.1 Pedagogical perspectives

I never teach my pupils; I only attempt to provide the conditions in which they can learn. (Attributed to Albert Einstein, 1879–1955)

The practised educator appreciates that how things are taught is critical to student engagement and thus to what is learnt. The concept that knowledge is constructed means that the learner assimilates new information with existing knowledge. This is done in ways that are meaningful and unique to the learner. The implication of constructivist learning theory is that rather than the reception of information passed down to them from an all knowing' teacher—Freire (1970, 1993) would probably refer to this as the banking system of education—students require opportunities to engage with information in a collaborative and exploratory way. Traditional didactic, teacher-centred and content-centred pedagogies are inappropriate within a constructivist classroom (Betne & Castonguay, 2008; Hare & Graber, 2007; Kane, 2010).

If students are going to think deeply about issues and engage in deliberation with respect to developments in science and technology and their impacts on society, law, commerce, culture and politics, bioethics education needs to be incorporated into the curriculum in ways that are resonant and relevant to the students, and rigorous in academic approach. Research undertaken within

New Zealand and across other countries demonstrates a worldwide trend of declining numbers of students undertaking the sciences at both secondary and tertiary level (Hackling, Goodrum & Rennie, 2001; Parkinson et al., 2011; Tomas, 2010). Based upon evidence gathered, the 2011 'Engaging learners effectively in science, technology and engineering' report published by Massey University (Parkinson et al., 2011) states that more widespread use of best practice pedagogies and the provision of relevant contexts is required to promote student engagement in the sciences. These pedagogical approaches place the student at the centre of social interaction and discourse. Within this setting (as Zeidler et al. [2005] identified with respect to socio-scientific issues), students are recognised as moral agents, whose ethnic and cultural beliefs and values, and personal experience impact on their response to bioethical issues and, therefore, impact on the reasoning they apply as they seek resolution to a dilemma. Zeidler et al. (2009) assert social interaction and discourse enable students to evaluate claims, analyse evidence and assess multiple viewpoints when they contemplate socio-scientific issues and the same is true within bioethics.

The exploration of issues within bioethics is a restless, challenging inquiry where views and the values that underpin them must be regarded and appreciated from different angles. Verkerk, Lindemann, Maeckelberghe, Feenstra, Hartoungh and De Bree (2004) define 'the moral shape of a situation'; the overall configuration of the ethically relevant particulars of a situation, and the responsibilities that are attached to it:

Moral competence is a matter of developing a set of skills, namely, seeing what is morally relevant in a given situation, knowing the particular point of view from which one sees it; understanding that others who are involved may see it somewhat differently; and, with those others, responding well to what one sees. (p. 32)

Rejecting the notion of morality as codifiable knowledge, Verkerk et al. (2004) view morality as socially embodied. Involving understanding and adjustment,

morality 'is a way of expressing who we are, of understanding others, and holding others and ourselves to moral account'. In line with Lindemann Nelson (2000) who argues that stories are an invaluable medium for moral deliberation because they can represent both the complexity and the subtlety of the moral life, Verkerk et al. (2004) contend that:

Because narratives of identity, relationships, and value play such a central role in our moral lives together, *moral* competence depends on *narrative* competence. Narratives are not only a factual account of reality, but are also an interpretation of reality as well. (p. 32)

In this way, narratives provide a bridge to the teaching and learning of values, beliefs and facts using meaning making.

Stories of relatedness, how a person is connected to those with whom he or she lives in community, and to his or her particular physical environment, are crucial to the development of an individual's sense of self and of his or her place in the world. The use of narrative is also extremely important in developing a person's capacity for imagination and creativity, and as such, that person's ability to conceive what his or her place in the world could be, outside of the current situation. In these, and other ways, stories are tools that assist individuals to understand, negotiate and make sense of situations as, or before, they are encountered (Brody, 2002; Burke, 1973; Coles, 1989; Richardson, 1990). Thus, in these and other ways, narratives are valuable tools when teaching and learning bioethics. As a person learns how to think, feel and interact with others through the interpretation of narratives he or she is told, so he or she forms personal values and learns ethical ways of being. In turn, the values formed through narratives of identity and relationship determine how and what decisions an individual makes. White (1980) contends that in any account of reality where narrativity is present 'we can be sure that morality or a moralizing impulse is present too' (p. 26). For Adams (2008), the use of stories as tools to understand, negotiate and make sense of encountered situations requires a discussion of narrative ethics.

3.6.2 Narrative ethics

Narrative ethics, an established area of both theoretical and practical scholarly endeavour (De Luca, 2010), embraces various forms of storytelling. Relating to subjectivity, personal stories and personal experience, a narrative approach to ethics confronts normative ethical principles including individual autonomy, and balancing liberty with harm and precaution with risks. A narrative approach to ethics emphasises relationality, an unalterable responsibility to others and the unique and distinguishing life narrative of each person, as alternative ways of addressing the ethical problems of contemporary life (Mills, 2010). Challenging the ontological and normative concepts of liberal individualism, narrative ethics incorporates notions of vulnerability and correlative aspects such as empathy and compassion (McCarthy, 2003; Mills, 2010). Echoing Arras (1997) who explains narrative ethics as 'a mode of moral analysis that is attentive to and critically reflective about the narrative elements of our experience' (p. 70), Ajana (2010) states that narrative ethics requires an emphasis on listening so that individual uniqueness may be revealed and ipseity, the essential element of individual identity or selfhood, may be restored.

Numerous scholars, including Brody, Frank, MacIntyre, Anscombe, Edwards, Murdock, Ricoeur, Toulmin, Arras, Charon, Nussbaum and Urban Walker, have written about narrative ethics canvassing a broad range of themes (Adams, 2008; McCarthy, 2003; Murray, 1997). Importantly, Kathryn Montgomery Hunter (1995) provides an overview of narrative theory in bioethics, while Hilde Lindemann Nelson (1997, 2001) analytically assesses different narrative approaches to bioethics. Recognising narrative not simply as a device for moral education, but as an essential element for moral understanding (Lindemann Nelson, 1997; Murray, 1997; Nussbaum, 1990), this research focuses on narrative as a pedagogical and epistemological tool: a tool for engaging students; a tool in the teaching and learning of theoretical ethics within applied bioethical settings; and a tool for exploring the sources

and limits of knowledge and justified belief. Using narrative in this way fulfils what McCarthy (2003) describes as the third tenet of narrative ethics: the claim that the task of moral justification is not primarily a unifying one, but rather one that acknowledges and embraces the multiplicity of often contested meanings that are present in a given situation:

What is key for this narrativist account is the idea that many different voices and readings of moral situations and individual lives are possible. And, generally, narrativists focus less on trying to reduce competing perspectives to a commonly shared view and more on involving as many people as possible in the dialogue. (p. 68)

Whether and how this applies to participants in the stand-alone bioethics trial will be discussed in Chapter Eight.

Narratives not only reflect, and play an active role in constructing a person's 'reality', but have a function in transforming individual reality and the current social and educational environment. The small-scale stories of individuals and the much larger multidimensional stories that comprise the fabric of society's discourse interrelate, each having an effect upon the other, determining an individual's values and affecting their behaviour and decision making. This is an important concept in narrative bioethics and in bioethics education.

3.6.3 Narrative and education

In the latter part of the twentieth century, narrative became a preferred hermeneutic across a range of disciplines. Education was no exception to this trend. Bruner (1996) pointed to the utility of narratives in primary and secondary teaching, while more recently, Connelly (2005) and Crawley (2009) have focused upon narrative pedagogy in the areas of tertiary education and training for careers in such fields as medicine, law and teaching. The efficacy of narrative as story-telling as a teaching and learning tool spontaneously emerged as the dominant and unanticipated theme during Truebridge's

(2010) doctoral research into how teachers in an US high school responded to a professional development programme on resilience. Teachers participating in the year-long participatory action research investigation found the telling of their personal resilience stories a natural and effective way for them to reflect upon their personal beliefs about student resilience. The telling and hearing of personal resilience stories among their teaching peers spontaneously emerged as a powerful way for participating teachers to increase their understanding and appreciation of the concept, theory and practice of resilience, in addition to developing their understanding and appreciation of their fellow staff and the students themselves. As a result of their personal experience within the research, the teachers were observed to transfer the use of narrative as story-telling into their classroom methodology over the duration of the study.

Recently, educators have advocated for the use of narrative as story-telling in the teaching of science (De Luca, 2010; Gilbert, 2001; Gilbert, Hipkins & Cooper, 2005; Hochstetler, 2006). Gilbert, Hipkins and Cooper (2005) cite four reasons for using narrative to teach science. These are that: narratives illustrate or provide a 'background' for the science concepts being taught; narratives are a way to start the kinds of ethical discussions now required in many school science courses; narratives add human interest and make science more 'relevant' and interesting; and narratives are a way of including students who find science inaccessible and alien.

As a discipline, bioethics incorporates both scientific and philosophical thinking. Many of the ethical issues in bioethics are grounded in developments in science and technology and a degree of understanding of the science behind these developments is required. However, thinking scientifically is different from thinking philosophically (Bruner, 1986; Just & Varma, 2007; Peters, 2007; Rodriguez-Moreno & Hirsch, 2009). Brawer (2006) acknowledges the significant challenge recognised by those who educate the medical profession to cultivate practitioners who are capable of

seeing a patient as both a physio-chemical entity constructed of molecules and subject to natural law, and a person of individual identity with a personal story, array of faculties, emotions and behaviours that 'defy scientific-reductionist methods of analysis' (p. 472). The following section will distinguish and contrast scientific (logical) and narrative ways of assessment and thinking.

3.6.4 Critical, logico-scientific and narrative ways of thinking

Bruner (1986) contends that there are two distinct modes of thinking: the 'logico-scientific' mode and the 'narrative' mode. While complementary, these modes differ significantly in the way they organise experience and structure reality. The logico-scientific mode aims to explain the natural world by developing formal, logical proofs and theories; that is, through crucial thinking and analysis. Emotions, feelings and concerns have no place in logico-scientific thinking. In contrast, the 'narrative' mode seeks to make sense of the world directly through people's relationships, motivations and actions, and for Bruner, this is achieved through narrative or story. Bruner argues that everyone who follows a normal development from birth understands how to think in stories. In contrast, it is comparatively few who become competent logico-scientific or critical thinkers. Critical thinking, which includes higher order forms of critique, for example, the identification and assessment of presuppositions or ethical theories used to anchor an argument, does not occur naturally for many (Bruner, 1986; Shermer, 2002; Kahneman, 2012; van Gelder, 2005).

Drawing on cognitive science, van Gelder (2005) summarises six key messages for educators intending to teach critical thinking. Referring to the nature of critical thinking itself, how critical thinking skills are acquired and how thinking is taught best, these six points are that: acquiring expertise in critical thinking is difficult; practice in critical thinking skills is crucial to acquiring critical thinking skills; the transfer of critical thinking skills must also

be practiced; some theoretical knowledge is required including acquiring the specialist vocabulary; argument mapping promotes the development of critical thinking skills; and crucially, that students are prone to belief preservation by making evidence subservient to belief.

Kahneman (2011, 2012) describes two thinking systems within the mind: System One, the emotional–associative system; and System Two, the rational–logical system. Whereas System One is automatic, effortless and instinctive, System Two involves deliberate, conscious exertion. System One dominates System Two, and System One ‘thinks’ in stories. Belief and opinion are associated with the coherence of the stories that are automatically generated in the associative memory. Here, coherence is not defined in a logical or scientific sense, but in an emotional sense. The test of truth is that a conclusion makes intuitive sense; that it sounds right or rings true, not that it necessarily is true when considered from rational–logical System Two. (Perkins, Allen & Halner, 1983; Kahneman, 2011, 2012). People respond to the emotional, not the logical, and may therefore be misled, and may make decisions or act thoughtlessly, irrationally or in haste (Gelder, 2005). That statistics, facts and evidence are subservient to story and a statement or conclusion sounding right, even if it is not valid, has important ramifications for communication about science and technology (Kahneman, 2011, 2012), and for bioethics and values education. However, the emotional can provide a way into the logical.

If everyone understands how to think in stories, then stories become an entrée for the teaching and learning of higher modes of thinking. Narrative, a mode of thought that students already understand, may be used to engage students (Bruner, 1986; Gilbert et al., 2005), and to provide what Gillett (3 December 2012, personal correspondence) defines as a memorable pedagogical moment; a readily recalled hook into academic, social and emotional learning. Once engaged, exploration of the narratives used provides a medium through which the key points of teaching critical thinking

as identified by van Gelder (2005) may be covered. That is, narratives told through a variety of genre may be used for students to explore the dilemmas experienced by the characters and how the characters respond to the dilemma, including what motivates the characters' thinking and what kinds of thinking the characters exhibit. Distinguishing and contrasting different ways of thinking allows students to develop and practice personal critical thinking skills and provides a medium through which the theoretical knowledge and specialist vocabulary required for expertise in critical thinking may be taught. Narratives provide a rich tapestry of fact, situation and character through which moral judgements may be tested (Arras, 1997). Narratives may be used to engage, teach, develop and sustain modes of critical thinking, one of the key competencies specified in the NZC.

3.6.5 Narrative content and narrative delivery

Wittgenstein (1953) suggests story-tellers not only tell stories, they do things with them; and 'what speakers do with stories shapes their meaning for listeners, as well as the consequences of their communication' (Gubrium & Holstein, 2009, p. xvi). In reality, narrative is about both the substance of stories and the activity of story-telling. This point is further developed in performance theory, which asserts that it is not simply a 'wooden' telling of stories, but the way they are told and most importantly, the audience to whom they are addressed, that makes stories an effective teaching tool. Stories told within the bioethics classroom are certainly used to gain reaction (and, therefore, engagement) but it is critical to the co-operative learning environment that the teacher/facilitator does not intend to have students react in a pre-determined way; that they do not tell a story merely to 'make a point'. Stories used within bioethics are about *how* to think, not about what to think, and this is a vital distinction. Adams (2008) states that 'when considering narrative ethics, we must consider the relationship a medium(s) has with a story and its accompanying morals' (p. 182) Adams continues 'we must

reflexively probe ourselves to consider how our expectations of and ethical stances toward a story may alter its crafting and reception' (p. 185).

Narrative is an effective and appropriate pedagogy for bioethics and values education because of the link between stories and personal identity building. If students—the future decision-making citizens—are to learn to think bioethically they require context, which is to say, a narrative: a way of imagining themselves as situated within a particular ethical issue and its implications. Narrative can supply this imaginative construal. Thus, the use of narrative is important in developing a person's capacity for imagination and creativity, and as such, a person's ability to conceive what his or her place in the world could be outside the current experienced reality. Narrative pedagogy is able to provide a hermeneutical framework and an imaginative construal of bioethical issues, which permit students to contextualise the issues within the lineaments of human interests, motivations and feelings. As Diana Tietjens Meyers (2003) argues, 'since narrative is such a prominent feature of human life, ignoring narrative-making, narrative-telling, narrative-understanding would seem to be a case of philosophical ineptitude, if not malpractice' (p. 159).

Many psychologists agree that narrative is a vital part of a child's development. All cultures and nations have origin stories that relate from where the members of the culture originate and how they are connected to one another. Local communities and individual families generally have similar stories about themselves. From birth, the stories of relatedness connect an infant with those to whom he or she is immediately close. As a child develops, stories of relatedness connect him or her to the extended family, and steadily to the wider community, culture and nation into which he or she has been born. As such, the narrative is both 'an important form of communication' and 'a means of making human life and, specifically the moral life, intelligible' (McCarthy, 2003, p. 67). This sense of 'narrative' alludes to the etymology of the word from the Sanskrit 'gna', a root term that

means 'know' (McCarthy, 2003; White, 1987). Originating from here, the term 'narrative' arrives into English language through the Latin terms '*gnare*', 'to know' and '*narrare*', 'to tell' and incorporates both concepts. The meaning of the term 'narrative' invokes two kinds of activity: telling and knowing (McCarthy, 2003) and in this way, narrative is a universal tool for both absorbing knowledge and for conveying it (Abbott, 2008; White, 1987). Narrative is central to conveying (teaching through exploration and co-construction) and absorbing (learning) bioethical knowledge within the research curriculum.

3.6.6 Narrative, bioethics and the research curriculum

Concurrent with the rise of narrative within education, there is a developing body of theory with regard to the use of narrative within bioethics. This section describes narrative theory in bioethics and how the theory addresses both the use of narrative in moral decision making itself, as well as the modality of how individuals may be educated to make moral decisions (Lindemann Nelson, 1997, 2000; Martin, 2008), reinforcing the use of narrative pedagogy in the research curriculum.

Paralleling Bruner's (1986) distinction between logico–scientific and narrative modes of thinking, Martin (2008) contends that there are two modes of meaning that are central to bioethics: exposition (facts) and narrative (stories). He expresses these ways of meaning in a vertical and horizontal sense, much as Freire (1970) contrasts 'authoritative' and 'liberal' education. Martin builds this structure on the work of Bernstein (1996) who distinguished the vertical abstract learnt knowledge of science, social science and the humanities, and contrasted this with the horizontal, everyday, common sense ways of knowing. Entailing definition, interpretation, logic and reason, exposition has been the 'taken for granted means of communication within our scholarly community' (Jordens, 2008, p. 39). In contrast, the recent 'turn to narrative', which Martin (2008) characterises as a 'horizontal' discourse,

'makes lateral connections among different things of equal value, rather than generating hierarchies and policing boundaries' (Jordens, 2008, p. 39).

However, Martin (2008) perceives a 'complementarity' (p. 42) between expository discourse and narrative discourse, and that when used together the sum is greater than the parts. Incorporating narrative within expository texts allows the sharing of feelings, the development of empathy and therefore bonding. A person's moral and ethical judgements are different when that person can identify empathetically with someone facing a particular dilemma. As Jordens (2008) states, 'moral argumentation is qualitatively different if it enables us to bond with others as well as win us over to another opinion with reasons and evidence' (p. 40). Popular media including television, radio and newspapers, are certainly aware of this in the way a 'real-life story' is utilised to illustrate possible benefits of a new biotechnology. Similarly, narratives may be used within the bioethics classroom to allow students to bond by sharing the feelings experienced by others without actually living through the precise experience. Narrative used as both a mode of reasoning and a mode of representation (Richardson, 1990; White, 1987) allows students to 'try on' alternative decisions and behaviours and to assess what fits best with their value systems. Brody (2002) uses the analogy of 'trying on' or 'wearing' different behaviours or decisions through the use of narratives 'much as you can try on different suits of clothes before buying one' to make the point that 'clothing which may look ideally suited for us on the rack may look very different when we try it on and look in the mirror' (p. 202).

Supplementary to providing a medium for imaginative construal and the trialling of a range of moral behaviours, the use of narrative as a teaching and learning tool develops affective and cognitive competencies. For Montgomery Hunter, Charon and Coulehan (1995), in addition to developing a student's capacity to imagine and be empathetic to other life stories and experiences including to understand different cultural, social and religious perspectives,

these competencies also include the ability to carefully observe and identify patterns of meaning; to follow complex plots; and to grow in self-awareness and self-criticism. Exploration of stimulus, context-setting narratives through discussion is integral to the pedagogy of this stand-alone bioethics trial. As Hand et al. (2012) observe, 'discussion is peculiarly conducive to appreciative understanding of the different positions in a controversy' (p. 626). An aim of this research project is to investigate student engagement with narrative-stimulated and student-focused pedagogies including the adaptation of the discussion-based community of enquiry approach utilised in Philosophy for Children (see section 2.7.2) (Daniel et al., 2005; P4CNZ, 2012b) on bioethics topics relevant to students' current and foreseeable future contexts.

3.7 THE ISSUE AND THE RESEARCH QUESTION: DRAWING THE LITERATURE REVIEW CHAPTERS TOGETHER

Chapters Two and Three have reviewed literature on curriculum, contemporary culture, values education, bioethics, bioethics education and narrative, identifying themes pertinent to the current research investigation. Following a summary of these pertinent themes, this section details the research questions that guide this study.

Developments in science and technology are leading New Zealand and the rest of the world into areas of unprecedented ethical dilemma, and are affecting the lives of individuals and the composition and evolution of society in unique ways. Concurrently, the pervading cultures of materialism, individualism and relativism are impacting on citizens' values frameworks, inclining individuals towards more self-centred, less collectivist values that esteem personal interests more highly than overall social welfare (Eckersley, 2004a, 2004b, 2005a, 2005b, 2008; 2011; Elliot, 2003; Hamilton, 2008; Kasser, 2002; Law, 2007; Somerville, 2010). The holding of self-centred values has implications for the decision-making strategies employed by citizens on both an individual level and collective basis. There is a large body

of research that demonstrates a link between consumerism and the disproportionate valuing of material possessions and extrinsic goals, including outward appearance, social recognition and financial success, and reduced well-being (Auerback et al., 2010). Reduced well-being is manifest in rising rates of depression, anxiety, impulsiveness and risk-taking behaviours, including greater consumption of alcohol, cigarettes and drugs, early sexual behaviour, school truancy and vandalism (Auerback et al., 2010; Bauman, 2001; Carr-Gregg, 2008; Eckersley, 2004a, 2005a, 2005b, 2008; Forbes et al., 2009; Kasser, 2002; Kasser & Ryan, 2001; Law, 2007; Twenge 2006; Twenge & Campbell, 2009; Twenge et al., 2010). Modern media technologies promote and reinforce achievement of extrinsic goals. Simultaneously developing technologies, for example, in the areas of neuroscience, tissue transfer and human reproductive technology, provide new goals to be aspired to and achieved.

Curriculum content responds to the political, socio-economic and cultural environments (Pinar et al., 1995; Schubert, 1996). Changing trends within New Zealand society over the past 50 years have implied a need to reassess curriculum content; in particular within the areas of science, technology, health and values education. As New Zealand society has become increasingly multicultural, the need to acknowledge Treaty of Waitangi obligations, together with the plurality of religious and ethnic perspectives has been established. New Zealand society is also becoming increasingly technological and multimedia literacies are progressively more important (Tomas, 2010). In addition to changing the way individuals communicate, connect with, and relate to one another, the World Wide Web and social media networks have expanded the amount of information available, together with the ways in which the public may access; are exposed to; and engage with, information.

Pedagogy has changed as a consequence of how information is accessed, and therefore how knowledge is acquired. Challenge to the traditional

hierarchical model of the teacher as the disseminator of expert knowledge down to passive students, has accelerated. At the same time, the vision of developing competencies and values within students so that they may become 'confident, connected, actively involved, and lifelong learners' (Ministry of Education, 2007, p. 6), is being established. Active involvement in contemporary New Zealand society includes the obligation to participate in the deliberative democratic process, as government agencies begin to consult with the public on which technologies should be embraced, restricted or rejected. Even when not directly consulted, citizens need to be equipped to make individual decisions with respect to technologies they will utilise or decline. Decision making, debate and the consultative democratic process can only be robust when people are sufficiently informed and skilled to deliberate the issues. As a consequence, there is a call to include the study of socio-scientific issues within the curriculum (Levinson, 2006a; Levinson & Reiss, 2003; Jones, McKim & Reiss, 2010; Reiss, 1999), to develop scientific literacy (OECD, 2006; Tomas, 2010) and to broaden science education beyond pre-professional preparation to cater for the whole population regardless of individual career interests (Gluckman, 2011a; Roberts, 2007; Winston, 2011). There is a gradual move to deliberative, participatory democracy, but more fundamental, immediate and personal is the unbidden, progressive encroachment of bioethical issues into normal everyday life, including for example, end of life decisions, organ transfer, nanotechnology, neuropharmacology, the available spectrum of cosmetic surgery and screening for conditions such as Down Syndrome in routine prenatal testing.

Opportunities to teach bioethics and ethical thinking currently exist in New Zealand secondary schools, including some NCEA qualifications. However, these opportunities are fragmented. Further, taught as they currently are in disparate subjects, and predominantly at a more senior level of secondary schooling, these opportunities do not reach every student (for example, not every student undertakes study in biology). Yet, advances in biotechnologies and the ethical issues they pose have an impact upon everyone in society. As

the academic discipline of bioethics matures it is necessary to distinguish between fields that initiate bioethical issues; the fields that make important contributions to bioethics and bioethical discussion; and the discipline of bioethics itself. As it is currently taught, bioethics 'units' inside the subjects of science, technology, civics, citizenship, religious studies, SOSE and similar disparate areas, contribute to 'bioethics discussion', but do not adequately contribute to academic learning within the discipline itself. The multiplicity and diversity of ethical, cultural and spiritual perspectives within applied bioethical contexts requires the rigorous teaching of meta, normative and theoretical ethics in appropriate applied contexts that exceed the confines of the current unit based approach (see Chapter Two).

Strategies, frameworks and units of work to assist teachers, predominantly science teachers, in facilitating discussion of bioethical issues have been developed both nationally and internationally. However, as reflected by its status as a discrete academic discipline at tertiary level, bioethics incorporates a unique combination of knowledge and competencies, which require teaching and learning in a consistent and unified way. While an adequate understanding of science is necessary, a broad philosophical, cultural and religious knowledge base is also required to adequately and rigorously comprehend the issues involved within bioethics; to understand the ethical theories that underpin the arguments and perspectives involved, and to critique these; and to actively participate in public deliberation and discourse. Integrated as it currently is within other academic disciplines, the theoretical base suggested within the frameworks, guidelines and resources for teaching bioethics at school level, as reviewed in the literature, is too narrow and does not include the teaching and learning of a number of important ethical theories. While some frameworks acknowledged multiple perspectives, no framework critiqued in this literature review acknowledged the cultural and spiritual dimensions required to be considered by New Zealand government agencies engaging with the public on bioethical issues. It is a contention of this thesis that if bioethics is to be taught

comprehensively, ethical theories, for example, situation ethics, natural law, divine command theory, and proportionalism, which underpin the variety of religious responses expressed in society, need to be incorporated. Neither do the frameworks, guidelines and resources for teaching bioethics at school level, as evaluated in this literature review, allow for critique of the ethical theories themselves. In addition, previous research into bioethics education does not explicitly acknowledge the additional challenge to ethical thinking that the pervading cultures of materialism, individualism and moral relativism create, nor link this facet to values education. Further, no framework or approach to the teaching and learning of bioethics critiqued in the literature review provided for the teaching and learning of philosophical argument, the skills of which appreciably enhance discussion of controversial issues (Hand et al., 2012).

Emerging as it does from the real-life intersections of science and values, the discipline of bioethics and teaching and learning within it offers a timely opportunity to incorporate narrative pedagogy into explicit values education and the development of the key competencies required in the NZC. This timeliness is reinforced by the developing interest in narrative within the discipline of bioethics itself (Jordens & Little, 2004; Lindemann Nelson, 1997, 2000; Martin, 2008). Contemporary use of the term 'narrative' sees it described in diverse ways including as: a foundational way of organising human experience, constructing models of 'reality' and building personal identity; a mode of thinking; the creator and transmitter of cultural traditions, values and beliefs; a mould in which memories and values are formed and conserved; a source of entertainment and a mirror in which what it means to be human may be discovered (Brody, 2002; Bruner, 1986; Herman et al., 2008; Lindemann Nelson, 1997, McCarthy, 2003, Murray, 1997; Nussbaum, 1990; Tietjens Meyers, 2003; Verkerk et al., 2004). Underpinned by the relevance of each of these dimensions of narrative, an approach to teaching and learning bioethics through open, rigorous and thought-provoking examination and discussion of scenarios, which wherever possible are factual

and not fictitious; for which there is arguably more than one 'right' course of action; and that may be heard, read or viewed, will be employed in this research project. The use of student-focused, narrative-stimulated and discussion-based teaching and learning practice within this project is further reinforced by the directive of the NZC (Ministry of Education, 2007) to develop effective pedagogy, including teaching methods that 'create a supportive learning environment; encourage reflective thought and action; enhance the relevance of new learning; facilitate shared learning; make connections to prior learning and experience; and inquire into the teaching-learning relationship' (p. 38).

3.7.1 The research questions

In light of the review of curriculum and values and bioethics education presented and critiqued in Chapter Two and this chapter, a need has been clearly identified for teaching and learning strategies that promote comprehensive values education and the development of bioethical literacy for all students. The central aim of this research project is to investigate the teaching and learning experiences of two collaborating teachers and 78 senior secondary students who participated in a year-long, stand-alone bioethics programme, based upon the researcher's previously developed curriculum. The following research questions guide this research investigation:

- What are the affective outcomes for students participating in the bioethics curriculum?
That is, in what ways does the teaching and learning of bioethics as a stand-alone subject contribute to the development of a participating student's personal values, moral reasoning and worldview?
- What are the cognitive outcomes for students participating in the bioethics curriculum?

That is, in what ways does the teaching and learning of bioethics as a stand-alone subject contribute to the development of a participating student's cognition, including academic learning and critical thinking?

- How do the affective and cognitive outcomes demonstrated by students participating in the bioethics curriculum relate to the values and key competencies requirements of the NZC (Ministry of Education, 2007)?
- Does the pedagogical framework employed encourage students to explore the boundaries of their values, specifically that which lies within and that which is outside?

That is, in what ways does the student-centred, narrative- and discussion-based pedagogy facilitate student engagement and the development of students' reflective judgement including the use of argumentation and evidence-based reasoning? And what are the wider implications for curriculum delivery of this pedagogical framework?

With an approach to bioethics education as a stand-alone subject within the New Zealand secondary school curriculum delineated, a curriculum designed and research questions defined, Chapter Four now presents the research methodology adopted. The chapter includes an examination of the procedures that will be utilised to generate and analyse data in order to address the guiding research questions.

CHAPTER FOUR: METHODOLOGY

One has to be mindful that the researcher's own background interest, knowledge and biography precede the research and that though initial hypotheses may not be foregrounded in qualitative research, nevertheless the initial establishment of the research presupposes a particular area of interest, i.e. the research and data for focus are not theory-free; knowledge is not theory-free. (Cohen, Manion & Morrison, 2007, p. 173)

4.1 PURPOSE OF THIS CHAPTER

This chapter progressively focuses from general social research methodology down to the specific techniques designed and implemented within the explicit context of the current investigation. As the selection of an appropriate research methodology is fundamental to the design of an investigation (Falconer & Mackay, 1999), the chapter begins with a general overview of educational research methodologies. Tracing the links between the constructivist theories of knowledge, learning and interpretation described in Chapters One and Two, the chapter proceeds to orientate the current research project within an interpretivist methodological framework. Completing the move from the general to the particular, the six factors that justify the use of a case study approach, are described. Beginning at section 4.6, the chapter then details the specific design and implementation of the mixed qualitative and quantitative data collection techniques used in this research, and describes the analytic procedures to be applied.

4.2 METHODOLOGIES AND EDUCATIONAL RESEARCH

When planning a physical journey it is frequently possible to reach the chosen destination by a number of different routes. Each route will require

traversing different terrain; distances and time taken will vary, as will the scenery along the way and the vantage points from which the scenery may be viewed, and as such, certain routes will suit the purposes of some travellers better than it will others. The research journey, a journey towards knowledge and understanding, is no different; the research goal may be reached by different methodological routes, each suited to different aims and objectives. To use Harding's (1987) definition, a 'methodology is the theory of knowledge and the interpretive framework that guides a particular research project' (p. 2) This contrasts with the research 'method', which refers to the techniques used for assembling empirical evidence. Beginning with the distinction between the primary positivist and non-positivist methodological paths, the opening sections of this chapter explain aspects of the various routes available through social science research.

The debate over whether social and educational research can or should be scientific has a long (Abbott, 2010) and terminologically nebulous history. Hammersley and Atkinson (2007) point out the considerable overlap and the 'fuzzy semantic boundaries' (p. 1) between labels used within social research. Burrell and Morgan (1979) develop a matrix model of social theory based on three fundamental philosophical debates, including the ontological question of whether reality is external to consciousness or a product of individual consciousness; the epistemological question of the nature of knowledge and whether an individual must experience something to understand it; and the question of human nature and whether this is determined or whether we have free will. How one responds to these questions has methodological implications and determines whether a researcher believes that understanding is best achieved through the application of a positivist or non-positivist model.

The location of researchers between the two theoretical positions of positivism and non-positivism typifies the quantitative versus qualitative divide that is now commonly posited as separating two communities of researchers

and their methods (Inui, 1996). Positivism in philosophy is the view that there is nothing that exists outside of facts. With respect to social science research, positivism equates to quantitative research through the collection of data (evidence) in the form of facts and figures. Within the positivist methodology, the researcher is an external observer who pursues research that is theory or hypothesis driven and that seeks to make generalisable observations (Inui, 1996). Positivists assert objectivism and the precision, reliability and predictability of the experimental method, including the control of variables, as a valid means of quantifying and understanding human activities (Burrell & Morgan, 1979; Cohen et al., 2007; Falconer & Mackay, 1999; Hammersley & Atkinson, 2007). To utilise a further analogy, a scientist gazing through a microscope symbolises positivist objective examination. There is a distance and difference between the observed and the observer, who is searching for visible, hard data through the intense examination of a small controlled sample beneath the lens, isolated from its context (Alderson, 1998).

In contrast, non-positivists (otherwise naturalists or anti-positivists) maintain that the social world and any phenomena under investigation within it are best understood qualitatively from the subjective point of view of the individuals who are directly involved (Burrell & Morgan, 1979; Cohen et al., 2007; Falconer & Mackay, 1999; Hammersley & Atkinson, 2007). Understanding of individuals' interpretations of the world around them, non-positivists argue, has to come from the direct experience of people in the specific, inside context and not the detached, objective outside. Within a non-positivist methodology, the researcher is a participant as well as an observer; part of the phenomena being studied. In evaluating their work, non-positivist researchers emphasise salience, richness, truth-likeness (verisimilitude), trustworthiness and the generative effect of findings on the work and understanding of others (Inui, 1996).

Due to considerable diversification within the area of qualitative research, the contemporary field of social research methodology is complex (Hammersley

et al., 2007). Describing the growing interest in and acceptance of qualitative research during the 1970s and 1980s, Lincoln and Guba (1985; and Guba & Lincoln, 1994) first labelled the emerging qualitatively orientated paradigm naturalistic, then later constructivist. Naturalism proposes that as far as possible, the social world should be studied in its 'natural' state, rather than through 'artificial' settings such as experiments (Hammersley et al., 2007). Lincoln and Guba argued that a researcher could not be both a positivist and a naturalist/constructivist as these paradigms were logically incompatible (Donmoyer, 2006).

Describing educational research as both a reflector of and contributor to 'the multi-sited demise of positivism and the growing acknowledgment of social inquiry as value laden', Lather (1992, p. 91) images this diversification as 'the great methodological ferment that characterises contemporary social science in general and educational research in particular' (p. 91). Lather organises this 'ferment' within four paradigms of postpositivist inquiry, where three—Predict, Understand and Emancipate—are drawn from Habermas, and the fourth, Deconstruct, is her own. Lather's (1992, p. 89) chart of *Paradigms of Postpositive Inquiry* presented in Table 4.1, provides a summary of the information above, usefully locating a number of the terms used in this section to describe different approaches to contemporary educational research.

Table 4.1: Lather's *Paradigms of Postpositive Inquiry* (1992, p. 89)

Paradigms of Postpositive Inquiry			
Predict	Understand	Emancipate	Deconstruct
Positivism	Interpretivism Naturalistic Constructivist Phenomenological Hermeneutic Symbolic interaction Micro- ethnography	Critical Neo-Marxist Feminist Race-specific Praxis-orientated Freirean Participatory	Post-structural Postmodern Post-paradigmatic diaspora

Given

- my alignment with the view of understanding as a dialogic, practical, situated activity (Gadamer, 1975; Malpas, 2009);
- my acknowledgement of social inquiry as value laden;
- my belief that human behaviour is underpinned by a person's interpretation of the world, which is subject to the filter of his or her core beliefs (Ellis, 2001; Froggatt, 2005);
- the investigation's emphasis on classroom interaction determined by my research goal to investigate the teaching of the stand-alone bioethics curriculum as a vehicle for the development of moral reasoning and critical thinking within participating students;
- and that, as the author of the original curriculum upon which the research intervention is based, I am part of the phenomena being studied,

I conclude that understanding will be best achieved in this investigation through the application of a non-positivist methodology.

4.3 ASSUMPTIONS ABOUT KNOWLEDGE: SITUATING THIS RESEARCH WITHIN AN INTERPRETIVIST METHODOLOGY

While non-positivists are united in their contention that behaviour can only be understood by the researcher sharing the same rich frame of reference as the individuals being studied, opponents of positivism itself 'subscribe to a variety of schools of thought each with its own subtly different epistemological viewpoint' (Cohen et al., 2007, p. 19). Consequently, several non-positivist methodologies, including interpretivism, may be identified within educational research. As a counsellor, I align with cognitive behaviour therapy, specifically, REBT (Ellis, 2001; Froggatt, 2005). As an educator, I align with constructivist learning theory (Boghossian, 2006; Taber, 2010; Vrasidas, 2000; Zembylas, 2005). It is these philosophical backgrounds that influenced me to choose an interpretive methodology for this thesis. As I will outline below, what links the theoretical perspectives of cognitive behaviour therapy, interpretivism and critical theory from the separate areas of psychology, education and research, is epistemology—assumptions about knowledge and how it can be gained; and hermeneutics—the art or principles of interpretation (Malpas, 2009).

The basic premise of REBT, as described in Chapters One and Two, is that humans are meaning-making machines; an event occurs, we make it mean something and we respond accordingly. This 'meaning-making' premise of REBT aligns with the fundamental premise of constructivist educational theory (described in Chapter Two), which, as Vrasidas (2000) explains, asserts that:

The structure of the world is created in the mind through interactions with the world and is based on interpretations. ... For constructivists, learning is meaning-making. (p. 346)

Constructivist learning theory asserts that new ideas are accommodated or assimilated according to what an individual already knows. Personal thoughts

and beliefs that result from prior learning become the base from which a person interprets new experiences and constructs or updates his or her reality. Within constructivist learning theory, each learner's subjective experiences, independent of the teacher, have a unique meaning: 'it is both the student's learning experience and her perceptions of those experiences that have educational value' (Boghossian, 2006, p. 715).

Both constructivist learning theory and rational cognitive behaviour therapy assume that what an individual 'knows' is socially constructed and represents but one of a multiple of possible 'truths', 'perspectives', or 'realities'. In the same way, but with respect to research methodology, interpretivism views human actions as 'based upon, or infused by, social or cultural meanings: that is, by intentions, motives, beliefs, rules, discourses and values' (Hammersley et al., 2007, p. 7). The interpretivist sees 'meaning' as 'interactional and interpretive' (Denzin, 2001, p. 53) and thus socially constructed and subjective. As Denzin (2001) describes in his introduction:

Interpretive interactionism ... endeavours to capture and represent the voices, emotions and actions of those studied. The focus of interpretive research is on those life experiences that radically alter and shape the meanings people give to themselves and their experiences. (p. 1)

Thus, interpretive practices of educational research 'go well beyond the mere use of qualitative methods. Their focus is the overriding importance of meaning making and context in human experiencing' (Lather, 1992, p. 91).

From different starting positions, the social philosophies of social interactionism, hermeneutics and phenomenology that inform interpretivism each argue that human behaviour is not caused in a mechanical cause-effect way, but rather, human behaviour is continually constructed and reconstructed based on people's interpretations of the situations they are in (Hammersley, et al., 2007). Therefore, the principal enterprise of the

interpretive paradigm 'is to understand the subjective world of human experience' (Cohen et al., 2007, p. 21). Accordingly, Denzin (2001) identifies six characteristics of interpretive research including that it is interactional; naturalistic; based on sophisticated rigour; can be both pure and applied; builds on critiques of positivism; and is concerned with the social construction of knowledge, emotion, gender, power and history. A study of phenomena in their natural environment, along with the acknowledgement that even the simple act of observation by a researcher necessarily affects the phenomena being investigated, underpins interpretivism. It is these characteristics that make the application of an interpretive methodology appropriate to this research study, the focus of which is on classroom interaction and the perspectives and responses of the pupils and teachers towards the bioethics curriculum being trialled.

4.4 THE CASE STUDY APPROACH

With the theory of knowledge and the interpretive framework—that is, the methodology—that guides this research project defined, the approach (method) that will be used for assembling empirical evidence must be determined. Six factors justify the application of a case study approach to this research project.

The first factor results directly from the choice of an interpretivist methodology. This research project is about academic, social and emotional learning. In order to achieve my research goal of investigating the teaching of bioethics as a discrete secondary school subject as a vehicle for values education and the development of moral reasoning and critical thinking, from an interpretivist point of view, context must be taken into account. Case studies are contextually bound. Thus, a case study approach is desirable because it embeds the research within the context; the learning in situ. A case study 'provides a unique example of real people in real situations ...

recognizing that context is a powerful determinant of both causes and effects' (Cohen et al., 2007, p. 253).

The second, third, fourth and fifth factors that justify a case study approach for this research are succinctly described by Robert Yin (2003, 2009). For Yin (2009), a necessary condition for the use of a case study approach is the development of theoretical propositions prior to the research being undertaken. That is, while a qualitative case study approach does not state and interrogate a hypothesis per se, it does include the assertion of propositions; and it is these propositions that fashion the research approach and the data collection and analysis techniques that are applied. As explained in Chapter One, my biographical journey and interests, including the experience of teaching a discrete bioethics curriculum for the six years prior to the research, led me to theorise a link between the subject material, its methods of delivery and the development of participating students' critical thinking skills and values assessment. These propositions determined my research goal, and influenced both the literature that I reviewed and the development and construction of my research questions (Cohen, Manion & Morrison, 2007; Yin, 2003). Thus, the second factor justifying a case study approach in this research is the development of these propositions prior to undertaking the research.

Each of the social science research methods that may be utilised including surveys, experiments, histories, economic and epidemiologic research, and case studies, has distinctive advantages and disadvantages. Therefore, the application of one method over another is frequently determined by the particular research situation (Yin, 2009). These methods overlap in many ways. Yin (2009) contends that a particular method's advantages and disadvantages, and therefore its suitability to a given piece of research, may be determined according to three conditions: the type of research question, whether the research is focused on a contemporary or a historical phenomenon, and the control a researcher has over actual behavioural

events. In general, a case study approach to research is indicated when 'how' or 'why' questions are being posed; the focus is on a contemporary phenomenon within a real-life context; and the researcher has little or no control over events.

The current stand-alone bioethics trial fulfils each of these case study approach indicators. Consequently, the third factor that justifies a case study approach in this study is the nature of the research questions, which include how (in what ways) the teaching and learning of bioethics contributes to the development of a participating student's cognition (including academic learning and critical thinking), personal worldview and moral reasoning. The fourth case study justification is that the focus of the research is on a contemporary, as opposed to a historical event. Teaching bioethics is a contemporary phenomenon both in the sense that bioethics as a new and evolving academic discipline results from developments in technologies in our modern time, and that this research is occurring in the current time and will utilise direct observation of the events being studied in addition to interviews with persons participating in these events.

The fifth, and possibly most significant, factor justifying a case study approach is that the context for the investigation is the dynamic environment of the classroom over which the researcher has little control. Within the classroom, a student, teacher or visitor's behaviour is influenced by multiple variables including his or her perceived personal identity, social interactions between peers, the content of the particular subject being taught, the nature of the teaching style (whether hierarchical or student centred) and the physical environment. The dynamics within such a multivariate environment are constantly changing and I, as the researcher, can control neither the phenomenon nor the participants under investigation.

This inability to change and control variables is a major point of difference that distinguishes case study from the experimental/scientific research

method. Accordingly, and in contrast to the scientific method, case study does not employ the use of traditional controls, constants, dependent or independent variables. With no controls, the case study approach does not reduce the phenomenon being studied to a set of constants and a predictable relationship between a dependent and independent variable (Yin, 2009). In this respect, and immersed as it is within the real-life context in which the phenomenon being investigated is occurring, the case study approach offers a comprehensiveness not achievable within the scientific method (Yin, 2009), penetrating such contexts 'in ways that are not always susceptible to numerical analysis' (Cohen et al., 2007, p. 253).

The sixth factor justifying the use of a case study approach in the current research is the opportunity provided to the researcher to utilise a wide range of analytical techniques and data sources drawn from both quantitative and qualitative methods (Flyvbjerg, 2011; Warwick, 2007). Indeed, as Labaree (2003) argues, to be effective in studying the dynamic environment of the classroom, educational researchers *need* to bring a variety of research techniques to the task. The 'binocular vision' afforded by the combination of mixed qualitative and quantitative methods within a research study is, Eliot Eisner (1996) asserts, 'the only way to achieve depth of field' (p. xi). More recently, through his articles dispelling misunderstandings surrounding case study research and thereby affirming the strengths of the approach, Flyvbjerg (2011, p. 301) agrees that 'case studies comprise more detail, richness, completeness and variance—that is, depth' (p. 301). A strength of the case study approach is that it provides the researcher with the opportunity to employ a broad assortment of quantitative and qualitative data collection techniques and, therefore, to apply a variety of analytical procedures.

4.5 SUMMARISING THE GENERAL METHODOLOGY

As the focus of this research is on academic, social and emotional learning, (essential elements for human flourishing as previously defined), the context

in which the research is occurring is crucial. In addition to affording real time investigation of both the bioethics curriculum content and pedagogical processes within the bounded, natural environment of the classroom, the case study approach offers 'the researcher an insight into the real dynamics of situations and people' (Cohen et al., p. 258). Further, a case study approach is indicated as the investigation is testing elements of the researcher's existing theoretical propositions via the posing of 'how/in what way' questions about a contemporary phenomenon over which the researcher has little or no control (Yin, 2009). In addition to being indicated by the methodology and context of the research, a distinguishing feature of the case study approach is that it allows data collection from multiple sources. As described in the following section of this chapter, the application of mixed data collection techniques also facilitates triangulation and helps to address the lack of objectivity that may be asserted with qualitative methodologies alone (Flyvbjerg, 2011; Myers, 2009).

4.6 DATA COLLECTION AND TRIANGULATION

Three theoretical propositions underpin this research: that participating in a bioethics course enhances the development of affective aspects including values development, engagement and communication; that participating in a bioethics course enhances cognition and critical thinking; and that the student-centred pedagogical approach employed in the teaching and learning of bioethics is relevant, engaging and successful. This section describes the variety of data gathering and analysing techniques implemented to assess the success or failure of the case study school bioethics curriculum to achieve these goals, and to establish findings to answer the research questions articulated in Chapter Three. Specific steps taken to maximise the quality of data collected inside this stand-alone bioethics trial are detailed throughout this section.

Studying a phenomenon from more than one standpoint not only offers a fuller description of the richness and complexity of behaviours with respect to that phenomenon, but also provides 'a powerful way of demonstrating concurrent validity' of data via triangulation (Cohen et al., 2007, p. 141). In this research study, data obtained through participant observation involving field notes and recordings are augmented with data obtained through the completion of initial and end-of-course (EOC) written surveys by all participating students; recorded one-to-one, semi-structured interviews with key student informants; one-to-one, semi-structured interviews with collaborating teachers; informal debriefing conversations with the collaborating teachers following lessons; regular, minuted meetings in a group situation with the collaborating teachers; one-to-one, semi-structured interviews with the school principal; student work including samples of pre- and post-teaching and learning activities in a variety of written and digital forms; teacher documentation including schemes of work and lesson plans; inviting the collaborating teachers to keep a written journal; and keeping a personal journal. Instituting this range of data sources allows for a systematic, cross-examination approach to the data analysis. For example, behaviours observed and recorded in the researcher's field notes can be contrasted with interview responses. Students and teachers gave permission to be audio taped and photographed while participating in the bioethics lessons. Comparison of these recordings from the beginning of the course with those taken towards the end of the course enables the analysis of development in communication skills (including use of appropriate bioethical terms and language), analytical skills and critical thinking. In turn, this analysis provides information against which the results of the student self-reported surveys and interviews can be compared. Further, having more than one teacher timetabled to teach the same curriculum allows for the comparison of different groups of students both simultaneously and over time, while also treating the group as a whole.

As demonstrated above, and as observed by Yin (2003), 'the data collection process for case studies is more complex than those used in other research strategies' (p. 106). For this reason, formal procedures should be followed by the researcher to ensure the quality of data collected. The sections that follow detail the data collection methods used together with the particular procedures adopted to maximise the quality of data collected and analysed within this stand-alone bioethics trial.

4.6.1 Participant observation

Given the centrality of participant observation to this research endeavour, it is appropriate to provide a general description of this technique and its advantages and disadvantages, including an explanation of the aims and the procedures used within this research project. The credo of participant observation is to keep as close to the phenomenon as is possible and it is thereby quite distinct from research techniques that emphasise distance and objectivity (Laurier, 2003). In a definitional sense, participant observation is a disciplined, rigorous, labour-intensive ethnographic research technique in which researchers imbed themselves in a social group or community for a sustained period, collect field notes and track systematic patterns to make inferences about social phenomena (Gans, 1999; Gillespie & Michelson, 2011). The key to participant observation as a research technique is that it allows researchers to *observe* what people do, which contrasts to other empirical techniques that are limited to reporting what people say about what they do (Gans, 1999). However, because it is not an external technique, for example, a questionnaire, a structured interview or a focus group, the stages of participant observation are not pre-set, but arise out of the phenomenon and setting that the researcher is investigating (Laurier, 2003).

The axiological debate that questions the role of values within research and whether researchers are value free or value laden is relevant to this discussion. Traditionally, science and the positivist scientific method have

asserted that researchers can conduct investigations without the imposition of values. In contrast, non-positivist theories contend that research is value laden and that value-free exploration is simply impossible. As previously described, the interpretivist paradigm acknowledges the researcher as imbedded within the research. As such, bias may be intrinsic and, therefore, steps must be taken to maximise the trustworthiness of data. Establishing trustworthiness within the design of a research project contributes to the ethical integrity of the investigation.

As the term suggests, participant observation involves both participation in the setting and observation of the phenomenon, and a balance between these two activities needs to be determined. As Kite (1999) observes, 'to participate or to peripherate; that is the question' (p. 48). Different combinations of participation and observation can be applied in measure relevant to different types of study and study sites, and the perspective of the researcher (Gans, 1999, Laurier, 2003, Cohen et al., 2007). Influenced by Adler and Adler (1994), Bonner and Tolhurst (2002, p. 8) label this variation in participation to observation within the field setting as ranging from 'complete membership of the group being studied, an insider, to complete stranger or outsider'. Regardless of where researchers may place themselves along the participant–observer continuum, they must be cognisant that the individuals being observed may alter their behaviour in their presence. Therefore, researchers should seek to minimise their impact on the research environment (Gillespie & Michelson, 2011). In an attempt to minimise their impact on the environment and the behaviours of the participants within it, some researchers choose above all to observe (Bonner & Tolhurst, 2002). Others assert the opposing view, arguing that greater participation can establish trust and put the observed at greater ease so that they will behave as naturally as possible.

A powerful research tool that allows an investigator the opportunity to gather 'live' data from naturally occurring social settings, observation is not without

its difficulties (Cohen et al., 2007). Case study investigations and participant observations are particularly prone to use by investigators who wish to substantiate a preconceived position (Yin, 2003). The researcher enters the field with his or her own expectations, assumptions and theories (Bonner & Tolhurst, 2002). As Kite (1999) asserts, 'we observe what we think is worth observing' (p. 45); or stated another way, we undoubtedly select what we choose to observe. Therefore, the researcher needs to be aware of a predisposition to seek and observe evidence that supports his or her propositions. Additionally, in a participant observation or interview situation such as those included in this investigation, the researcher needs to be aware of how all too easy it is to give an approving nod or smile while observing. Within the classroom, where students may be seated in a large circle, it is possible that such slips in body language would be noticed. Further, given that it is probable that the collaborating teacher may be facing the researcher while teaching, it is likely that some of these unchecked signals would be perceived. Such responses require discipline and the potential that bias may interfere with data collected is something that a researcher needs to keep in the foreground throughout a study. Actual seating arrangements are detailed in Chapter Five.

The potential effect of a researcher observational bias as described above is amplified by the potential for a researcher interpretation bias. Personal interpretation plays a significant role in the collection and analysis of data within a case study (Cohen et al., 2007; Simon, 1989; Yin, 2003) and/or when using observational techniques (Laurier, 2003). In addition, familiarity with the observed setting may contribute to a failure to observe important events or to make assumptions about what is being observed without seeking clarification for the reasons behind particular actions (Bonner & Tolhurst, 2002). While he contends that the finest participant observation is commonly done by those who have been involved in and tried to carry out and/or be a part of the things they are observing, Laurier (2003) also explains that:

If you are a 'local' already you have huge advantages in providing adequate descriptions of how and why things get done in the way they get done. Yet you also are at the disadvantage of no longer noticing how such things get done because they are so familiar as to be *seen but unnoticed* and you may never have attempted to make them into any kind of formal description. (p. 10)

Several strategies, including being reflexive and critically examining my assumptions and actions in relation to data collection, were employed within this study to minimise such 'researcher' effects (Bonner & Tolhurst, 2002). I also encouraged my supervisors and colleagues to embrace every opportunity to reveal my bias by testing my tolerance for alternative explanations and contrary findings within my data. As Flyvbjerg (2011) contends 'it is falsification and not verification that characterizes the case study' (p. 310). Notably, Flyvbjerg (2011) also observes that 'the question of subjectivism and bias toward verification applies to all methods, not just to the case study and other qualitative methods' (p. 310).

It is difficult to record everything that is important while simultaneously observing and on occasion, participating. To overcome this, and any problems with memory, every class was recorded on MP3. While smaller in size than a mobile phone, the MP3 recorder had no difficulty in picking up conversation across the physical space of the respective classrooms. As soon as possible after each lesson, I listened to the MP3 recording and supplemented the field notes that I had taken in situ. Thus, I employed both direct and indirect observation (Cooper & Schindler, 2001). This process also allowed me to reflect on whether what I had noted was factual or interpretive and to differentiate between description/evidence and interpretation/judgement. The immediate and methodical processing of each week's recorded lessons permitted the assimilation of newly acquired data with existing data throughout the full-year participant observation phase. The use of the MP3 recorder also meant that on the rare occasion throughout the

year when I was unable to attend a class in person, the class was recorded. I could make notes from these recordings in my field note journal and discuss the class with the collaborating teacher. I was surprised at how quickly the students forgot about the presence of the MP3 recorder.

My identity as a teacher and researcher, and the purpose for my being at the school was explained to the staff and to the students at their relative entry points into the research case study. I became a familiar face in the staffroom during the year, even winning a couple of weekly staff raffles. Any members of the wider school community were free to ask me general questions about the research at any time. Should they ask, my aim was to respond politely and truthfully while being cognisant of my position both as a guest in their environment and as a researcher with associated responsibilities to maintain confidentiality.

As already explained, participant observation involves more than passive observation and includes actual participation in the events being studied to varying degrees where appropriate. In my role as participant observer within the classroom, I aimed to balance being discreet enough not to disrupt the normal activity of the classroom—that is, unobtrusive enough to observe people engaging in activities that would occur in much the same way if I was not present—with being familiar enough with the students that they felt comfortable and ‘themselves’; that they did not feel that they had to behave in a ‘certain way’; and that they did not feel that their privacy was being compromised. I sought to adopt an intermediate role, whereby I was recognised as a teacher who was undertaking research into bioethics education, but who had a non-initiating, non-intervening, observational role within the classroom lessons. I became a common feature of the environment within each classroom, sitting in the same seat at the back, consistently recording in my field note journal.

My field notes contained both factual/descriptive observations and interpretive/judgement observations. Factual observations were recorded in blue ink on the right of a double page. Factual recordings included:

- the number of students in the class on that day
- the nature and order of topics covered and activities undertaken
- notations and/or map of seating arrangement and personal space—that is, how students choose to sit/group within the classroom space and in relation to each other; how this might be dictated by the space or set up for a particular activity, and so on
- physical behaviours and gestures—who does what; who interacts with whom; who is not interacting; people who enter and exit, and
- verbal interactions—who speaks to whom, for how long, and what points were made during the interaction.

I left a column on the left for my interpretive observations, which were recorded in black. Interpretive observations included the characteristics of students who stood out during a teaching and learning session; what differentiated them; and the tones used by students when interacting/responding with one another. Interpretive observations were not shared with any student who enquired what I was writing in the field notes.

Both my field notes and the initial documentation that I submitted to my supervisors contained the actual names and identities of the research location and participants. This was altered for the 'public' presentation of the material including this thesis, to achieve confidentiality and minimise the possibility of individual participants being directly linked to the data they provided.

4.6.2 The written surveys

Quantitative data were collected through two written Likert scale surveys conducted with every participating student; a brief initial survey and a more

substantive EOC survey, which may be found in Appendices Ten and Eleven respectively. The initial survey, which comprised nine Likert scale questions and two questions inviting a written response, was administered in week 10 of the 30-week course. The purpose of this short survey was two-fold: to provide some feedback for the collaborating teachers (including to gauge how the students were responding at this early stage and to indicate whether any minor adjustments to the curriculum and its modes of presentation may be required); and to provide the researcher with an opportunity to trial Likert scale survey design.

Likert scales may be subject to distortion in a number of ways. Thus, a survey to gauge participant attitudes requires crafting. In an attempt to minimise central tendency bias, the tendency of some respondents to avoid the extreme response categories, I used a seven-point Likert scale. The wording of this seven-point scale implied a symmetry of response rank around a neutral middle category. The initial survey visually depicted equally spaced uprights around which to circle a chosen response, as illustrated in Figure 4.1 below.

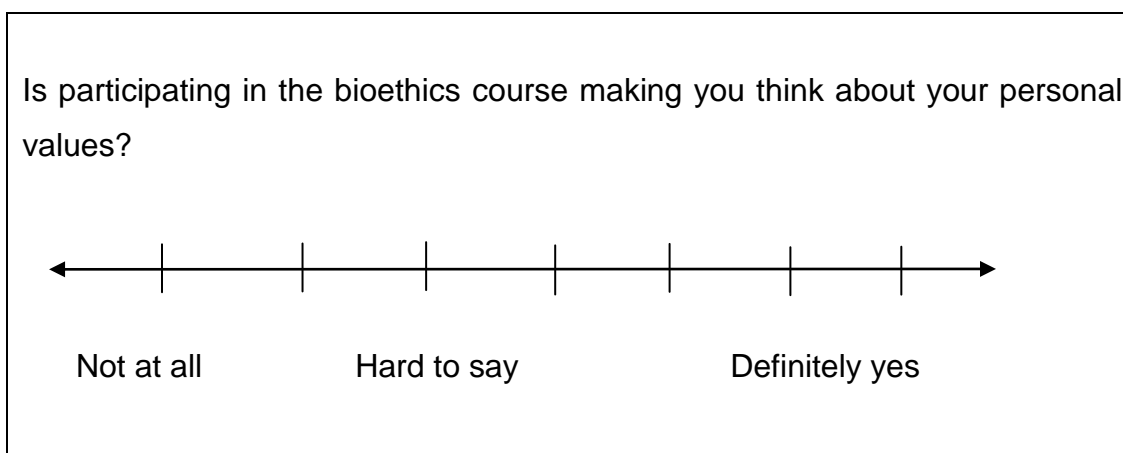


Figure 4.1: Example of a Likert scale item from the initial student survey

However, depicting the scale on a line continuum resulted in a number of students filling in the spaces between the response options. Further, the

wording of the scales was not consistent throughout the initial survey, with the options given being relevant to the question that was asked. Analysis of the initial survey design resulted in substantial changes being made to the format of the more comprehensive EOC survey. These changes, as illustrated in the example below, included students being asked to respond to statements, rather than questions. This was more appropriate to a Likert scale survey where ‘an item is presented as a declarative statement followed by response options that indicate varying degrees of agreement with or endorsement of the statement’ (De Vellis, 1991, p. 68). In addition, the Likert scale response options were altered from the line continuum and were presented as a series of discrete evenly spaced circles, as illustrated in Figure 4.2. All seven circle options on the scale were labelled and the terms (such as ‘strongly agree’ and ‘moderately agree’) were used consistently throughout the survey.

	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
Participating in the bioethics course has caused me to think about my personal values	○	○	○	○	○	○	○

Figures 4.2: Example of a Likert scale item from the EOC student survey

Both surveys were anonymous in order to minimise social desirability bias, where a respondent may wish to impress or to please. However, it is noted that in this project, where students were completing the surveys in a small class environment where they are well known to their teacher and the researcher, this bias may have been difficult to minimise.

The EOC written survey contained 25 Likert scale items and was divided into two sections. Section A contained 14 items for each respondent to endorse or reject according to the described seven-point scale. Each of these items was a statement made by individual key student informants during the first series of one-to-one interviews conducted mid-way through the year. Section B of the survey contained a further 11 statements written by the researcher, to be

rated on the seven-point 'strongly disagree to strongly agree' scale. In addition, Section B contained eight written-answer questions; a question asking students whether they used 11 listed values on a three-point 'yes; don't know; no' scale; and a question asking students to rate nine teaching methods used during the course according to a five-point scale ranging from 'very engaging, engaging, indifferent, boring to very boring'.

To minimise acquiescence or compliance bias where respondents agree with statements as they are worded, statements throughout the EOC survey were given in a mix of both positive and negative forms. In a further attempt to minimise compliance bias the scale on the five-point pedagogical question was reversed (that is, was shown from positive to negative, being 'very engaging' to 'very boring') compared to the negative to positive scale of the seven-point statements (being 'strongly disagree' to 'strongly agree'). A number of the statements in Part B reflected the same enquiry as statements in Part A. This was done deliberately to check for consistency of response. The EOC survey was trialled for understanding and ease of use on three Year 13 students currently attending the school where the researcher's curriculum was originally taught, and two postgraduate student colleagues before the administered form was finalised. Immediately prior to undertaking the EOC survey case study students were given information on how to complete it using a PowerPoint. This information included instructions for completing the Likert scales. As a result of spontaneous annotations beneath Likert scale items being left by students during the initial survey, instructions for completion of the EOC survey included that students were permitted to annotate any of the Likert scale items throughout the survey if they wished. These annotations then became an additional data source. The full instructions are provided along with the survey in Appendix Eleven.

4.6.3 Analysis of the written survey data

The quantitative data generated from the written surveys were analysed to elucidate trends in attitudinal responses across all participating students. Once data were collected and entered into a results grid, checks for errors in data entry, missing data and outliers were made. While some discrepancies between the Likert value recorded and annotations made were noted, no outliers were found and all data recorded by students in the initial and EOC written surveys was included for analysis.

Prior to entering the data into an Excel spreadsheet, a numerical code was applied to the responses where: strongly disagree = 1; moderately disagree = 2; disagree = 3; neither disagree or agree = 4; agree = 5; moderately agree = 6; and strongly agree = 7. Likert question data could then be graphed. Graphical presentation of the data makes the results easy to interpret and clearly indicates the mode (the most frequent response) to a statement.

Following the entry of responses to each survey item for every individual student into the spreadsheet, the SPSS computer programme was utilised for quantitative analysis, with an independent t-test being applied to determine any statistically significant differences in responses between the two case study groups.

4.6.4 The 2011 student survey

Koru College (a pseudonym) determined to maintain the stand-alone bioethics course in the timetable beyond the research year. This provided an opportunity to conduct a written survey with students at the case study school who participated in the bioethics subject in 2011, but who were not participants during the formal research year. The additional data generated from the 2011 student survey enabled analysis that was not originally predicted.

The 2011 course was delivered by Helen, one of the original collaborating teachers, to an accelerate Year 11 class (reflecting the 2010 accelerate Year 11 bioethics class, see section 5.5.3) and to a mixed ability Year 12 class. The 2011 cohort did not include any students who had participated in bioethics in 2010. Therefore, each 2011 student was responding to his or her first year of bioethics just as the 2010 cohort had. The single difference between the 2010 research course and the 2011 bioethics course was the doubling of time allocated in the timetable from one hour per week to two.

In consultation with Helen, who was keen to evaluate the second year of the course, it was decided to administer a survey to the 2011 students that was shorter than the comprehensive EOC research survey, but that comprised selected Likert scale items from it. Fourteen of the original 25 Likert scale items (items 1, 2, 3, 4, 6, 10, 12, 13, 14, 17, 19, 23, 24 and 24), were chosen to form the 2011 EOC survey. These items surveyed responses to personal values development, worldview, thinking processes, skills of argumentation, teaching methods utilised within the bioethics class, and exploration of a novelty effect. The instructions for completion of this survey and the demographic information collected at the end of the survey were identical to the 2010 survey.

The small sample size across the two case studies of the 2010 EOC student survey (n=65) limited the quantitative analysis that could be applied. While the recommended minimum sample size for factor analysis varies (MacCallum, Widaman, Zhang & Hong, 1999), the decision to survey the 2011 bioethics course students from Koru College provided an opportunity for the total sample size to double to 130 students. These extra students were not used in any comparisons involved with the purpose of the research. However, their responses helped strengthen the data used to create a construct for *affective–cognitive response to bioethics*. This included providing a wider mix of intelligence levels, which created a more normal

distribution of population, an assumption of the construct building process (Greene, 2008). The aggregate data on the 14 questions selected from the 2010 research survey to form the 2011 student survey were put under a series of statistical tests including factor analysis using SPSS, in order to create a valid and reliable construct.

Surveying the 2011 bioethics student cohort also provided an opportunity to check for the operation of the Hawthorne Effect. Being aware that they were part of a research project and that they were being observed may have affected the 2010 case study research students' and collaborating teachers' response to the subject and the responses they gave throughout the data collection process. The students participating in bioethics at Koru College in 2011 did not have a researcher in their class and did not consider themselves part of a research project throughout the year.

4.6.5 Key student informant interviews

Key student informant (KSI) interviews were conducted at two points during the year-long research, being at the mid-way point and at the end of the year. Interviews were conducted with 40 of the 78 participating students; nine from Year 11 and 31 from the Year 12/13 group. Twelve students (three Year 11 and nine Year 12/13) participated in the interview process once (that is, in either the mid-course or EOC interview), with 28 KSIs (six Year 11 and 22 Year 12/13) students participating in both interview rounds. As Hammersley and Atkinson (2007) note 'a crucial issue that arises once the decision has been made to collect data via interviews is: who should be interviewed?' (p. 103). Endeavouring to eliminate the possibility of either the researcher or collaborating teachers selecting students who they consciously or subconsciously felt would give only positive responses, a school secretary was asked to undertake the selection of KSIs. The secretary was provided with a list of students participating in the bioethics classes, which had been annotated by the collaborating teachers with a five-point scale for apparent

engagement and a five-point scale for academic ability. The secretary was asked to select KSIs purposively to reflect the variety of ethnic backgrounds present in the school (and thus the wider community) and to provide a balance of Year levels, gender, academic abilities and apparent engagement levels. KSIs were approached by this school secretary and had the right to refuse participation. The school secretary also arranged the interview timetable and arranged release of the students from other academic classes if necessary.

I was provided with a warm, private office in a block of regular classrooms in which to conduct the student interviews. The interviews were semi-structured in that I formulated a list of interview topics (which can be found in Appendix Twelve) that reflected my research questions and that I sought to cover during the interview. However, it was never my intention to ask the interviewees a set of precisely prescribed questions in a given order. Rather, I sought to adopt a flexible and reflexive approach that would allow the conversation to flow in as natural a way as possible (Hammersley et al., 2007). The average length of interview was 23 minutes (2sf) for the mid-course and 26 minutes for the EOC. The interviews were transcribed as soon after recording as was practical. Students were then invited to read the transcript of their interview and to make changes and/or clarifications if they wished. No student requested an alteration to his or her transcript. While highly time consuming, undertaking all the transcriptions myself resulted in a considerable familiarity with these data.

4.6.6 One-to-one interviews with the collaborating teachers

Formal one-to-one interviews were conducted with the collaborating teachers at both the beginning and the end of the year. The initial interviews averaged 20 minutes and the end of year interviews averaged one hour and 10 minutes in duration. These one-to-one collaborating teacher interviews were scheduled ahead of time and occurred in an empty classroom or private

office setting. As with the KSI interviews, I prepared guiding questions for use in the collaborating teacher interviews, but sought to have the interviews flow naturally and not to be precisely prescribed. These guiding questions are presented in Appendix Thirteen.

4.6.7 Informal individual debriefs with collaborating teachers

Early into the study, I learnt not to turn off the MP3 recorder at the official end of the lesson, but to leave it recording until I was leaving the building, as many an informative conversation was held between a student and the collaborating teacher as participants were packing up. Similarly, many an informal conversation about the lesson was held between the collaborating teacher and myself as we prepared to leave the room. Those being recorded during these informal post-lesson conversations knew that the recorder was still operating. Typical topics of conversation during these immediate post-lesson 'debriefs' included discussion about the content and structure of the lesson, the pedagogical methods used, and the students' responses, particularly where an individual student or group of students had responded in an noteworthy way. These informal debriefs are not recorded separately, but occur at the end a particular lesson file and are referenced accordingly. Where these conversations included new material or insights that I felt were not recorded in my field notes during the actual lesson, I would annotate my notes in the car before I left the school campus.

4.6.8 Group meetings with the collaborating teachers

The collaborating teachers and I met for regular scheduled planning meetings throughout the year-long case study. These occurred during the school holidays prior to the start of each new term, and then as close to week four and week seven of each 10-week term as practical. Planning meetings with my collaborating teachers were held outside of the more controlled research environment of the college campus. Many of these meetings were lengthy

(for example, the two-day meeting at the start of the project when curriculum was being selected and that took place in the home of one of the collaborating teachers) and/or were held in a social setting (for example, over a meal in a café or in the staffroom). Rather than attempting to record such meetings digitally on MP3, I chose to record them by note taking. It was common for these notes to be shared with the collaborating teachers in real time as I was writing them. On the rare occasion where I felt it was necessary, I would expand the notes I had taken (from memory) sharing them with the collaborating teachers for their acceptance or alteration as soon after the meeting as possible. Such sharing typically occurred in the staffroom during a recess or lunch break the next time I was on campus and frequently developed into an informal group meeting in itself. In addition to scheduled planning meetings, spontaneous group meetings occurred on a weekly basis as I 'touched base' with the collaborating teachers in the staffroom. The collaborating teachers knew that I was only a telephone call or email away should they need assistance with a resource, wished to discuss an idea, and so on. There was regular email contact on the days I was not on campus. Evidenced by the sharing of resources and lesson plans, it was apparent that the collaborating teachers frequently communicated directly with each other and without me. I did not see this as unusual, but simply in the manner common to any supportive colleagues teaching in the same subject area.

4.6.9 Formal interviews with the school principal

Two one-to-one interviews were also recorded with the school principal; a 20-minute interview at the beginning of the project, and a 26-minute interview at the end. These interviews, conducted in the principal's office, were also formally scheduled in advance. While friendly and open, the nature of the interviews with the principal (the semi-prepared topics for which appear in Appendix Fourteen) was more formal than with the collaborating teachers, or even the KSIs. Partly due to acknowledging the principal in her role as head

of the school, there had also been significantly less opportunity to develop a rapport beyond our professional roles throughout the research.

4.6.10 Student work

To supplement the evidence of learning gathered by the recording and analysis of classroom lessons, the self-reporting by KSIs and the perceived shifts in student abilities reported by the collaborating teachers, specific samples of student work were gathered from three pre- and post-teaching and learning activities. Two of these samples—a Year 11 pre-test and post-test that investigated a student’s understanding of scientific terms and the ethical, cultural and spiritual concerns surrounding stem cell research, and a Year 12/13 survey of attitudes with respect to embryo experimentation—were in written form. The other sample was recorded digitally.

4.6.11 Teacher documentation

The teaching curriculum for the full course was negotiated and agreed upon in a group situation with the collaborating teachers. Once the overview was established, the sequence and content of lessons was inserted into a week-by-week, term-by-term lesson schedule. Each collaborating teacher and I had a copy of this schedule. This schedule was habitually revised during planning meetings, and was adjusted to account for events including a topic taking longer than expected to cover, something of interest and relevance occurring in the media, or a collaborating teacher’s unexpected absence. The detail of how a particular lesson would be conducted and the precise content used to teach the scheduled topic was up to the individual teacher. I had access to these individual teaching plans. However, given that I had detailed field notes from and a full recording of each bioethics lesson, access to a collaborating teacher’s individual lesson plans appeared a duplication of material and I chose not to use this as a data source.

4.6.12 Research journals

At the outset of the project, I provided both collaborating teachers with a spiral bound, hard covered A4 book and invited them to use it to keep a personal journal throughout the project. They would then have the choice to share the journal with me for use as a data source at the end of the course. Although entries were made briefly and sporadically, one collaborating teacher, Helen, did keep a journal, which she freely passed to me for use.

I too began a research journal at the outset of the project. In addition to recording my personal reflections about the participants, nature and progress of the bioethics case study, the entries into my personal journal included a critique of the reading I was undertaking for the literature review and making connections between these and my research questions. Both my field notes and my personal journal form sources of data for this research.

4.6.13 Analysis of qualitative data

Case studies may collect data qualitatively or quantitatively, or by mixed methods (Flyvbjerg, 2011). For this reason, analysing case study evidence is, according to Yin (2003), one of the most difficult aspects of doing case studies:

Unlike statistical analysis, there are few fixed formulas or cookbook recipes to guide the novice. Instead, much depends on an investigator's own style of rigorous empirical thinking, along with the sufficient presentation of evidence and careful consideration of alternative interpretations. (p. 127)

As qualitative data may be analysed in a number of ways, a general analytic strategy is required to facilitate the effective and efficient handling of data. Such an analytic strategy should ensure that evidence is treated fairly, compelling analytic conclusions can be reached and alternative

interpretations may be ruled out (Yin, 2003). Thus, as Flyvbjerg (2011) states 'the case study has its own rigor, different to be sure, but no less strict than the rigor of quantitative methods' (p. 309).

Yin describes four general analytic strategies that, rather than being mutually exclusive, may be used in any number or combination. Table 4.3 describes these strategies and indicates how they are applied within this research case study.

Table 4.2: Yin's (2003) four general strategies for case study analysis and relating their application to the stand-alone bioethics trial

Strategy	Description of strategy	Application to this research
<i>Relying on theoretical propositions</i>	The original theoretical propositions that led to the case study guide the case study analysis. The proposition, which leads to the research questions helps focus attention on certain data, helps organise the case study and to define alternative explanations to be examined (Yin, 2003, p. 130).	This is the first analytic strategy applied in this research. Data gathered from the mixed methods undertaken in this research is organised, collated and presented according to the three research question areas (of values development, cognition & engagement) providing a collective response to each (Cohen et al., 2007. p. 468).
<i>Developing a case description</i>	Less preferable than relying on theoretical propositions but useful when the original and explicit purpose of the case study may have been a descriptive one (Yin, 2003, p. 131).	The original and explicit purpose of this research was not descriptive. Nevertheless, description of the two cases within the research will determine how the thesis chapters are organised and how each case study chapter is individually structured.
<i>Dual use of qualitative and quantitative data</i>	'If quantitative data are subjected to statistical analyses at the same time that qualitative data nevertheless remain central to the entire case study, you will have successfully followed a strong analytic strategy' (Yin, 2003, p. 132).	As described above, both qualitative and quantitative data were collected in the current case study, with the greatest amount of data being qualitative.
<i>Examining rival explanations</i>	Defining and testing rival explanation. This strategy generally works alongside all three of the above. Yin defines three 'craft' rival explanations (the null hypothesis; threats to validity; investigator bias) and six 'real-life' rival explanations (Simple or Direct; Commingled; Implementation; the Rival Theory; Super; & Social).	This was an important strategy within the current research. Data collection included focused efforts to minimise the effect of craft rival explanations, in addition to directed attempts to collect evidence about possible other influences (the described design of the EOC written survey in section 4.6.2 above references an example of each) .

After an investigation of available products, I decided to proceed with the analysis of my qualitative data without the assistance of computer tools. Given that I would need to have clarified the reasons for defining the initial codes that I entered into the computer software in the first place, and that even with the assistance of the sorting functions I would need to apply the analysis (Yin, 2003), it seemed only marginally more time consuming for me to complete the exercise 'by hand', with the added advantage of becoming more immersed in and, therefore, familiar with, the textual data.

Preliminary analysis of the qualitative data generated by participant interviews involved reading all transcripts in their entirety multiple times in order to acquire a general sense of the data. Through sorting, reviewing and reflecting on the transcripts, salient themes/ideas/issues emerged. These themes/ideas/issues were clustered into categories. Interview transcripts were divided into text segments, labelled and grouped to reflect the underlying meaning. Following Miles and Huberman's (1994) summary of analytic manipulation, I placed the data from the KSI, collaborating teacher, and principal interviews in a preliminary order by forming a matrix of categories and placing responses and spontaneous comments within those categories. The matrix included tabulating the number of people who were asked a particular question and the corresponding frequency and variety of responses. Having data tabulated in this manner allowed for the calculation of second-order numbers including means and variances, if required. The body of data was scrutinised for examples that supported and contradicted emerging themes.

Transcripts of the semi-structured, in-depth KSI interviews conducted across both case study classes (n=40) were analysed for evidence of engagement with personal values; engagement with values that differ from their own; development of skills in critical thinking; development of skills in philosophical argumentation, including the ability to identify presuppositions and to support an opinion with evidence; development in the skills of managing self and

relating to others; conceptual understanding of philosophical theories; understanding of science concepts; experience of the teaching methods used; and general interest levels across the full year.

Transcripts of the interviews conducted with the collaborating teachers (n=2) and the school principal were analysed for their perceptions of student learning and benefit from participation in the course, including both affective and cognitive outcomes, aligned to the values and key competency aspects of the NZC (Ministry of Education, 2007). The collaborating teacher interviews were also analysed for personal and professional development.

The results presented in Chapters Six and Seven will be cross-referenced by the presentation by themes that are aligned to the research questions. Claims arising from the data will be developed through analytic induction and progressive focusing, defined by Sinkovics and Alfoldi (2012) as ‘a systematic narrowing and refinement of the research focus *during* fieldwork in order to accommodate highly unique and specific issues (emic) of socio-cultural behaviour’ (p. 821). For Parlett and Hamilton (1972), the first to advocate progressive focusing, it is an approach in which ‘researchers systematically reduce the breadth of their enquiry to give more concentrated attention to the emerging issues’ (p. 18), or as depicted by Sanger (1996) progressive focusing funnels the generation of analytic categories from the very broad to the narrow. The results from the qualitative and quantitative data sources will be combined in order to strengthen the findings presented in Chapters Seven and Eight.

4.7 SUMMARY

Beginning with an overview of educational research methodologies, the opening sections of this chapter (4.2–4.5) position this research project within an interpretivist methodological framework. Six factors have been identified that substantiate the use of a case study approach including, enabling real

time investigation of the bioethics curriculum content and pedagogical method within the bounded, natural environment of the classroom; the posing of 'how/in what way' questions about a contemporary phenomenon over which the researcher has little or no control; and facilitating data collection from multiple sources. The latter section of this chapter (4.6) has detailed the mixed quantitative and qualitative methods employed within this investigation, chosen to maximise the quality of data collection and analysis within this stand-alone bioethics trial.

In order to interpret an act or phenomenon, it must first be described (Denzin, 2001). Accordingly, the following chapter, Chapter Five, describes the bioethics classrooms. The chapter includes a description of the case study school, the case study curriculum, and the participants and learning environments of the two case study groups.

CHAPTER FIVE: THE BIOETHICS CLASSROOMS

Case studies focus on 'relation to environment', that is, context.
(Flyvbjerg, 2011, p. 301)

5.1 PURPOSE OF THIS CHAPTER

This chapter describes the structure of the research case study. The chapter begins by describing the selection of the case study school (section 5.2). From here, the process through which the collaborating teachers were selected and the impact that this had on determining the participating student groups is explained. An explanation of the content of the bioethics curriculum, adapted by the collaborating teachers from the researcher's existing model, follows in section 5.3. The two case study groups are then described. Beginning with the larger Year 12/13 case study, section 5.4 introduces Helen (a pseudonym), one of the two collaborating teachers, and explains her motivation to participate in the project and her goals for participating students. Section 5.4 then describes the composition of the students in the Year 12/13 case study group; how they were selected; where they were taught, and how they were taught. Section 5.5 describes the Year 11 case study group in the same manner, concluding with a clarification of the differences in student academic histories and collaborating teacher pedagogical approaches, between the two case study groups. Section 5.6 details the researcher's differing degrees of participant observation within the two case studies.

5.2 THE CASE STUDY SCHOOL

A desired quality in the research school was that it would reflect New Zealand's ethnic and socio-economic diversity as closely as possible, therefore placing the research curriculum within a more typical social environment in addition to reflecting the wider general population consulted

through deliberative democratic processes. The most recent figures available from Statistics New Zealand (the national census conducted in 2006) showed the ethnic distribution in NZ to be NZ European 67.6 per cent; Maori 14.6 per cent; Pacific peoples 6.9 per cent; Asian 9.2 per cent and African/Middle Eastern/Latin American 0.9 per cent. Three of the 32 secondary schools within a one-hour car journey radius of my home were identified as a reasonable fit with these statistics. I telephoned each of these schools to arrange an appointment with the Principal. In each case, what Hammersley and Atkinson (2007) refer to as 'my initial access negotiations' (p. 49) began with the principal's personal assistant, who acting as a 'gate-keeper' asked me the reason I wished to meet with the principal. I briefly outlined that I was a doctoral candidate and that I was looking for a school that met the given demographics to participate in a research study throughout the following academic year.

Granted an appointment time at two schools, I made my direct approach to the respective principals on the same day. The rationale, aims and objectives of the research were explained to each principal in both oral and written forms, and an offer to provide professional development to the school staff and to present a one-hour bioethics seminar to senior students, as examples of curriculum content, was made. My offer to present a bioethics seminar to all the staff was accepted by the principal at Koru College during the initial appointment and was scheduled for the regular Monday afternoon staff meeting time two weeks later. Following this seminar presentation to the whole staff, Koru College accepted the invitation to participate in the research.

5.2.1 Demographics

Reflecting New Zealand's ethnic diversity, the 1,200+ student body at Koru College is around 66 per cent New Zealand European, 20 per cent Maori, four per cent Pacific Islander and 10 per cent other, including Asian and

African, and international students from South America and Europe. On the anonymous written surveys, the participating student group identified themselves as New Zealand European, Maori, Tongan, Fijian, Fijian Indian, South African, Rwandan, Zimbabwean, Indian, Cambodian, Chinese or Canadian.

Based on census data for households with school-aged children within the catchment area, the Department of Education assigns each school in New Zealand a decile rating. Recalculated by the Ministry following each five-yearly census, a school's decile rating reflects the average family or whānau backgrounds of pupils at the school. There are 10 deciles and approximately 10 per cent of schools are in each decile. Five socio-economic factors are included in a school's decile calculation: household incomes within the school's catchment areas; occupation and employment or non-employment profiles of families with school-aged children; the educational qualifications of the parents within the catchment area; household crowding; and the percentage of parents within the catchment area that receive income support from the government. 'Decile 1 schools are the 10% of schools with the highest proportion of students from low socio-economic communities, whereas decile 10 schools are the 10% of schools with the lowest proportion of these students' (Ministry of Education, 2013). Situated in a community comprising executive housing subdivisions through to a large state housing area, Koru College is rated decile six.

5.2.2 Recruiting the collaborating teachers

Following the whole-staff presentation, 10 teachers volunteered to participate in a second bioethics PD half-day. These teachers came from a variety of academic departments within the school, including science, history, English, physical education, art, economics and transition. From there, eight staff indicated their continued willingness to volunteer for the year-long case study. At this point, the practical aspect of timetabling came into effect. The

timetable at Koru College is designed around 25 one-hour lessons per week. Each full-time subject is allocated four of these lessons. It became apparent that a one-hour bioethics class could be offered to Year 11 students during their timetabled Wednesday study period, and that a one-hour bioethics class could be offered to two separate combined Year 12/13 transition classes, every week.

In the end, it was these practical timetable constraints that resulted in the identification of the two collaborating teachers, Nick (a pseudonym)—a fifth year teacher from the English department; and Helen—an educator with some 25 years' experience in teaching economics and who has been Head of the Transition Department for the past five years. The differences with respect to teaching experience and academic background meant that the collaborating teachers brought a broad set of complementary skills and attributes to the research project. The timetable constraints that led to the identification of the collaborating teachers also directly determined the groups of students to whom the bioethics course would be offered, being any student in Year 11 and any Year 12/13 student enrolled in the Transition Department.

5.2.3 Comparison of composition of the Year 11 and Year 12/13 groups

Seventy-eight students participated in the bioethics course throughout the 2010 academic year. How the participating students were determined and the difference in academic histories and self-perceptions of intellect between the Year 12/13 case study participants and the Year 11 students are described in sections 5.4 and 5.5, the two respective case study sections that follow. This section describes the difference in gender and ethnic diversity within the Year 11 and Year 12/13 case studies.

The Year 11 class began with a ratio of five female students to each male student. This altered during the first half of the year when two more males joined the class, shifting the ratio down to (just over) three females to one

male. There was a one-to-one female to male student ratio in the Year 12/13 case study group from the start to the finish of the year.

In addition, as shown in Table 5.1 below, the Year 11 case study group was less ethnically diverse than the Year 12/13 group.

Table 5.1: Cultural diversity in the bioethics case study groups (values to 3 sf)

Ethnicity	Year 11 Case study No identifying in class of 24	Year 12/13 Case study No identifying in group of 54
NZ European	21 (87.5 %)	26 (48.2 %)
Maori	1 (4.17 %)	16 (29.6 %)
Pacific Islander	1 (4.17 %) ¹	5 (9.25 %) ²
Canadian	1 (4.17 %)	0
African	0	4 (7.41 %) ³
Asian	0	3 (5.56 %) ⁴

- 1 Specifically Fijian
- 2 Specifically two Cook Islanders, one Tongan, one Fijian Indian and one unspecified
- 3 Specifically two South African, one Rwandan and one Zimbabwean
- 4 Specifically two Cambodian and one Chinese

5.2.4 A ‘two case’ case study

The importance of including bioethical and socio-scientific issues within the curriculum has been established in the literature review, particularly Chapter Three. Given that the investigation was testing well-formulated propositions, with substantial preliminary evidence indicating some circumstances in which the propositions were believed to be true, a single case strategy was originally considered adequate to confirm, challenge and/or extend the propositions (Yin, 2003, p. 40). However, the naturally occurring variation both within the type of student, including their ages and levels of academic ability, and between the collaborating teachers, allowed the same bioethics curriculum to be investigated under different conditions and facilitated the

division into two case studies within the one school. A 'case' may be defined as a specific system with boundaries that distinguish it from its external environment (Stake, 1994; Warwick, 2007). Conveniently, the physical walls of the two self-contained classroom settings provided tangible boundaries for the case studies undertaken, and permitted the replication of the bioethics curriculum in two contrasting settings, within the same general school environment. Enabling cross-case analysis, the consequent two case study design strengthens the analytic conclusions arising from the research (Yin, 2003, p. 53).

5.3 THE CASE STUDY CURRICULUM

A 30-lesson (30 hour), full-year bioethics course for senior students was determined in association with the collaborating teachers over a rigorous, high energy, high enthusiasm, two-day meeting early in January 2010, ahead of the start of the 2010 academic year. Following discussion, the collaborating teachers chose to design one core curriculum to be delivered simultaneously to both the Year 11 and Year 12/13 group case studies. This facilitated collegial discussion as the course was presented and evolved throughout the year, and allowed for shared lesson and resource preparation.

The researcher's existing full bioethics curriculum (described in Appendix Two), including topics and resources, was shared at the outset. The purpose of this was not to interrogate the foundations of the established curriculum, but to allow the collaborating teachers to choose what they were keen and comfortable to teach from it. This would be coupled with their experience during the two bioethics workshops in which they had participated during the recruitment process and what they were enthusiastic to supplement and incorporate from their own teaching disciplines. The difficult decision was what to omit. I have noted in my journal:

While Monday saw me in a more leadership role (especially with respect to suggested content and 'how to' when teaching ethical

theory) on Tuesday morning, both Nick and Helen arrived with resources to share and it was clear the 'collaborative' was established, which was delightful. Both teachers are great storytellers and are completely 'at home' with the narrative aspect of the research ... By the end of Tuesday we had this year's curriculum drafted. There are simply too many possible applied issues to cover, so we also have a draft plan for a 2011 Year 12 programme for the school, to follow on from this case study. (Researcher's journal)

As it transpired, the curriculum used at the case study school developed from a single factual situation, that of Theresa Ann Campo Pearson, an anencephalic baby whose parents wished her organs to be harvested and transferred to infants on the transplant waiting list. As demonstrated in Figure 5.1, the case of Baby Theresa formed the basis for an extensive set of bioethics lessons designed to teach students ethical theory, strategies of philosophical argument and critical thinking skills, and to teach and reinforce given scientific concepts. Grounded as it is in organ donation, something most senior secondary students have thought about as they are required to tick a box declaring them an organ donor or not when they apply for their driver's licence, Theresa's story was seen as a starting point that had some relevance for participating students. From this scientific starting point of Allotransplantation, the ethical theories of utilitarianism, Kantian ethics, natural law, virtue ethics and situation ethics were explored along with the medical concept of brain death and the philosophical concepts of consciousness, identity and personhood. In the early stages of the year, students were also introduced to argument theory. Common argument types including slippery-slope arguments were identified and how to structure and critique inductive and deductive arguments was practiced.

Given that tissues and cells as well as whole organs can be transplanted, students were then introduced to the applied scientific technology of stem cell research, including the use of embryonic stem cells. This led to an

exploration of numerous philosophical, cultural and religious responses to the question ‘*When does life begin?*’ As it is not just transfer of living tissues, cells and organs between members of the same species that is possible, but also between members of different species, the curriculum progressed to an exploration of the applied technology of xenotransplantation. This led to discussion of animal rights and rights theory in general, and facilitated a review of the concepts of identity and personhood. Exploration of the philosophical theories of crime and punishment (including utilitarianism, retribution, rehabilitation and restorative justice) and the concept of truth presented as natural extensions to the applied scientific issues and philosophical concepts explored, particularly those of animal experimentation and animal rights. The 28-week curriculum then concluded with an examination of ethical food. Details of the lesson sequence and a comparison of how the programme ran throughout the year in both case studies may be found in Appendix Fifteen.

Teaching and learning is seldom a linear process with one lesson following neatly and discretely on from another. Rather, topics taught and learnt frequently interrelate, thread together and build upon each other over a period. To consolidate and reinforce, learning topics previously taught are reviewed and connections to new concepts are made. The arrows within Figure 5.1 depict this inter-connectedness of the content within the research bioethics curriculum where full arrows indicate lesson sequence and dotted arrows indicate how these topics linked in and were referred back to.

teachers. The shared aims for students participating in the case studies were to:

- develop thinking skills including learning to question internally
- develop self-management skills including listening attentively without interrupting, taking turns and debating without personalising a difference of opinion
- distinguish between sound and unsound arguments by learning to discern and analyse faulty reasoning
- develop skills in philosophical argumentation, including recognising, examining and critiquing underlying presuppositions and assumptions, the validity and soundness of arguments, and the difference between them
- develop skills in communication including skills in oral question making and the ability to make a point plainly and succinctly
- explore their personal values
- explore the values of others (cultural, historical, spiritual); to look at issues from perspectives alternative to their own; and to distinguish possible unforeseen consequences of a particular ethical decision or viewpoint
- learn theoretical ethics. To gain a knowledge of a variety of ethical theories, their principles of guiding action, and their associated strengths and weaknesses
- explore philosophical concepts (including the concept of personhood; the concept of identity).

In addition, the collaborating teachers aimed to reinforce (and where necessary) to teach scientific concepts, including providing the opportunity to better understand the science behind each technology explored; to inform students of developments in science and technology and their actual and potential environmental, economic, political and social impacts; to show students that they have the power of choice; and to reinforce to students that they are responsible for the choices they make and that they owe it to

themselves as members of society to be informed. Vitally, the collaborating teachers aimed to have pupils feel that in bioethics classes every pupil is equally appreciated and that their opinions are sought and treated seriously. This included to facilitate learning by encouraging risk taking, and to provide an opportunity to make mistakes, to obtain feedback and to give well-supported individual opinion. With respect to each of the above aims, the content of the case study curriculum was seen as a resource for assisting students to experience and develop skills and understandings, rather than as a body of facts and concepts for transmission. As science is a compulsory part of the primary and secondary curricula in New Zealand, it was assumed the majority of students would have a basic level of scientific understanding, for example, basic knowledge of the structure of the human body. However, no previous philosophical knowledge was assumed.

5.3.1 Assessment of learning in the trialled curriculum

The reflective, self-involving aspects of bioethics education do not fall easily into the required language of 'outcomes'. Both I as the researcher and the collaborating teachers wished to determine that learning was occurring. In addition to determining to track students' developing use of correct scientific and philosophical terms, along with any development in communication skills including those used in philosophical argument, both teachers devised formative activities for use at the end of lessons, or pre- and post-teaching and learning activities, as forms of assessment. The pre- and post-teaching and learning activities form part of the research data. Examples of assessment activities are described in Chapters Six and Seven.

5.4 THE YEAR 12/13 CASE STUDY GROUP

More important than the curriculum is the question of the methods of teaching and the spirit in which the teaching is given. (Bertrand Russell, 1872–1970)

This section describes the Year 12/13 case study participants and environment. The Year 12/13 case study had the higher number of participating students (n=56), and reflected greater academic and ethnic diversity than the Year 11 case study. Section 5.4.1 introduces Helen, the first of the two collaborating teachers, and describes her motivation to participate in the project and her goals for participating students. Section 5.4.2 describes the Transition Department in which the Year 12/13 case study was centred. How the students were selected is described in section 5.4.3, which is followed by elucidation of classroom interaction including the Year 12/13 case study social and learning environment.

5.4.1 The facilitator

The two Year 12/13 combined bioethics classes that form the Year 12/13 case study were facilitated by Helen, a teacher of some 25 years' experience. Having taught economics for many years, Helen was asked to establish a Transition Department within the college a number of years ago. The Transition Department has grown and at the time the research project was undertaken, Helen headed a staff of four.

The opportunity to participate in the research project arrived within the college at a good time for Helen, who, from a professional development point of view, was looking for a new challenge in teaching. As Helen explained in her initial one-to-one collaborating teacher interview at the outset of the project:

I was looking for something that provided me with a bit more intellectual development. I mean I can teach the transition students with my eyes closed, so this popped up at an opportune time. I was looking for something that was a little bit more challenging; that would stretch me, and allow me to stretch the students more ... I guess, professionally in terms of my classroom teaching, I'm hoping

to gain a lot of more really relevant, interesting things that I can talk to and engage the students in conversation about. (Helen, 100202)

From a personal perspective, Helen was motivated to participate by her interest in the topic material. Having originally trained as an economics teacher, Helen was attuned to ethical issues impinging on business decisions and was interested to extend her ethics knowledge into other academic areas including science, law and politics.

During her initial interview, I asked Helen what she hoped participating students would get out of the project:

I'd like them to start asking questions. The benchmark for me will be if somebody comes in and says 'I went home and I looked that up on the net' or 'I went home and I saw that in the paper'; 'I went home and I talked to mum and mum said ...' So just trying to get some intellectual curiosity going and get them on a process, I think that would be good. (Helen, 100202)

Helen's response reflected her hopes that the course would raise students' curiosity, that they would become engaged and actively think and discuss issues.

5.4.2 The Transition Department

Designed for students who require 'their learning to be presented in a more individualised manner' (Koru College, 2011, p. 77) the pace of study within the Transition Department is adjusted to a student's personal needs. Three subject areas come beneath the umbrella of the Transition Department: Transition, Retailing and Gateway. In addition to supporting students to gain NCEA credits within their other courses, for example, English and mathematics, the transition course offers practically based courses in civil defence, human rights, cultural heritage, curriculum vitae writing, employment

agreements, occupational safety and health, community services, legal aid, and the courts, youth and the law. Designed for students who wish to seek employment in the retail and services industries, the retailing course includes teaching and learning about Consumer Law, stock control, sales and customer service and teamwork. Students can achieve credits towards their NCEA at Levels 2, 3 and 4 in Retailing, as unit standards are purchased from the local Polytechnic. Gateway involves students being placed in an employment situation for approximately 20 days throughout the academic year. In addition to a number of core generic NCEA unit standards, students enrolled in Gateway are also expected to complete a number of industry-based standards.

5.4.3 Formation and composition of the Year 12/13 case study classes

All 62 Year 12 and 13 students enrolled in transition attended a one-hour 'taster' bioethics session that considered the impact of human reproductive technologies on social relationships, which I facilitated during the first week of the 2010 academic year. Students were then permitted to self-select into one of two classes to be run at this level. In order to participate, students had to agree to give up one of their four spells of transition each week, and undertake to maintain their progress through the transition curriculum over the three remaining weekly spells. Parental permission was sought from all students who wished to participate. Fifty-six (90 per cent) of the students enrolled in transition self-selected into the bioethics class.

Both of the Year 12/13 bioethics classes were run on a Thursday. Class One, the morning class (10 am to 11 am) was the larger of the two, with an average of 32 students each lesson throughout the year (allowing for absences due to illness, sports exchanges etc.) compared to an average of 20 students per Class Two, the afternoon class (which ran from 2:15 pm to 3:15 pm).

As described in section 5.2.1, the Year 12/13 cohort was more evenly distributed with respect to gender but more culturally diverse than the Year 11 case study group. The students within the Year 12/13 case study were also more academically diverse in comparison to the Year 11 case study cohort. Students in the 12/13 case study represented the full range of abilities from those requiring significant academic support through the Athena Unit, a supported learning environment for students with physical and intellectual impairments, within the Koru College campus, to those deemed above average for academic aptitude by their subject teachers. While the full range of abilities was represented, the bell curve was skewed to the lower end of the range. As Helen observed 'transition is the non-academic and the non-intellectually challenging type of students really' (Helen, 100202).

Students with learning difficulties and students with family, behavioural and/or emotional problems are over-represented in the Transition Department. Thus, students participating in the Year 12/13 case study comprised a range of backgrounds and families of origin. These included several refugees from war-torn countries, two of whom had spent several years in transit refugee camps in Africa; students with parents who were terminally ill, or who had recently lost a close family member; a student receiving the Independent Youth Allowance, enabling her to live independently from her family with whom there had been a significant breakdown; a student who had moved into the general area with her extended family so that they could be closer to her father who was serving a jail term; students with family associations to the local chapter of a national motor cycle gang; and as mentioned above, several students supported through the Athena Unit. For 10 of the 52 students who participated in the Year 12/13 case study, English was a second language.

5.4.4 Year 12/13 Bioethics classroom interaction

Transition students are often those who, for a variety of reasons, have acquired the personal belief that mainstream subjects are not for them. While any student may fear appearing stupid or foolish, or may fear censure or being rejected by the dismissal of the responses and thoughts they offer in class from time to time, Helen and her staff report that a significant proportion of transition students experience this fear the majority of the time. Many students within transition are neither academically confident, nor academically courageous. Different students within the class employ different strategies for dealing with these fears and perceptions, with some becoming withdrawn and reluctant to offer anything in class, and others becoming pretentious, covering up their fears with 'class clown' behaviour.

A spirit of manaakitanga, of caring for one another, including an atmosphere of trust and acceptance was palpable throughout the whole of the Transition Department in which the two Year 12/13 bioethics classes were situated. An experienced educator of these students, Helen is what Rath, Harmin and Simon (1978) would perhaps describe as an effective 'value-clarifying teacher' (p. 40). As she listened to the troubles individual students were experiencing both within and outside school, her interactions and responses were non-judgemental and she subtly but clearly communicated her belief in them, and that whatever situation they found themselves in, forward movement could be made. Helen's communication with her students was patient and respectful. On numerous occasions throughout the year, I observed Helen go 'above and beyond' what is required of a teacher, for example, taking less fortunate students to Spotlight to buy fabric and organising the making of a dress they would otherwise not be able to afford, so that they could attend the school ball; or personally transporting students to extra-curricular events during evenings and at weekends. Knowing that they were cared for, Helen's students would naturally self-disclose to her. Simultaneously firm (straight and clear in her communication) yet gentle,

Helen also gave of herself and built mutual trust and respect by sharing her own experiences and stories at appropriate times. Helen explained that this built a sense of relatedness; in acknowledging and respecting her honesty the students perhaps tended to be more 'honest' themselves. Through her modelling of honest, direct, personal and respectful interaction, Helen felt that students would understand that they were in a safe environment and that the situations being discussed are real.

The nature of the students and their associated personal student identities, and that students in transition are often on an individual programme and, therefore, do not often function as a 'whole class' during a transition lesson, resulted in a particular pattern of student–teacher and student–student interaction in the Year 12/13 setting as the research year began. Illustrated in Figure 5.2, as new applied contexts and ethical theories or were introduced, students tended to direct their responses and comments through Helen, rather than directly to one another. This altered significantly as the research year progressed (see Chapters Six, Seven and Eight).

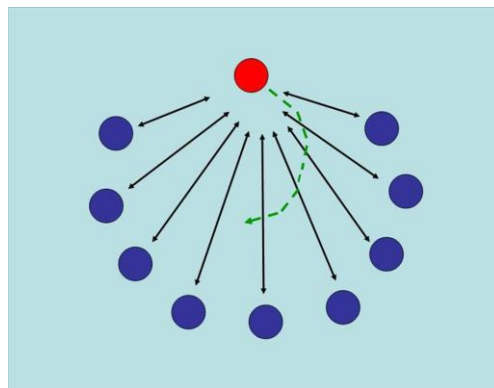


Figure 5.2: Initial Year 12/13 class interaction as new information was introduced

The Year 12/13 bioethics case study classes were held in one of the two conventional classrooms designated for the Transition Department, on the second storey of a standard Ministry of Education circa 1960s classroom block. Within the first few lessons, the students began to spontaneously

rearrange the seating in the room as they gathered at the start of a bioethics lesson, placing their seats around the outside of the room so that they were effectively in a large circle. This unsolicited and subtle change in seating marked the beginning of changes in student-to-student and student-to-teacher communication throughout the course.



Figure 5.3: The Year 12/13 case study environment. Students have spontaneously rearranged the chairs to sit around the outside of the room

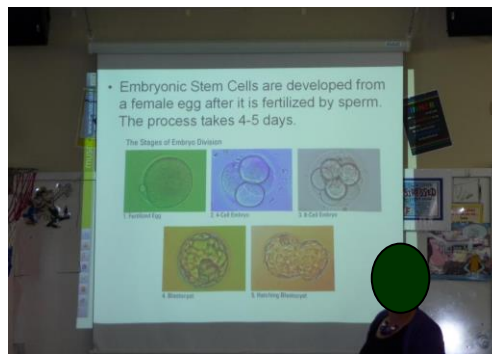


Figure 5.4: Helen using PowerPoint slides during lesson on ‘When does life begin?’

A skilled teacher, Helen was consistently non-judgemental of the students themselves while simultaneously being able to hold a student’s opinion or choice up to critical analysis. Helen (and likewise Nick in the Year 11 case study) clearly enjoyed playing devil’s advocate. Helen made significant use of PowerPoint during the presentation of her bioethics lessons. Although Helen’s classroom was not equipped with a Smartboard, she nevertheless

made extensive use of You Tube and audio clips. Notably, these clips would also differ from those used with the Year 11 cohort, with each teacher choosing clips that they thought more appropriate to the students in their respective classes and/or with which they were more comfortable according to their teaching style and lesson objective.

Helen was practiced at relating concepts being taught to her students' own experience. For example, when introducing the concept of slippery-slope arguments, Helen began by using Koru College's uniform rules including allowing students to have visible tattoos:

Where do we draw the line about what is acceptable and what is not? Is there a difference between a cultural tattoo (or piercing) and others? (Classroom MP3, 100225)

Extremely well prepared, Helen designed activities that would reinforce new concepts being explored, making props ahead of time. One such example of a 'making it tangible' activity occurred when Helen used hats in specified colours and large laminated illustrations of kidneys, hearts and lungs when exploring allo-transplantation and the need for what organs in what numbers, with her students. These props were then utilised to engage students in an analysis of Harris' (1975) Survival Lottery essay, and thus a critique of utilitarianism. The 'Baby Theresa defining utilitarianism and Kantian ethics' laminated card activity described in Appendix Sixteen describes the interaction style prevalent early in the Year 12/13 case study, Helen's use of pre-prepared props, and Helen's subtle seeding of concepts and vocabulary during student discussion.

5.5 THE YEAR 11 CASE STUDY GROUP

It is difficult to overstate the benefits of a meaty, morally challenging classroom discussion. Properly facilitated, discussions like these develop students' critical thinking skills, provide a group bonding

experience, and engage the students in deep, meaningful reflection about the kinds of people they are and want to be. (Elkind & Sweet, 2004, p. 4)

This section explains the context of the Year 11 case study. Following the introduction of Nick, the second collaborating teacher (5.5.1), section 5.5.2 describes the formation and composition of the Year 11 case study class. The social environment and interaction within the Year 11 bioethics class is described in section 5.2.3. This section concludes with an illustrative example of the teaching style operative in the Year 11 case study.

5.5.1 The facilitator

The Year 11 bioethics class was facilitated by Nick, a 30-year-old in his fifth year of teaching. Teaching in the English department, Nick enjoys exploring and debating controversial issues. Having included some philosophy in his degree, he was keen to be involved in the bioethics trial as he saw it as an opportunity to teach about logic and as:

Giving students the means of thinking about issues and ideas, rather than having to go towards a task the whole time, which it seems is what we're doing in English, which is completely different. [In English, it's] 'Yeah, right, you need to do that, that, change that, and then you'll be fine'. But [bioethics] is about thinking. That's rather exciting. (Nick, initial interview, 100202)

5.5.2 Formation of Year 11 bioethics class

A one-hour 'taster' bioethics session was presented by the two collaborating teachers and myself to all Year 11 students in the first full week of the new 2010 academic year. This taster session provided an opportunity to explain to all students at one time that the school was participating in the research and to introduce me, so that the students would recognise who I was and why I

would be in the school throughout the year, building familiarity and trust. Through an engaging PowerPoint using identities such as Bart Simpson and the Peanuts characters, Helen introduced the afternoon and explained the purpose. I then gave a short presentation entitled *Are You My Mother?* (a title borrowed from the P. D. Eastman book of the Dr Seuss Beginner Readers series familiar to many students from their childhood) on developments in human reproductive technologies. Nick followed with a presentation on euthanasia and physician-assisted suicide. Helen then concluded the session, explaining that participation would necessitate a student foregoing their timetabled study spell on Wednesday afternoon. Students were then offered the opportunity to self-select into the class by taking an information sheet and parental permission slip to be returned on a 'first come, first served' basis.

Being the twenty-fifth spell of the week, the Wednesday period 5 'study' spell (2:15 p, to 3:15 pm) has traditionally been viewed at Koru College as an appropriate time to schedule additional lessons, pre-NCEA assessments (for example, in drama), re-sits for NCEA assessments (for example, in mathematics) or field trips (for example, in geography). This practice continued throughout 2010 and resulted in several students having to choose between bioethics and their other subjects on several occasions during the year. During our EOC interview, Nick reflected on this situation:

I think there was a problem with the timetabling of the course in a way, where it is Wednesday period five, which for all other Year 11 students was a study, and so some bioethics students who wanted to be there would on an odd period be forced into doing a drama assessment, or a re-sit, or things like that. (Nick, 101118)

This, in turn, was reinforced by comments from KSI such as:

It's been disappointing because every now and then I haven't been able to come to a bioethics class and people have talked about it and

I've gone 'Oh no! I don't know what this issue was that you discussed!' (Dan, 101104–01)

In this way, the scheduling of NCEA revision, preparation and re-assessment lessons during the Wednesday spell five times affected the number of students attending a given Year 11 bioethics lesson. Numbers fluctuated between 17 and 24, with an average of 22 students attending any one lesson.

5.5.3 Composition of the Year 11 bioethics class

The self-selection process recruited positive and enthusiastic students. Twenty students initially opted in. When asked why they had chosen to opt into the class, KSIs reported that through the taster session, bioethics looked 'interesting' and 'different'.

Students were told at the taster session that Nick Low would be teaching the course. Young, male, handsome, well dressed and personable, it is appropriate to acknowledge the possibility of a 'Mr Low factor' at work in the self-selection process. This may be one reason for the initial 5:1 female to male student ratio in the Year 11 class described in section 5.2.3. However, there were no obvious signs of this evident during informal 'playground' conversations with participating students, nor during the KSI interviews.

From the outset, the Year 11 class included a group of approximately 10 students who had been together in an accelerate class since Year 9 and 10 (and in several cases, at Intermediate school prior to this). These accelerate students arrived to the bioethics class with a strong student identity and level of personal confidence. Not only were these students academically able, they identified themselves as such as indicated by these excerpts made matter-of-factly, and without any hint of arrogance, during KSI interviews:

It was kind of like, okay if one of my teachers who knows how good I am at school and all that type of stuff is coming up to me and saying 'you would excel at one of these things'. (Miriam, 100812–02)

That's always good, to make the brain work. Because generally at school I will just skim through classes because I am able to. (Sabrina, 101028–02)

Teachers of their other timetabled subjects were asked to rate the students participating in the Year 11 bioethics class for academic intelligence on a five-point scale from limited, to below average, to average, to above average, to talented. The students within the Year 11 group who were not already identified as talented from the accelerate cohort, were all ranked as of average to above average ability by their subject teachers. However, this was with the exception of Max. A section of dialogue from the end of project interview with Nick illustrates the impact that the bioethics course had on some participating Year 11 students:

It's exciting seeing students such as Max who in other classes, teachers said he was removed; didn't do any work—'what is he doing there?' one teacher said quote end quote. But to see him so engaged, and him really putting forward his thoughts and then listening to people's responses and coming back—and really often taking a different tack to other people ... And outside of class he has come up to me and said you know, 'I want to do bioethics', in terms of 'how can I make a career out of this?' Yeah, like 'what lectures can I go to? What can I read?' And that's marvellous. (Nick, 101118)

Both Max's level of contribution to the class, and the quality of that contribution were acknowledged by his fellow participants through spontaneous comments including, for example, the classroom interaction that followed a thoughtful response from Max to a clone of you not being the same as you and therefore not challenging either's uniqueness because

clones would experience things in a relatively 'different' time. At this point, Bree enquires of Max 'why don't you respond like this in other classes?' (Classroom MP3, 100519); and from her EOC interview, Sabrina's spontaneous comment 'yes, I think I would fully just praise Max for bringing up all these points that I wouldn't think of'.

Part of the accelerate cohort, it is also appropriate to expand the contribution and impact on class interaction of John's Asperger's Syndrome.

I mean you've got John sitting there up the front with Asperger's Syndrome and he's coming from almost an unemotional, detached view, and bringing these things from the logical point. (Nick, 101118)

Aloof, but polite and with a certain intangible vulnerability, John's logical objective contributions can be illustrated through his response to the Jim dilemma, used to explore aspects of utilitarianism in lesson three (10 March 2010). The substance of the Jim dilemma is as follows:

Jim a hapless tourist and collector of botanical specimens finds himself in the central square of a small South American village where Pedro and his band are about to execute 20 innocent village residents. There have been recent acts of protest against the government and the government wish to remind its citizens of the advantages of not protesting. After establishing that Jim is there purely by accident, Pedro declares him an honoured international guest. Captain Pedro offers Jim the guest privilege of killing one of the 20. If Jim accepts then the other villagers will be set free. Of course, if Jim refuses, Jim will be free to leave, but all 20 will die. The 20 against the wall and the other villagers understand the situation and wish Jim to accept.

Nick lined a number of students against the wall in role play and cast various class members in the role of Jim. While other students wrestled with issues such as wanting to ask for a volunteer or choose the

oldest/weakest/ugliest/the one with the criminal record, or simply questioning how they could shoot anyone, John calmly counted '1, 2, 3, 4, 5, 6, 7, 8, 9, bang'. He then proceeded to tell us that this was 'decimation' and was how the Roman army historically inflicted punishment, with the death of every tenth member of the rank and file. Neither Nick nor I knew this, nor anyone else in the class. In this instance, the class respected John's ability to firstly make a definite decision, and secondly that his decision was based on a logical/historical reason. It was seen as 'fair' and 'random, not judgemental' (student responses, classroom MP3, 100310).

In summary, rather than being 'normally' distributed, the academic intelligence of the Year 11 case study student cohort was skewed towards the above average to talented end of the bell curve.

5.5.4 Year 11 bioethics classroom interaction and illustrative examples of teaching style

The confidence levels of students within the setting of the Year 11 bioethics class was heightened as the accelerate cohort were both socially familiar and experienced at discussing/debating with each other. This significant, 'core' accelerate group within the Year 11 bioethics class felt free to share their opinions, never holding back out of fear that their view would not be appreciated.

And that's good because most of our bioethics class are friends—like I have known most of these people for ages—and I have been friends with them as well. Like I have been friends with half the class and I have had classes with all the others. So we all know each other and we are not afraid to voice our opinions. So we will just say it, and half of us are loud mouths anyway from the accelerate class and we will say it anyway. (Sabrina, 100628–02)

Year 11 was a student-centred classroom, with each lesson essentially being a meeting of minds to solve problems and explore ethical theories. Through skilful questioning and seeding of ideas, Nick facilitated the students 'discovery' of concepts—the students discerned and uncovered; they were not 'told'. That is, rather than pass discrete information to students, Nick allowed genuine exploration that generated knowledge. The knowledge generated was in the form of both academic understanding and personal insight. Having discerned this knowledge for themselves, the students appeared to gain a sense of 'ownership' of it. I note remarks such as 'students discover; they are not told' in the margins of my observation journal.

An example of students 'generating' knowledge for themselves, which occurred early in Term 1 when Nick described the real-life case of Baby Theresa, is fully described in Appendix Seventeen.

The level of student teacher interaction in the Year 11 class was high from lesson one. When Nick asked a question or introduced a new concept for discussion, he invariably received one, and usually numerous, student responses:

And I talked to a lot of staff members about the enthusiasm for learning, and often management issues came through—the over excitement—you know the whole class putting their hand up at once, which is things teachers have never heard of really. (Nick, 101118)

Further, the level of student-to-student interaction was high. It was common for one student to contradict or endorse another student directly:

They did form a good bond as a class, that Year 11 class, where they felt safe to share. There was no-one dragging it down in terms of 'Oh you're stupid for saying that'. It was always very supportive and 'Oh yes, interesting point'. (Nick, 101118)

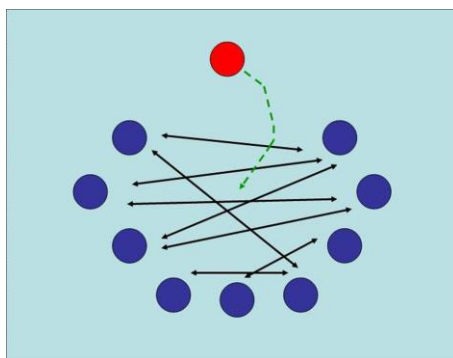


Figure 5.5: Year 11 class interaction as new information introduced

Within the first few lessons of the course, it became common for Nick after introducing a topic for exploration to step back to allow the discussion to flow between the students rather than through him. Only when the discussion became energised to the point of students talking over one another, would Nick step back in:

Sometimes I wasn't even there as well—Like I would just fade away a bit and let it happen. It had a natural way of people responding and that sense of 'no—I want to say something' without it becoming chaotic. You know, at times I had to say 'no, wait—you, you, you and then you, and then you and you' [laughter] and as I said that was exciting seeing so many students wanting to participate. (Nick, 101118)

The students acknowledged and appreciated the peer teaching and learning:

I find it one of my most enjoyable classes because I love the way we can just have this discussion, but we are all making good points. Like I love the way it is always good fun to hear everyone's points and have a big class discussion about it and you all feel like what you are doing—you are kind of all putting something into it, and you are all taking something away from the learning. (Sabrina, 100628–02)

The content of class discussions was 'clean'; the focus was on the topic material for the lesson rather than the examples used to illustrate the topic at hand. For example, in the second lesson for the year, which considered how

to structure a good argument, the Year 11 students focused more on 'argument theory' than the illustrations used to demonstrate, for example, a slippery slope. That is, the examples were recognised as an illustration and not for debate in and of themselves, resulting in few tangents being taken during the lesson.

Making excellent use of curiosity and suspense to engage students, Nick demonstrated that a good capture makes students want to respond—that it grabs them both emotionally and intellectually. Generally speaking, emotional engagement occurred first. Nick would then guide the students into the intellectual explorations, challenging them, stimulating their thinking and promoting academically rigorous debate. More often than not, each lesson would begin with a provocative opening. This varied from arriving into a pitch-black classroom, to arriving into the classroom with a confrontational slide (visual) already set up on the Smartboard, to arriving to the classroom and being individually greeted at the door and given an envelope with the instruction 'not to open it yet'.

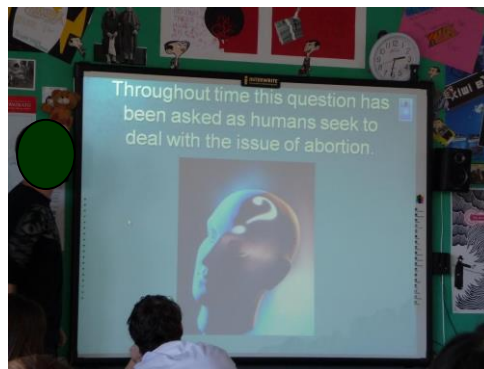


Figure 5.6: Use of PowerPoint in Year 11 case study class

Like Helen, Nick made significant use of PowerPoint during the presentation of his lessons. Working collaboratively, Helen prepared the majority of the PowerPoint slides and shared them with Nick, who modified them as he felt appropriate. Nick's modifications usually involved deleting the number of slides and examples used, and/or the insertion of a provocative image.

Notably, Helen’s presentations contained many more slides and examples than were used by Nick.

Nick made excellent use of the Smartboard available in his teaching space, within the bioethics lessons. Already proficient in the integration of the Smartboard into his English lessons, Nick had looked forward to the opportunity to expand his use of the Smartboard and its many functions within the bioethics class:

Certainly, using the Smartboard—that will be exciting for me as well because it will give me options that I wouldn’t necessarily use in an English class. Certain functions such as the recording. We could have a discussion, we can record it and then we can play it back, and then we could say, now ‘pause it there. Now you said ...’; ‘what do you ...’ that sort of thing. And certainly just practical things such as it will have the screens that we looked at last time, especially with it being just once a week—‘Right this is what we covered last week, this is the brain-storm that we did, here on the board. Remember this? Remember that? Do you still feel the same about that?’ (Nick, 101118)

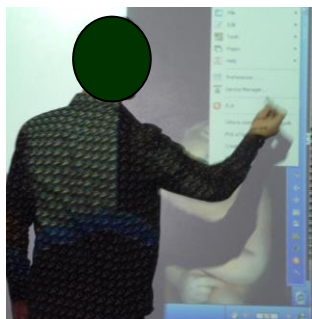


Figure 5.7: Nick made extensive use of the Smartboard in the Year 11 case study class

In addition to the functions mentioned above, Nick also used the Smartboard to have students record their decisions electronically rather than, for example, having them form a physical continuum. He also made use of the

Smartboard to look up additional information on the spot and importantly, the Smartboard provided Nick with a technique for overcoming his confessed lack of confidence with some scientific language and concepts. When asked in his initial interview what daunted him about teaching bioethics Nick responded:

I think if anything, I'm nervous about some of the science content, as far as feeling that I don't know enough about it to deliver perhaps. Specifically scientific lingo-jingo sort of, jargon, which I have a natural fear of, that I will have to overcome. (Nick, 100202)

It was apparent that Nick had spent some time considering how he might manage the teaching of scientific concepts within the bioethics course, as he continued:

[Certainly] with the Smartboard—there are certain cheats that I can do, where I can record myself saying certain words beforehand and I can play that back. Like just a small sequence perhaps about say fertilisation of the egg. I could record that and play the diagrams at the same time. So there are certain ways around that for me. (Nick, 100202)

From the outset, Nick was excited by the different sense of time that the bioethics course offered, and acknowledged this with respect to expanding his use of the Smartboard:

I don't really use these functions when teaching English and so on. I don't seem to have the time, or space of time. Even though it [bioethics] is just one hour, it seems a different sort of time that we've got—it's a time to make sure students know what they are dealing with. [In bioethics] we are dealing with issues and we can go at our own pace in a way—you don't *have to* include that. You know, you've got a story up your sleeve, but we've not quite finished this one yet, so we will leave that for another day, perhaps. (Nick, 100202)

Story-telling and the use of narrative was a further important professional development aspect of participating in the research for Nick:

And another thing I think I will get out of it as far as PD for myself, is developing the idea of story-telling in the classroom, which I have dabbled with a bit, but I have never really used it as a main teaching strategy ... I've always liked that idea of giving a story and getting the students to think about it. You know 'what does this mean?' and then relating it to an issue and more stories. A lot of the stories I will be fine with telling. And I think I will be fine creating my own stories as well. And I like to adapt stories, change things. Throw in a little surprise there—what about this; think about that, which I think will come rather naturally to me. (Nick, 100202)

Indeed, the dynamic nature of the Year 11 bioethics class was added to by Nick's aptitude for dramatic story-telling and his predisposition to assume a character role as he was teaching.

Each one-hour bioethics lesson throughout the year in the Year 11 case study class incorporated between five to eight different teaching and learning activities. These included permutations of:

- story-telling (authentic and hypothetical)
- PowerPoint directed whole class teaching
- video and audio clips
- whole class discussion
- whole class activities including for example:
 - recording ranking on Smartboard
 - sorting cards in silence
 - role playing a scenario, for example, the Panel Game or Lifeboat scenario
- silent reading to self
- group activities including for example:
 - think, pair, share; or 1,2,4

- mind-maps
- brainstorming
- hot-air balloons
- role plays
- use of lyrics and music.

5.6 COMPARING MY ROLE AS PARTICIPANT OBSERVER IN EACH CASE STUDY CLASSROOM

This section describes the different ways the collaborating teachers responded to my presence in the classroom. Visitors, some of whom participated in the classes, others of whom simply observed, are also briefly described.

While both Helen and Nick appeared very accepting of my observational presence in their lessons, they responded to me in different ways during the lessons. In contrast to Helen who involved me within the class on frequent occasions, checking a fact or figure; asking me for clarification; or suggesting that I should answer a particular question, Nick seldom involved me in any teaching moment with the whole class. There was no hint of hierarchy or deference in the class communications between Helen and myself. Rather, questions, clarifications and responses were conducted in an air of collaborative team-teaching. My responses were brief and delivered from my sitting position at the back of the room. While Helen was referred to or addressed by students as 'Mrs Stronach' or 'Miss', I was known by my first name, Deborah, within the Year 12/13 case study. This was not formally discussed with Helen before observations began—it was just something that evolved and with which I was entirely comfortable. In contrast, Nick, addressed as 'Sir' or 'Mr Low' within the class, and the Year 11 students referred to me as 'Mrs Stevens', with the students' use of 'Deborah' being saved for a 'cheeky' moment.

I sat in the same location at the back of the room for each respective case study class throughout the year. In the Year 12/13 setting, the MP3 recorder was placed at the front of the room on Helen's desk. The presence of the MP3 recorder went almost unacknowledged by the Year 12/13 classes, with some students only being reminded of its presence if, during a lesson, I moved it to focus on a group working on a specific activity. A small number of students in the Year 12/13 case study expressed curiosity about what I was recording in my field note journal and during the first two weeks, several approached me to enquire. At these times, I showed them the opening page for that lesson and explained that I was recording factual information including the number of students in the class that day, the type and order of activities undertaken, the physical arrangement of the classroom and notes on verbal interactions. Following this initial curiosity, no further interest was expressed in my field notes by any of the participating students.

Within the Year 11 case study setting, the MP3 recorder remained with me at the student desk at which I was seated at the back of the room. During group activities, I would move the MP3 and myself to beside one group, or around different groups, as appropriate.

5.7 SUMMARY

This chapter has described the structure of the stand-alone bioethics trial, which is the focus of this research. The process of selecting Koru College, a state secondary school that reflects New Zealand's ethnic and socio-economic diversity as closely as possible, and in which the two case studies are situated, has been described. The process that identified the two collaborating teachers who facilitated the full-year bioethics course, also determined the 78 participating students who comprised the two distinct case study groups; the Year 12/13 case study based in the Transition Department; and the Year 11 case study, predominantly a group of advanced learners. The teaching and learning environment and the social interaction within the

respective bioethics classrooms have been described, and the bioethics curriculum adapted for the trial introduced.

As the Year 12/13 case study involves the larger number of students (n=56), the results from this group will be described first in Chapter Six, which follows.

CHAPTER SIX: THE YEAR 12/13 CASE STUDY

When students participate in a real discussion, in which they formulate their thoughts on a topic, express their personal judgments, and are respected for their opinions by the other participants, then real learning takes place. (Elkind & Sweet, 1998)

6.1 PURPOSE OF THIS CHAPTER

The first of two results chapters, the focus of this chapter is the Year 12/13 case study. Section 6.2 begins with a description of the students' responses to the initial survey conducted after nine of the 30 bioethics lessons. The sections in the remainder of the chapter organise, collate and present the results of the quantitative and qualitative analyses of data gathered across the year, particularly KSI interview responses and the more substantial EOC written survey.

From section 6.3 onwards, the results are presented in the order of the first three research questions, articulated in Chapter Three, which guided this research. Section 6.3 presents results with respect to affective outcomes for participating students, including values development and expansion of worldview. Exploration of the cognitive outcomes then follows in section 6.4. This includes in what ways, if any, the teaching and learning of bioethics as a stand-alone subject enhanced a participating student's skills of critical thinking and reflective judgement, including the use of argumentation and evidence-based reasoning. Section 6.4 also evidences academic learning. Section 6.5 examines how the affective and cognitive outcomes demonstrated by students participating in the bioethics curriculum relate to the values and key competency requirements of the NZC (Ministry of Education, 2007). As the chapter concludes, section 6.6 focuses on three Year 12/13 case study students. Through two narratives, this section

describes two significant breakthroughs that demonstrate affective and cognitive learning and the development of the key competencies of relating to others, managing self and participating and contributing, which resulted from participation in the bioethics course.

6.2 YEAR 12/13 INITIAL SURVEY RESULTS

Helen administered the initial Likert scale survey to the Year 12/13 students at the beginning of the second semester. The students had participated in nine lessons and had just completed an exploration of the 'concept of personhood'. Detailed results generated from the 45 Year 12/13 students who completed the initial survey are tabulated in Appendix Eighteen. These results show that nine lessons into the research curriculum, 71 per cent (32/45) of students reported that the bioethics course was trending them to think about their personal values. Two-thirds of the students (30/45) recorded that the bioethics course was causing them to consider the values of others, while a quarter reported that it was difficult to say at this time. With respect to cognition, 84 per cent of the Year 12/13 case study students reported on initial survey that participating in the course was causing them to analyse things in a different way, with the other 16 per cent reporting that it was 'difficult to say' at this point.

While more than a quarter (26 per cent) reported that participation in the bioethics course was changing the way they thought and responded in other subjects, 49 per cent of students reported finding this 'difficult to say' at this stage. Thirty-seven per cent of participating students reported that they contributed 'more' to 'much more' during a bioethics class compared to their other subjects, and the majority (82 per cent) of the Year 12/13 case study students found the balance of teacher talk and practical activity within the bioethics classroom 'just right' at this stage. At this initial stage, 65 per cent of students had talked about issues raised in the bioethics class at home, either

'a few times', or 'frequently', while 50 per cent reported raising the issues discussed in the bioethics class in other subject classes.

In addition to the nine Likert scale questions, the initial survey invited students to give written responses to two questions. Eighteen of the 45 students gave written responses to the first question *What suggestions for improvement to the course do you have?* Of these, 16 (89 per cent) stated that they had no suggestions for improvement. One Year 13 male participant suggested the course would be improved if it included more topics on 'Choices of who lives and who dies', while a Year 12 female student suggested 'more videos of things that have happened'.

Twenty-six of the 45 students gave a response to the second question *What positive comments do you have about the bioethics course?* As tabulated in Appendix Eighteen, the themes that the course: was encouraging students to think; was encouraging students to consider different perspectives; was exposing students to new ideas; and was interesting, enjoyable and fun, emerged repeatedly. Many written responses included more than one category of response, for example, affective and cognitive. A typical example, made by a 17-year-old, Year 13, female was:

I have really enjoyed bioethics so far. It has taught me a lot and has made me change the way I see things and think in-depth more about decision making.

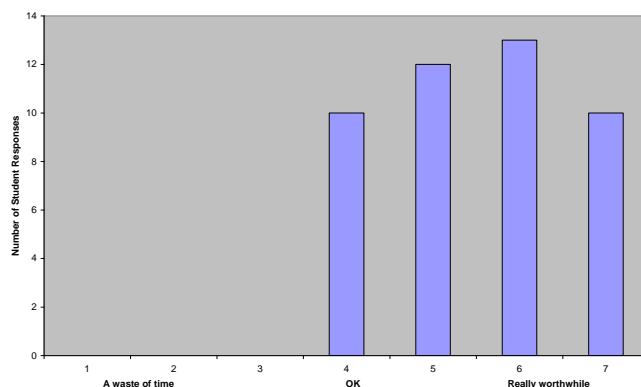


Figure 6.1: How are you finding the bioethics course so far?

The first question of the initial survey asked *How are you finding the bioethics course so far?* with possible responses on a left to right scale from 'A waste of time' through to the neutral 'OK', to 'Highly worthwhile'. As shown in Figure 6.1, all students recorded an 'OK' (4/7) to 'highly worthwhile' (7/7) response. However, one Year 13 male student who recorded a 5 for how he was finding the bioethics course so far, went on to write 'I am finding it really interesting!!' in response to the second of two written response questions included at the end of the survey. Similarly, a Year 13, female, who recorded a 4 (OK) for the same item responded 'It is really worth it, knowing different opinions toward different topics'. Such apparently incongruent responses demonstrate that Likert scale surveys do not provide uncompromising information, but rather represent trends. Therefore, in the sections that follow, numerical data are supported by qualitative data, enabling the expedient exploration and clear presentation of patterns, relationships, comparisons and qualifications across the data types (Cohen et al., 2007).

After nine bioethics lessons responses from the Year 12/13 students demonstrated a strong trend towards worthwhileness; towards engaging with their personal values and the values of others; and towards analysing things in a different way, as will be shown in the sections that follow, these initial positive trends were maintained, and in many instances strengthened, across the full year of the research project.

6.3 AFFECTIVE OUTCOMES

This section groups results from mixed methods utilised across the year with respect to the first research question: affective outcomes for participating students. Results demonstrate that participating in the bioethics course caused a considerable majority of students to engage with their personal values; to question their personal values; to acknowledge views that differ from their own, and to understand these; and to expand their worldview.

Results for the EOC Likert scale items are presented in graphical form throughout this section. The specific distribution of responses for each figure may be found in tables presented in Appendix Nineteen.

6.3.1 Personal values

Written survey and interview responses indicated that participation in the bioethics course led the substantial majority of students to engage with their personal values. In addition, bioethics was identified by the substantial majority of students as distinct from other subjects in providing an opportunity for the exploration of values and alternative worldviews.

During the mid-course interview process, 14 KSIs were asked specifically whether participating in the bioethics course was causing them to think about their personal values. All 14 answered in the affirmative with responses ranging from 'Yes' to 'Definitely!' All 14 clarified their 'Yes' by adding spontaneous information, including eight students who stated that participation in the bioethics course was causing them not just to think about, but also to question their personal values.

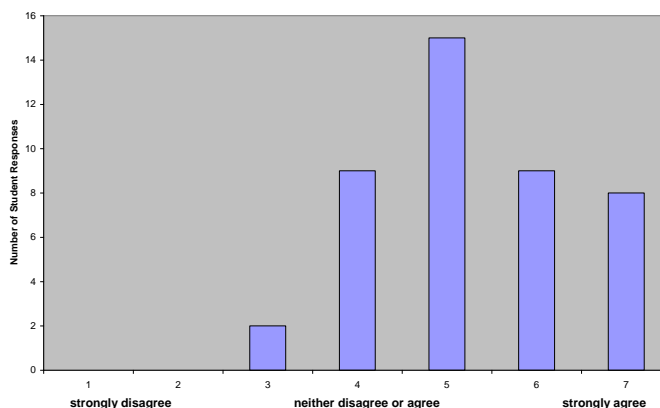


Figure 6.2: Participating in the bioethics course has caused me to think about my personal values

Three EOC items related to personal values. As presented in Figure 6.2, at the end of the year, 74 per cent of students agreed to strongly agreed that

participating in the course had caused them to think about their personal values.

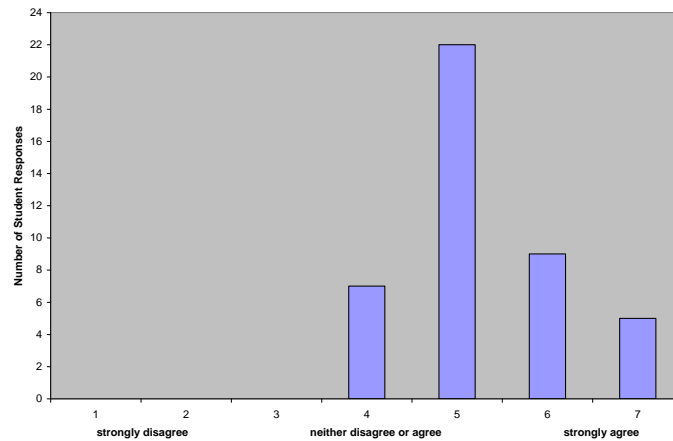


Figure 6.3: You learn more about who you are in bioethics because it brings out your personal point of view

Eighty-four per cent (35/43) of Year 12/13 students agreed to strongly agreed that they had learnt about themselves, as participation in the bioethics course had brought out their personal viewpoint (see Figure 6.3). While seven students (16 per cent) recorded a neutral response for this item, no student disagreed.

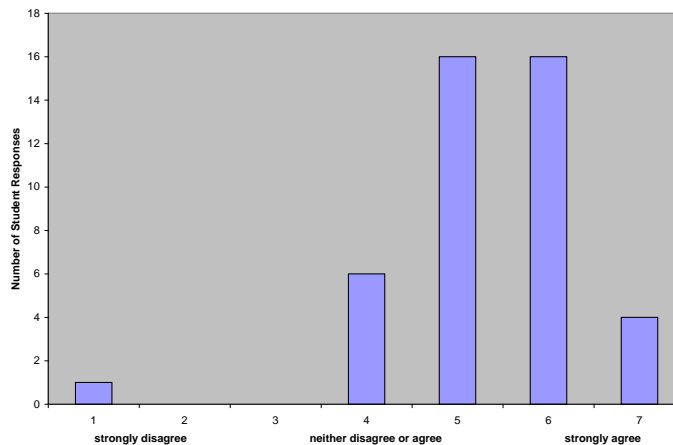


Figure 6.4: The bioethics class makes you question yourself and your values

Eighty-four per cent of Year 12/13 students also agreed to strongly agreed that participation in the bioethics class had caused them to question their personal values (see Figure 6.4). One student (a Year 13 female) strongly disagreed with this item and six students (14 per cent) recorded a neutral response.

The EOC written survey included three open-ended questions asking students in what other subjects they had the opportunity to explore and discuss personal values, ethical issues and personal worldview, respectively. As tabulated in Appendix Twenty, the majority of students responded that no other subject they had undertaken at secondary school asked them to explore their personal values, discuss ethical issues, or engage with their personal worldview. Twenty per cent (9/43) of the Year 12/13 students acknowledged the values aspect within the subject of community, sports and leadership, and 14 per cent (6/43) recognised English as a subject that may on occasion require engagement with personal values. No science subject, a curriculum area where bioethics units, if taught, are traditionally included, and in which the NZC requires the exploration of ethical issues to be included within senior biology, was named in response to the written-answer survey question referring to personal values exploration. Three students annotated their 'None' response to the written question *In what other subjects do you have the opportunity to discuss your worldview?:*

None. Typical school teaches you nothing relevant about the real world. (Year 12, male)

None. We haven't discussed worldviews in any other classes. (Year 12, male)

None. But I would really like to. People deserve to be able to let out their own points of view and feelings towards things. (Year 12, female)

Written survey and interview responses reflect that for the majority of Year 12/13 case study students, bioethics was distinct from other subjects in providing an opportunity for values exploration, teaching and learning.

6.3.2 Worldview

Analyses of data generated through the survey, interviews and observation evidenced that participating in the bioethics course led the substantial majority of Year 12/13 case study students to expand their worldview.

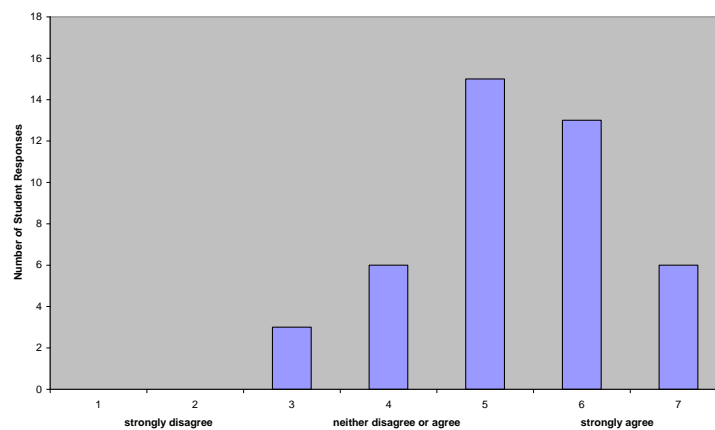


Figure 6.5: Participating in the bioethics class changed the way I look at the world

Two EOC survey items were designed to explore the perceived effect, if any, that participating in the bioethics course had on personal worldview. Seventy-nine per cent (34/43) of the Year 12/13 cohort agreed that participating in the bioethics course changed the way they looked at the world (see Figure 6.5).

Ninety-three per cent (40/43) of students agreed to strongly agreed that bioethics made them think about things from a different point of view (see Figure 6.6). Seven per cent (3/43) of students recorded a neutral response, and no student disagreed with this item.

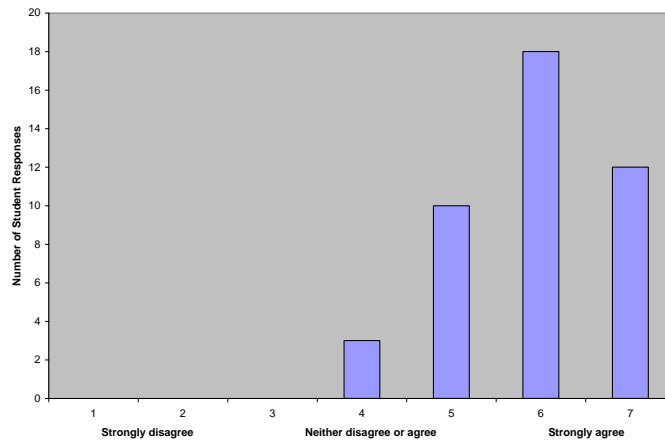


Figure 6.6: Bioethics makes you think about things from a different point of view

The clear positive trend of agreement that participation in the bioethics course expanded students’ worldview evident in the written survey was supported during the interviews when students described that they had learnt to think about things from different perspectives. The following excerpts are illustrative:

I started to see things—I started to get different ideas from different people like listening to those other people giving their ideas, so that I started to take different ideas from them. (Watende, 100624–02)

Like normally if I think something I just look at it from my point of view—I don’t see it from other people’s—but now I can see it from everyone’s point of view and I understand that now. (Dion, 100623–07)

Through the bioethics course many students realised that different people may view the same issue in different and diverse ways. As the following excerpt from Tom illustrates, many students realised that not everyone responds in the same general way:

I've found it interesting because everyone has a different opinion about what should happen and I had never really thought that people would be that different to my ways of thinking. (Tom, 100628–05)

Rather than the world being one way that he was simply reading and, therefore, that is how everybody would see it, Tom had realised that reality is open to interpretation.

During the interviews, numerous students linked the ideas of acknowledging and questioning their personal values with a widening of their worldview, and the construction of new knowledge, as the following excerpt from Leah illustrates:

I guess it's like the way you have been brought up as well. Like you know what is right and what's wrong because of your experience and stuff. So there's like whatever I know and when we do a new topic, like what I already know of it I will put into it, but then I learn more, I change it and I think how come I thought that? (Leah, 101026–01)

Acknowledging that she comes to something new based on her family of origin, her ethnic, cultural and social background, Leah realised that personal interpretation can shift. In the time she had taken to explore each new bioethical issue, Leah had gained a greater understanding of how she, and others, view and respond to that issue. Dion, Tom and Leah are illustrative examples of how students participating in the bioethics course realised that the world was not a certain way; and given that things are not a certain way, personal opinions can change. This opens up a door for conversation, understanding and tolerance.

Spontaneous declarations of the changes they have observed in their own thinking by students such as Dion, Tom and Leah, suggest that the Year 12/13 students were engaging in the process of critical thinking, an essential element of which includes assessing one's own thinking (Kahneman, 2012).

Leah's comment in particular, evidences the NZC (Ministry of Education, 2007) statement that competent thinkers 'reflect on their own learning, draw on personal knowledge and intuitions, ask questions, and challenge the basis of assumptions and perceptions' (p. 12). The strongly emerging theme of changes in personal thinking interweaves throughout the following sections on cognitive outcomes (6.4) and development of key competencies (6.5).

6.4 COGNITIVE OUTCOMES

This section presents responses related to the second research question, which investigated the cognitive outcomes for students participating in the bioethics curriculum. Section 6.4.1 evidences the positive development of skills of critical thinking reported by all Year 12/13 case study students. The development and practice of skills of philosophical argument (6.4.2) and evidence-based reasoning (6.4.3) reported by the considerable majority of students, is followed by evidence of academic learning (6.4.4). In addition to being firmly interwoven with each other, the areas of critical thinking, development of skills of argumentation and evidence-based reasoning interconnect closely with the competencies of relating to others and managing self, discussed in section 6.5.

6.4.1 Critical thinking

Participation in the bioethics course developed and expanded students' critical thinking skills. Each of the 31 Year 12/13 KSIs (100 per cent) reported an alteration in thinking processes, repeatedly and of their own accord throughout interview. In responding to the specific question *Do you think you think differently as a result of participating in the bioethics course?* all KSIs incorporated the concept of thinking 'more' including, thinking about more perspectives; exploring 'more ideas' in their thinking; thinking 'more widely'; being 'more questioning' in their thinking; thinking more deeply; taking more time to think; listening more carefully; and thinking through the consequences

of different choices. In addition to thinking 'more', one-quarter of students (8/31) reported thinking 'harder'.

The following excerpt from an interview with Zac, a Year 13 student, illustrates a typical response:

So do you think you think differently because you have been part of the bioethics course?

Yeah, yeah, definitely. Because you get not just my point of view, but you get all the other pupils in the class and you sort of—Yeah, it definitely has made me think twice about my values and all that sort of thing.

So may we explore that for a moment? [Yeah] So you 'think twice'?

Yes, yes, definitely. I take more time. Before this I would sort of, the first idea that popped into my head, that's what I stuck with. But now you have got to sit there and have a real good think before you make up your mind.

So you take more time [Yeah] to 'have a real good think'—does that imply that you are thinking more deeply?

Yes, yes.

And when you are thinking deeply, what are you considering?

Um, what effects it would have on others. What effects stuff would have on others. (Zac, 101029–01)

In addition to reinforcing the general trends of taking more time to think, and thinking more deeply, Zac's response included thinking about perspectives

other than his own, and considering the consequences of decisions for others. In this way, Zac's response builds upon the personal values and worldview realisations of students presented in section 6.3.2. Zac first identified that the world is not exactly as he views it. He then identified that with the more perspectives he learns about and comes to understand, views, including his own, can broaden and change. Zac then took a further step; understanding that people have different ways of thinking, Zac identified that these different views need to be taken into account, which requires effort. Zac has gone beyond the step of asking himself if his decisions and, therefore, actions are consistent with his new personal ways of interpreting the world, to consider what effects his decisions may have on others.

During his EOC interview, Dougal identified three components to thinking 'more': thinking deeply, taking more time, and considering the views of others.

It [bioethics] does make me think a lot more than I usually did. It means having to think a lot more.

What does 'make you think a lot more', what does that look like?

Like usually in my classes I wouldn't have to think that much—it's just the teacher telling you and you put it away in your head and save it for later. But in this type of class there's the teacher telling you something and not giving you a right or wrong answer; it's an answer you have to decide for yourself. And having to think about that gives you—it makes you think a lot more.

So does 'more' mean taking a greater time to think, or does it mean thinking more deeply?

It's both of them—thinking more deeply and taking more time to think about stuff. Yeah. And seeing how other people see the issue. That's pretty much what I like to see. Like even asking my friends and other

people about the different issues that arise in class, and what they think about it—yeah. (Dougal, 101027–03)

In describing a difference between the thinking required in the bioethics class and the thinking required in his other subjects, Dougal alluded to a difference in a traditional, hierarchical classroom with a teacher ‘telling you and you put it away in your head’ and the student-focused pedagogy adopted during the research, where ‘you have to decide for yourself’. This theme will be explored in detail in Chapter Seven.

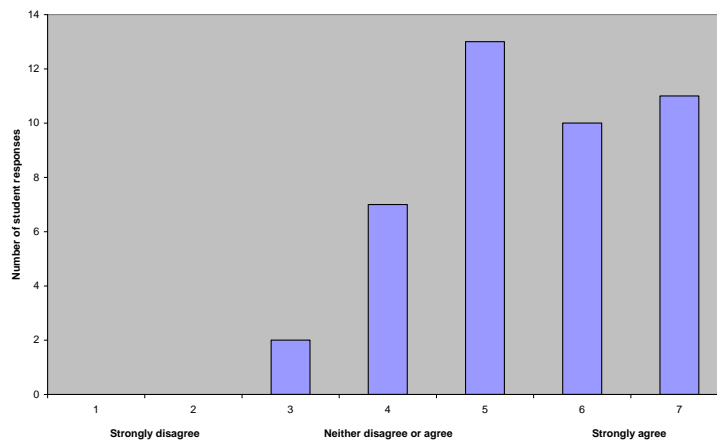


Figure 6.7: As a result of being in the bioethics course I think more deeply

That the bioethics course encouraged students to think deeply, to take more time and to think reflectively, was supported by student responses to two items in the EOC written survey.

As shown in Figure 6.7, 79 per cent of the Year 12/13 cohort agreed to strongly agreed that as a result of being in the bioethics course they thought more deeply.

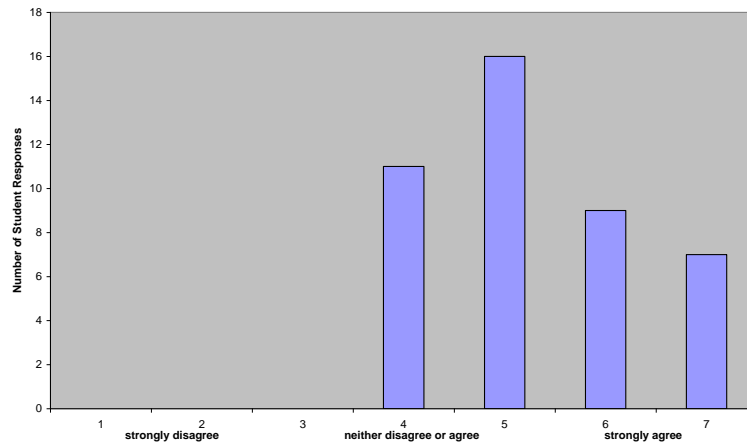


Figure 6.8: Having been in the bioethics course I take more time over forming my opinions—I don't just say the first thing 'off the top of my head'

As demonstrated by Figure 6.8, 74 per cent of Year 12/13 students agreed to strongly agreed that participating in the bioethics course had taught them to take time over forming their opinions, discouraging them from making impulsive comments. This item with respect to taking more time over thinking rather than saying things impulsively elicited the highest number of annotations in the Year 12/13 case study, with five students clarifying their scale responses. Three female students (two strongly agree and one moderately agree) clarified that as a result of being in the bioethics course they thought more about the reasons for their opinions before they said anything. Two male students who each recorded 'Sometimes I do; sometimes I don't' beneath their neutral responses, appeared to acknowledge that it is not always possible to suppress impulsive responses.

As presented, both qualitative and quantitative results demonstrate that participation in the bioethics course developed the thinking skills of case study students.

6.4.2 Argumentation

Analysis of the mixed-methods data reveals that students perceived significant improvement in their skills of philosophical argument through participation in the bioethics curriculum. Components of critical thinking include the ability to reason, and to recognise and question presuppositions, assumptions and premises (Kahneman, 2011; Ministry of Education, 2007). These are also aspects of philosophical argumentation.

When asked the general question, *Do you think you argue better as a result of being in the bioethics class?* during the interviews, all 21 students responded affirmatively with responses ranging from 'Yes' to the emphatic 'Definitely!' Over half the students (57 per cent, 12/21) stated that the perceived improvement in their skills of argumentation resulted from learning to consider different perspectives before offering their opinion. One-third (7/21) of students stated that they had learnt to support their opinion with reasons and/or evidence; one-third explained that they had developed a better attitude towards opinions that differed from their own, and were not immediately defensive; and one-third (7/21) stated that they took more time to think through the issue and the responses of others, before offering an opinion. Just under a third (6/21) of students spontaneously identified that knowledge, including new vocabulary and an understanding of theories accumulated throughout the bioethics course enabled them to argue better. Twenty per cent of students spontaneously identified that participation in the discussion-based course had improved their confidence and that they had gained the courage, not just to participate and to share, but to admit that they were wrong.

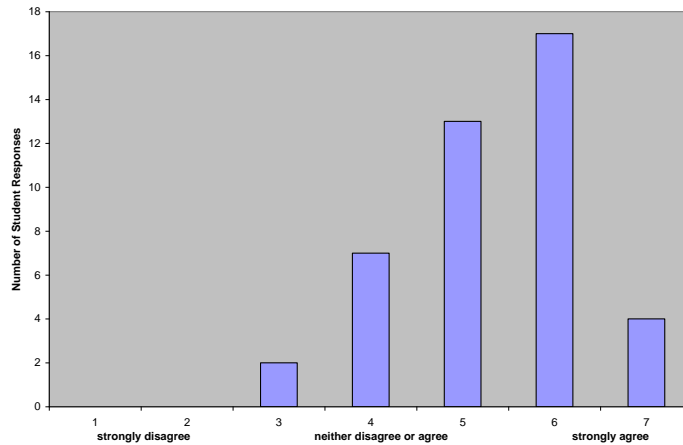


Figure 6.9: I argue better as a result of being in the bioethics class because I understand other people’s values better now

Perceived improvement in skills of argument was also reported through responses to two less general EOC items. Based on quotations from two mid-course KSI interviews, these two items linked improved skills of argument with better understanding the values of others, and learning to support an opinion with reason, respectively. Seventy-nine per cent (34/43) of Year 12/13 students agreed that improvement in their argument skills could be attributed to an improved understanding of other people’s values resulting from participation in the bioethics course (see Figure 6.9). The one student to annotate this item wrote ‘As a result of this class I have learnt to tolerate other people’s opinions and I try to understand their reasoning behind it’, beneath his moderately agree rating.

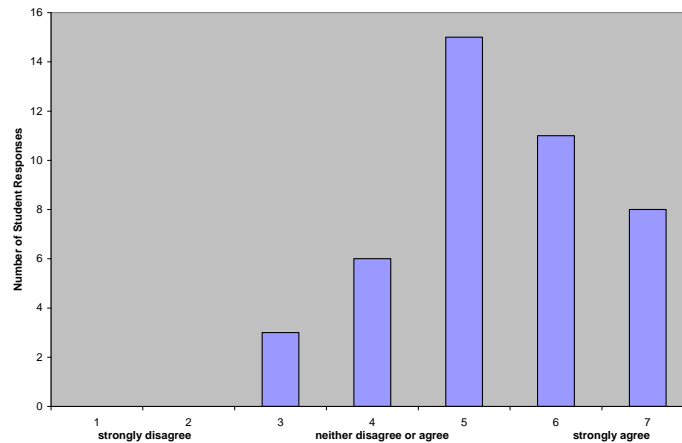


Figure 6.10: I argue better as a result of being in the bioethics class because now I am able to put a reason with what I think

Seventy-nine per cent of Year 12/13 students responded that their skills of argument had improved as participation in the bioethics course had taught them to support their opinion with a reason. The single annotation recorded in response to this item was from one of the two students who selected a disagree rating who wrote, ‘I grew up in a family that often talks about this sort of thing’.

When asked the question about improvement in his skills of argumentation, during the interviews, Watende, (for whom English is a second language) identified the need to go beyond a purely emotional, knee-jerk response and to support an argument given for a particular perspective with reason:

It’s the same thing like I told you before aye, about like finding more information first. So you know, when I am arguing, you know—how to say it?—Um, like when I am defending my own side, I give them the reasons; I like give them the reasons to come to my side. (Watende, 100624–02)

Watende’s response is illustrative of the recognition to go beyond a purely emotional reaction spontaneously offered by one-third of the students to this question during the interviews. Watende’s response is also illustrative of what

was observed during bioethics lessons, particularly during the first half year, where students clearly articulated to their peers around the classroom rejection of any unsubstantiated emotional opinions and the need to support a response with reason.

6.4.3 Evidenced-based reasoning

As previously shown (see section 6.4.2), the substantial majority of Year 12/13 case study students learnt to support their personal views with reasons, examples and evidence. Reciprocally, students also demonstrated that they had learnt to critique the arguments of others through the absence or provision of supporting reasons. Nine KSIs were asked what would be necessary for someone to do in order to change their point of view. All nine (100 per cent) responded that sound reasons or evidence would be required. Three characteristics of a convincing counter-argument were identified: the requirement for a counter-argument to be well supported by reason; for the person offering the counter-argument to have a sincere belief, rather than just arguing the opposite side for the sake of arguing; and for the counter-argument to be able to withstand scrutiny and interrogation. These characteristics are summarised in the following excerpt from an interview with Nathan:

If someone was to change your mind about something that we've discussed in bioethics, what would they need to do to change your mind?

They'd have to have good reasons. It depends on the subject too, but they would have to be pretty precise. They'd have to be persistent. (Nathan, 101026–02)

When describing what was necessary for someone else's opinion to change hers, Jess used an analogy of buying a dress:

It's not just okay to have an opinion, you have to have a reason behind it. You can't just say 'Yeah I want to do that because I want to', you have to say 'Yeah I want to do that because it's going to ... Like I want to buy that dress not just because it will lift my self-esteem, but because the cut has to be right, the fit has to be right, the look has to be right. It's a bit like that with opinions as well. Yeah, like you need reasons to think stuff. (Jess, 101026–03)

Through this analogy, Jess captures the idea enunciated by each KSI that a convincing argument is one that goes beyond a purely emotional response and that is supported by reason or evidence.

Integral to the philosophical argument experienced in the course was the understanding of different perspectives, which were explained and learnt through reason giving. A philosophical argument implies how a dialogue is managed. Having established that there are different opinions and ways of thinking, participating students realised that their opinions needed to be justified, and justified in a way that others might accept or reject with understanding. What students learnt was required of them in terms of offering a rational argument, they learnt to require of others.

6.4.4 Transference of thinking and reasoning skills

Strong evidence emerged from analysis and triangulation of the mixed-methods data that the skills of thinking and reasoning learnt by students within the bioethics course were transferred beyond the boundaries of the classroom.

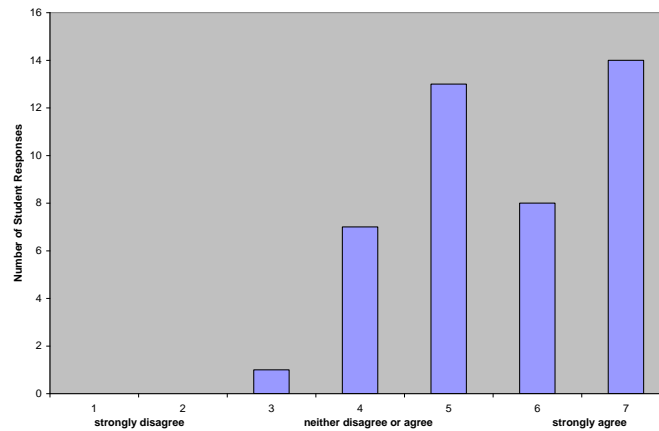


Figure 6.11: With bioethics, you can use your new ways of thinking outside the classroom

During the EOC survey (see Figure 6.11), 82 per cent (35/43) of Year 12/13 participants agreed to strongly agreed that the thinking skills they developed in the bioethics course were transferable.

Following the question about whether they thought their thinking processes had changed through participation in the bioethics course, to which all 31 students responded that they had (see section 6.4.1), 11 KSIs were asked if they thought these changed ways of thinking transferred outside of the bioethics classroom. All 11 (100 per cent) students affirmed that thinking skills developed inside the bioethics class were transferred to other school subjects and other areas of their life. Fifty-five per cent (6/11) spontaneously offered a social example in illustration. These examples included students now engaging with current issues reported through television, radio and newspaper media; interactions with family and friends; and improved thinking skills affecting social behaviour. Fifty-five per cent (6/11) of students named a specific school subject in which they were applying their new thinking skills, with four naming English, one history and one biology as the example. During the interviews, KSIs also stated their perception that thinking skills and knowledge gained in the bioethics class would transfer to situations encountered in the future.

In a further example of the interwoven nature of emerging themes, an excerpt from an interview with Kate, where she responds to a question about improvement in her skills of argumentation, offers further evidence of transference of skills developed during the bioethics course into other areas of a student's life:

I argue much better [as a result of being in the bioethics course] but I have no idea how to explain it—maybe it's just helped me become less shy in saying what I think and caring less about what others think of me for saying it. Um, it's just easier to argue, like when we have debates in PE and stuff like we have, it is easier to actually think of something that is good—not just like 'Just because!'—I can actually back it up now. Like actually think about it and have a good reason to back it up. I just think of the good idea, and then when I pause I think of something to back it up, or how I can actually make it sound better to everyone else that's there. I'm thinking more about what I'm arguing about and I'm not just coming out with a stupid argument. It's working better at home too. (Kate, 101027–05)

Rather than being confined to the bioethics classroom, this excerpt from Kate indicates that improved skills of reasoning and argumentation became part of Kate's thinking pattern and were transferred to, and employed in, other school subjects and family life. Kate's opening sentence describes how skills of reasoning and argumentation developed through the bioethics course had an impact on her self-confidence; confidence in her own values; and Kate's courage to participate and contribute in lessons. Each of these developments had an effect on how Kate related to others; a topic discussed further in section 6.5.2.

6.4.5 Making different decisions

Relating to transference of thinking and reasoning skills, responses to two questions indicate that participation in the bioethics course prompted the substantial majority of students interviewed to make decisions differently.

Of the 20 students who were asked the general, interpretable question *Have you made any decisions differently as a result of being in the bioethics course?* during the interviews, 80 per cent (16/20) replied that they had, with 81 per cent (13/16) of these students spontaneously offering a specific example. Examples ranged from changing their decision on organ donation (6/3) and making decisions around ethically sourced food (3/13), through to two students who had decided not to miss school without permission and one student who decided to intervene in a bullying situation. Over one-third of the students (38 per cent) spontaneously reported that they now took more care about general decision making after having taken the bioethics course. Of the four students (20 per cent) who responded that they had not made any decisions differently as a result of being in the bioethics class, three stated they were sure they would in the future.

Nine KSIs were asked the second question related to decision making; *Have you changed your mind about something as a result of being in the bioethics class?* Eight of the nine responded that they had. Five of the eight (62 per cent) spontaneously offered that their change of mind was due to hearing a different perspective, while three (38 per cent) explained that in addition to changing their minds about something, the course had equipped them to form opinions on things they were previously ignorant of or ambivalent about. Three of the eight (38 per cent), offered an unsolicited response with respect to utilitarian ethics. The excerpt from Pat is an illustrative example:

Have you changed your mind about something as a result of being in the bioethics class?

Yeah, like the earlier situations. At the beginning before I really started the class, or we were just starting, I kind of just sort of agreed with the greater good. But after just the first few discussions, I kind of changed my opinion to less of that. (Pat, 100623–03)

Like Pat, each of the students identified that they had unknowingly been applying utilitarian ethics to their decision making. Having understood and then critiqued utilitarian ethics, these students had identified that utilitarianism would not always lead to choices and outcomes that fit with their values. Having then learnt that other ethical theories and ways of thinking existed, each student reported that they had changed their solely utilitarian pattern of decision making. The response of these students provides a specific example of the assimilation of new knowledge.

When asked whether she had changed her mind about something as a result of being in the bioethics class, Stephanie described in more general terms how she constructed the knowledge on which she based her opinions through the gaining of new information and hearing and considering alternative opinions:

Yeah, I think that's happened a bit, but I can't remember exactly what it was I changed.

So why do you change your mind?

Um, because I don't really know quite a lot about it before, so it makes me think more and sort of just change what I think about it. I learn more and hear other people's opinions. (Stephanie, 100628–09)

Although she may now want to be an organ donor, one student, Carrie, nonetheless felt that she had not changed her mind about anything as a result of being in the bioethics class. Rather, Carrie acknowledged the

thinking aspect of the course, and how this had impacted on her decision making:

Have you changed your mind about any decisions that you might have already made, as a result of being in the class?

Not really. Maybe I would want to be an organ donor now. But not really, because I think, I over think, everything anyway. Bioethics classes definitely help me to be open minded and to think about things, and to think about why I make decisions and stuff. It has definitely made me question everything—like every decision that I make. (Carrie, 100628–07)

It is difficult to assess whether Carrie had processed being an organ donor or not prior to the bioethics course; however, evidentially, she had now considered a decision around this issue. Rather than a change of mind, this may represent a change in the decision-making process, including thinking deeply and making decisions around issues previously not contemplated, something reflected of their own volition by more than a third of the KSIs who responded to this question.

Tyson's response to the question of whether he had made any decisions differently as a result of being in the bioethics class provides an example of an informant who could not think of a specific example at that moment, but who, like Carrie, acknowledged a change in their decision-making process:

I can't really think off the top of my head, but I am pretty sure that I have, but I can't think exactly [of a particular example]. Yeah. But I think differently about most things really

So thinking 'differently' means?

Taking more time. And thinking like, in the future what the outcome's going to be. Yeah. Like I think outside the square more, kind of thing.
(Tyson, 101029–02)

Like Zac in section 6.4.1, Tyson described that he had learnt to take time over his thinking and decision-making process, including to think beyond the present and to reason through possible future consequences of different options. Participation in the bioethics course enabled students including Zac, Tyson, Carrie, Stephanie and Pat to understand how they were thinking and how they might change their thinking with respect to ethical dilemmas. Students recognised that types of ethical thinking may be adjusted according to the circumstances. The ability to recognise, critique and adjust ethical modes of thinking that students developed, will be discussed in Chapter Eight.

A number of themes were incorporated within responses to the questions of whether they had made different decisions or changed their mind about something as a result of being in the bioethics class, summarised and illustrated in the excerpts above. These include, engaging with personal values; an expanded worldview; development in critical thinking skills, including consideration of personal thinking, the perspectives of others, and the consequences of decisions; evidence of learning through the use of terms such as 'utilitarianism'; and the construction of new knowledge. Such responses demonstrate the link between the affective and cognitive aspects of this research, and relate back to section 6.3.

6.4.6 Evidence of scientific and philosophical learning

This section presents evidence of student learning and retention of specific scientific and philosophical concepts, within the Year 12/13 case study cohort.

During the mid-course interview process, 25 students were asked a variant of 'tell me about the Baby Theresa case'. This question was asked under two circumstances: either in response to a student spontaneously mentioning the case (n=10), or as a specific question designed to test recall (n=15). While the case was referred back to from time to time throughout the course, it was explored thoroughly only once, in the first lesson of the year. Ninety-two per cent (23/25) of Year 12/13 transition students could recall scientific and/or philosophical concepts learnt through the Baby Theresa case 19 weeks later. Table 6.1 presents a summary of the 23 students' philosophical and scientific understandings spontaneously expressed at interview. The interview findings are presented in four sections: instances in which students demonstrated a deep understanding of the philosophical concepts specific to the Baby Theresa case; instances in which students demonstrated a general understanding of the philosophical concepts; instances in which students demonstrated a deep understanding of the scientific concepts relevant to the case; and instances in which students revealed a general understanding of the scientific concepts.

Table 6.1: A summary of students' philosophical and scientific understanding of the Baby Theresa case expressed at interview 19 weeks after the lesson (n=23)

<p>Evidence of deep understanding of the philosophical concepts within Baby Theresa case</p> <p>6 students correctly recalled the events and demonstrated a deep understanding of the philosophical concepts specific to the Baby Theresa case, including correctly naming both ethical theories involved (utilitarianism and Kantian ethics) in addition to being able to clearly explain the principle underpinning the respective ethical theory.</p>
<p>Evidence of general understanding of the philosophical concepts within Baby Theresa case</p> <p>15 students correctly recalled the events of the case and the ethical dilemma within it, and demonstrated a general understanding of the philosophical concepts. This included being able to describe both of the ethical theories by giving the tagline phrase ('Greater good' and 'Means to an end') associated with the ethical theories, or by using a combination of one correct name and one tagline. 2 students, while correctly recalling the events of the case and offering a reasoned opinion based on utilitarian thinking, neither named the theories nor used tag-lines.</p>
<p>Evidence of deep understanding of the scientific concepts within Baby Theresa case</p> <p>3 students demonstrated a deep understanding of the scientific concepts correctly describing Theresa's physiological problem by the use of the term 'anencephalic' together with naming missing and present parts of the brain, and identifying how this would impact on Theresa's ability to function. These students included discussion of organ donation in their recall.</p>
<p>Evidence of general understanding of the scientific concepts within Baby Theresa case</p> <p>18 students recalled some of the general science within the case using more generalised terms such as 'brain dead' or 'born without a brain'. They demonstrated an understanding that Theresa could not function or develop like a normal infant and/or that they understood this was a terminal condition. Each of these students demonstrated an understanding of organ donation.</p> <p>Two of the 25 Year 12/13 KSIs interviewed, responded that they could not remember the case and demonstrated no recall of the philosophical and scientific concepts covered within it.</p>

The following excerpt from the interview with Amber typifies responses that were rated as evidence of general understanding for both the scientific and philosophical concepts related to the Baby Theresa case:

When I was observing one session, the class did quite a bit of talking about Baby Theresa. What was going on in her case?

Um, she didn't have a brain, but she still had a beating heart and was breathing, but she had no other brain functions or anything. And her parents, they wanted to use her organs to give to other people who needed them—to like save other baby's lives. I thought that that was a good thing because they were saving more people. And if you don't give away the organs then other people would have to wait longer and might not be able to live. And because she wouldn't be able to live anyway—like she would die a few days later [pause]

So, what happened?

They didn't end up doing it because apparently she was 'alive' [gestures] or something and it went to court and the judge said 'No, you can't do that' and I thought 'Why not?!' Like you are saving more people from it, why should it not be okay? If I had been Baby Theresa's mother, I would have wanted her organs to be given to other people. Like for the greater good; utilitarianism and stuff.

Do you remember what the theory is associated with the Judge's view?

Ka—Kant? (Amber, 100625–05)

Not only did Amber display recall of the case discussed 19 weeks earlier, she had interpreted the case, come to a personal view and spontaneously offered this with reason. Later in the interview when she was asked if she had made any decisions differently as a result of being in the bioethics course, Amber's response included spontaneous recall of another specific scenario, in addition to a particular type of argument, both also studied many weeks previously:

Yeah. When I have to make choices, I think I relate what I've learned in bioethics to the final decision. I relate my problem to something,

like the train thing—like thinking if I do that then this might happen.
And like the slippery-slope thing. (Amber, 100625–05)

In addition to describing how she had learnt to consider the consequences of decisions, these excerpts demonstrate how Amber had utilised the case studies and theories learnt in the bioethics class as a comparative thinking tool in decision making, both within the subject of bioethics and across her day to day decision making.

6.5 COMPETENCIES

The qualitative and quantitative data presented in this section relates to the third research question with respect to whether and how any affective and cognitive outcomes demonstrated by students participating in the bioethics curriculum relate to the values and key competency requirements of the NZC (Ministry of Education, 2007).

As the competency of ‘thinking’ (Ministry of Education, 2007, p. 12) has been largely covered in section 6.4, this section will begin with results relating to ‘Participating and contributing’ (Ministry of Education, 2007, p. 13), before addressing ‘Relating to others’ and ‘Managing self’ (Ministry of Education, 2007, p. 12).

6.5.1 Participating and contributing

Survey, interview and observational data demonstrate that involvement in the bioethics course developed the competencies of participation and contribution for the considerable majority of students. The content and teaching method inherent to the bioethics curriculum were significant factors in improved participation and contribution.

Three EOC items explored aspects of participation and contribution within the bioethics class. Analysis of the distribution of responses (tabulated in Appendix Nineteen), reveal that the substantial majority of students (88 per cent or 38/43) recorded that they felt free to contribute their ideas during the bioethics course. No student disagreed with this item, while five recorded a neutral response. Eighty-eight per cent of Year 12/13 case study students also reported that they listened attentively during their bioethics class. Again, no student disagreed with this item, although five students recorded neutral responses. Two-thirds (67 per cent or 29/43) of the Year 12/13 students perceived that they contributed to the bioethics class by making their peers think when they offered reasoned, alternative points of view.

Once again, survey results were supported by responses made by KSIs during the interviews. Twelve students were asked whether they *felt free to contribute thoughts and ideas and to ask questions during the bioethics class*. All 12 (100 per cent) responded that they felt free to contribute and that whether they did or did not contribute or question during class was their choice. In response to this specific question, one-third of interviewees spontaneously expressed their perception that everyone in the class felt free to contribute, as the following excerpts from interviews with Tom and Shane illustrate:

There are a lot of people in the class that say things and stuff—like even people who don't really speak that often, but all of a sudden they are talking about stuff and that, which is good. Like in other subjects you get told what to do and in this one you can decide what you want to do, sort of thing. Yeah—I reckon it is just better because if you don't know, you can say you don't know and not get it wrong type-thing. In other classes if you are wrong, they tell you you're wrong. But in bioethics you can't really be told that you are right or wrong. (Tom, 101027-04)

Yeah—I can just talk to it, yeah. It's mostly no right or wrong answer; it's your opinion on the topic, so everybody can participate. (Shane, 101026–08).

Numerous students conveyed their perception that they and their peers experienced a freedom to contribute in bioethics as a result of 'no right or wrong' answer, when responding to diverse questions during the interviews.

It was common for students, for example, Tom above, to include a comparison to other subjects when they responded to the question about their participation in the bioethics classroom. Eighteen KSIs were specifically asked how they perceived their participation and contribution in bioethics in comparison to their other subject classes. Eighty-nine per cent (16/18) of students perceived they had greater participation in the bioethics classroom. That 89 per cent of KSIs perceived later in the year that they had greater participation in bioethics than in their other subjects, represents a significant increase from the 37 per cent who reported in their initial survey that they contributed 'more' to 'much more' during bioethics, and indicates extensive development of the competencies of participating and contributing.

The following excerpts from Dion, Rawiri and Ishani illustrate the theme of participation through active listening and sharing, which emerged strongly during the interviews in response to the comparative contribution question. These excerpts also build on the theme of freedom to contribute personal opinion due to the absence of definite right and wrong answers, expressed by Shane above.

In my other classes I don't really put my hand up that much and talk. I just like get on with work, but in bioethics its real interesting so I like try to get involved more. I speak more and I'm focused. Like I am more involved all round.

So what does involvement mean to you?

Like listening to everyone, having my say, and yeah, just focusing really. (Dion, 100623–07)

Are there differences between the way of you participate in Bioethics compared to some of your other subjects?

Yeah! Big time! Um I tend to listen more [in bioethics] 'coz its information I want to hear, not like maths or something. And like when something is going on, because I'm listening more I want to know what they are talking about, so I ask more questions. (Rawiri, 100628–03)

What about you and how you respond inside a bioethics class?

I am good with this [bioethics]. But I am quiet in other classes and I don't give my opinions. Over here, I can give my opinions and discuss whatever I like. Over here, I can tell my opinions and whatever I think is right or wrong. But in other classes I can't say.

What is it about bioethics that makes that difference for you?

Mmm, in bioethics we have open views—like we can say whatever we want—but in other classes we can't. (Ishani, 100628–06)

Ishani's comment conveyed a willingness to contribute in the bioethics class as her fear of being wrong had reduced. Underlying this is student identify and self-confidence. Ishani is enunciating what numerous students, including Nathan and Shane earlier in this section, reported; their perception that in other classes answers can be right or wrong and questions are designed to elicit a correct response. In comparison, in bioethics, students perceived that

one well-supported, reasoned argument could be as defensible as another, and there was, therefore, less threat of being wrong.

6.5.2 Relating to others

As this and the following section on the competency of managing self show, involvement in the bioethics course had a positive effect on how Year 12/13 case study students related to others, both within and outside the classroom. The positive effects included becoming less judgemental, more understanding, and more temperate in their response and interaction. While the competencies of managing self and relating to others, students concurrently engaged in character-behavioural values learning.

As previously presented (see section 6.4.2) when surveyed, 79 per cent of Year 12/13 students agreed to strongly agreed that their skills of argument had improved as a result of a developed understanding of other people's values. During the interviews, 21 KSIs were asked if they felt participating in the bioethics course had assisted them to understand the views of others. Eighty-six per cent (18/21) responded 'Yes', while two (11 per cent) responded 'Sometimes' and one responded 'not always'. Fifty-seven per cent (12/21) specifically mentioned that the course encouraged them to consider alternative points of view by placing themselves in the position of others. A quarter of students used specific examples to illustrate their understanding of a variety of philosophical, cultural or religious views. A quarter of students expressed surprise that others thought differently to the way they did, reinforcing the theme of an expanded worldview previously discussed in section 6.3.2.

The following excerpt from Leah is indicative of the interview responses given.

Yeah, like I can understand other people's values even if it is different to mine, but I can still think that my opinion is right, kind of

thing. Like I can be 'Oh yeah, that's understandable'. Like I can still understand other people's values but that doesn't mean that I agree with them. (Leah, 100623–06)

Recognising diversity in cultural values, Wei also alluded to understanding what underpins the values of others, without having to agree with those values:

Different people have different opinions and stuff and you can see that. Like everyone's different and they value different things for different reasons. Yeah. Because different cultures and stuff treat things differently to other cultures. Instead of just thinking it's weird, it's good to know why. Yeah. (Wei, 101101–01)

Pat's response indicated that he had become less judgemental of people as a result of participating in the bioethics course:

What about the values of other people?

It's kind of more like they are just people to me now—like I don't really have a 'view' on anyone else anymore

.

Explain that a bit more?

Well, now I just kind of see people as a person who has rights—it's just another person; it's not anything special.

So do you think that is different to the way you saw people before you looked at some of these scenarios?

Yes, Yep.

How would you have seen people before?

I don't know—I might have had kind of views on 'people better than you' who deserve more; or who have different rights. But now it's just 'people are people'. Everyone is kind of equal. (Pat, 100623–03)

The perception that they had become less judgemental of others was spontaneously stated by the substantial majority of all 31 Year 12/13 student informants at some stage during the interview process, frequently in response to a seemingly unrelated question. The following excerpt from Dillon in response to a question about decision making is illustrative:

Do you think looking back over the whole year, and as a result of being in the class, do you think you've made any decisions differently?

Yes, I actually have. Like I look at people differently, which is a big change. I figure out how some other countries treat people ... and animals. It was very sad seeing that. All that type of stuff. (Dillon, 101026–07)

In his response, Dillon expressed empathy as the result of new knowledge and an expanded worldview, which in his own words had led him to make a significant change in how he 'looks at' and considers others.

Shane also expressed the ability to consider with empathy the perspective of another, and attributes this change in the way he relates to others to his participation in the bioethics course:

Have you made any decisions differently as a result of being in the bioethics class? Over the year, have you made any decisions differently?

Yep.

Can you share an example of what that might be?

Mostly, um, like judging people I suppose. Like seeing people after I've learned about things. And accepting what you have. So yeah, I just looked at all that differently. And, just like if people have problems or something, look at it from their point of view instead of just mine—don't laugh at them or anything, just be like 'That must suck'.

So putting yourself in other people's shoes?

Yeah. (Shane, 101026–08, 3:27)

Pat, Dillon and Shane's responses each contain a reference to others globally, not just within the personal and immediate context. Involvement in the bioethics course led students to develop understanding of the values and responses of others, including those from different cultural, philosophical and spiritual backgrounds. Developed understanding resulted in changes in the way students related to one another within the classroom setting, and in the way they responded to people from the global community as case studies and scenarios were explored.

6.5.3 Managing self and relating to others

Participation in the bioethics course had a positive effect on the way the majority of students managed their response to others. During the interviews, students were purposively questioned about their perception of shifts in how they respond to people whose views differ from theirs, including how they manage this response. All 12 students (100 per cent) who were asked *Do you think you respond differently to people whose views differ from your own as a result of participating in the course?* during their mid-course interview, responded 'Yes' to 'Definitely!' Ten of the 12 (83 per cent) reported that they were now more reasoned in their response, not immediately and emphatically

dismissing the opposing view as 'wrong!' or trying to 'shame the person out' or be 'smart'. The already described themes of thinking more about the opposing perspective before responding and listening more attentively emerged strongly once again in response to this question. In replying to this question, one-third of interviewees reported that the change in the way they respond to those whose views differ from theirs, was a result of the new knowledge about different cultural, ethical and/or spiritual views, and the strategies of philosophical argument, which they had gained in bioethics.

During the interviews, Sefa articulated the importance of courtesy and allowing those with views different from your own to speak without interruption:

Um, if you disagree with someone you have just got to try and find a way around it, and you have got to let that person talk instead of like interrupting with them. (Sefa, 100624–04)

In addition to acknowledging the lessons on formal argumentation, Rawiri also expressed the importance of verbal tone and body language when in dialogue with others.

Do you think you argue better as a result of being in the bioethics class?

Yep. Just knowing more stuff and like how to argue. Yeah. [And] It comes in with your tone and stuff. Instead of taking their head off, put it across in a polite way. Yeah. (Rawiri, 100628–03)

In addition to expressing greater consideration and respect for the views of others and her response to them, Tariana, too discerned that as a result of participating in the bioethics course she had learnt to be less domineering when she disagreed with people:

So you are relating differently to people as a result of being in the class?

Yeah. It makes me think why I argue with people, yeah. I know what I'm going on about now, and when I argue I'm not just yelling at you; being smart about it—you know how you can be smart and argue? Yeah, like usually if you were to disagree with me, it would be like 'Shut up!' Yeah, now I'm like 'Well what then?' and I just listen to their side and then I'll be like 'Oh, yeah, true ...' (Tariana, 100624–05)

In addition to the competencies of relating to others and managing self, Sefa, Rawiri and Tariana are examples of students articulating character-behavioural values learning. Just as students identified in the sections on argumentation (6.4.2) and evidence-based reasoning (6.4.3), that a purely emotional opinion was inadequate for philosophical debate, Sefa, Rawiri and Tariana articulated the realisation that authentic dialogue and debate necessitates going beyond an immediate, emotional and potentially confrontational reaction towards someone who has an alternative view. Students learnt that engaging in dialogue with those who have an opposing view requires critical thinking skills, including taking time to consider different perspectives and supporting the rejection of opposing claims with reason. They have also learnt that philosophical argument and dialogue require appropriate communication skills, including relating to others temperately and with courtesy.

Helen substantiated these interpretations, and observed the values learning that had occurred within the bioethics course, during a discussion of how a teacher would measure development of the key competencies:

Yes—if you look at the bioethics programme, 'managing self', well that's key to being in there too, because you can't have a classroom full of students who all want to scream their ideas out if they can't manage themselves. You can't be out of control in there, or nobody

is going to want to come back. You have to respect other people's values and I think they have learned to do that.

They've learned that it's okay for people to be different than them—if that is one thing they have learned this year, they have learned that. That being different doesn't mean that it's wrong. And they are actually quite comfortable with that now. They are comfortable—they expect someone to have a different idea to them, and they are quite comfortable disagreeing with each other, yet still walking out as mates, or sitting in class beside each other. Whereas, at the start of the year it wasn't so. If you disagreed then that must mean that I am wrong or you are stupid, Yes—and I will just shout at you.

But there has been no out of control disagreement in there, on any of this. It has been an exercise in self-management and self-control. (Helen, 101118)

6.6 SIGNIFICANT BREAKTHROUGHS

This section narrates two stories that focus on three Year 12/13 case study students. Both narratives illustrate significant breakthroughs that occurred with these students during, and as a result of, their participation in the stand-alone bioethics trial. The first narrative describes a breakthrough with respect to the competencies of managing self and relating to others. The second narrative, the story of David, details the affective and cognitive learning, and the effect such learning had on the student identity of a participating transition student customarily assisted through the learning support unit.

6.6.1 Managing self and relating to others: The story of Jess and Kate

A female Year 13 student from a fundamentalist Christian home, Kate had a very definite worldview and the courage of her convictions. Kate's parents

had 'felt it was okay for her to participate' in the bioethics course 'as long as she didn't lose/change her own values' (signed parental permission slip, February 2010). Polite at all times, Kate bore the brunt of some very negative reactions when she ventured to offer her opinions and arguments during class. In the early stages, this bordered on hostile and you could observe some students in the class waiting for Kate to comment. On occasion, students would pre-empt what they assumed Kate might say before she had said a thing. Despite this, Kate participated actively in discussions even when she was a lone voice for a particular view. That she was a lone voice was demonstrated physically in that Kate began the year sitting by herself and slightly removed from the main class group. However, in a tangible illustration of how the bioethics course assisted participating students to consider the views of others, Kate was peacefully and socially sitting within a group of dominant class members by the start of Term 4. This was largely due to a fundamental change in the relationship between Kate and a dominant female class member, Jess.

An articulate, intelligent student, Jess was outwardly confident and unafraid to comment. One of the most vocal opponents to Kate's worldview, a breakthrough occurred mid-bioethics course when Jess found herself agreeing on the 'right action' to a situation with Kate, although for different reasons. Helen noted in her journal:

Kate and Jess agreed on something! A milestone!—2 different paths to the same decision—They were as surprised as I was!

Jess was certainly surprised, if not a little irritated, that she had come to the same decision as Kate, as a transcript of the lesson just after Jess had stated her decision illustrates:

Helen: Do you know what has just happened, Jess? [Pause]

Helen: Do you know what has just happened, Kate?

Jess [somewhat calling out as the penny drops]: We agree!

Helen: For the first time, you are both on the same side of the fence.

Jess: I will change my mind then!

Helen [easing the tension]: You each make decisions via different ethical frameworks, but sometimes this will lead to the same decision being made.

There was a gradual mellowing in hostility towards Kate following this event, to the point that four months later, by the start of the fourth term, Jess and Kate began sitting together not just during the bioethics class, but also during their study classes. On the first occasion that this happened in the bioethics class, Helen noted in her journal:

Kate and Jess chose to sit together today! They have more respect for Kate now than they ever would have had in just a normal class. They respect her values in their own strange way, whereas at the start there was a less tolerant approach.

That Jess began to see beyond her superficial, categorical reaction that ‘they disagree with me so they must be wrong’ (100623–04); to understand her own values; to compare and contrast them to the values of others, discerning similarities and differences and developing a greater understanding and tolerance for the values of others, is illustrated in the following unsolicited section of her EOC KSI interview:

Like me and Kate have actually grown closer because of bioethics— Like we hang out now, like during our study periods and stuff, and we talk about it. Like we talk about different situations that we could be in and then we just sit there and think about it for a while.

So you guys found common ground even though you come at things from a completely different perspective?

Yeah. I was amazed! [Laughs.]

How does that feel?

It feels good. I am happy that me and Kate have grown closer for it. Yeah. Because if this class wasn't here now, I think we would still be the people that make fun of each other. Like she'd say stuff to me and I'd say stuff to her and that would be it—like hurtful stuff. But now that we have got something in common to talk about, we find out more stuff about each other.

So is there a respect for the fact that you can look at the same situation, sometimes you will see it the same way and sometimes you won't [Yeah] and you can respect the fact that there are reasons behind [Yeah] why you won't?

Well I've asked her about what her reasons are and she's explained her beliefs and stuff to me. So now I'm like—when people don't agree with me, before I would be like 'You don't agree with me, but you have too! Like you have to see it from my point of view!' But now it's just like 'Okay, well what's your reason? Okay; Yes. I understand that now, that's fair enough. (Jess, 101026, 5:12–6:20)

As Helen observed during a conversation at the end of the course:

I know that Jess knows that she has learnt stuff—and Kate—and it's interesting to see how they moved closer together, whereas at the beginning of the year you would have said there's going to be a fight here; they are actually going to draw blood on each other. And at the end of the year, they both acknowledged, and they ended up in my classes, they would both sit at the same table, which was, well, you couldn't imagine two more different people. And two people who would never have anything to do with each other in the normal run of events, and there they are. They have developed a sort of

compromise, comfortable place where they can agree and disagree and it's alright. (Helen, 101118–01)

6.6.2 Evidence of affective and cognitive learning and a change in student identity: The story of David

A gentle Year 13 student with a long 1970s hair style, David, who physically stood a head above his peers, was a member of the larger Thursday morning Year 12/13 case study group. Well mannered, reserved and with a deliberate and measured speech pattern, David had been academically supported through Koru College's Athena, or learning support unit, throughout his five years of secondary education.

During the first round of KSI interviews, David told me that he chose to be part of the bioethics course as 'It sounded interesting and I thought I'm going to learn something, so I can't really loose out'. I immediately asked if he thought he had learnt things so far.

Yes [pause].

Great—tell me more about that.

I have learnt how situations vary. How single rules cannot apply to different situations because of certain things. I don't know what it is—it's just very interesting and I am really learning from it. It is quite amazing about how I am learning about how I see things as well. [And] It is interesting seeing what everyone else thinks and the variance of it. [Pause.] (David, 100628–04)

During the interview, David impressed me with the depth of his recall of the Baby Theresa case. Having described that Theresa had only a brain stem and could not survive, and then offering his position on the case, I asked:

So what type of ethical theory are you applying there?

Utilitarianism I think. Yeah, I am generally more utilitarian. Kantianism I do sometimes agree with, but I'm generally utilitarian; because why would you let one person die when you could have four people survive?

So you are not Kantian with respect to Baby Theresa because you feel that the judge could have ruled differently?

Yeah.

But you said that sometimes you are Kantian in your thoughts.

I have occasionally been—No-one will ever be completely one way because there will be some situations where you are not. (David, 100628–04)

In addition to supporting his personal view with reason and correctly naming and implying his understanding of the two ethical theories studied within the case, David made a mature observation and expressed the self-knowledge that he may oscillate between different ways of ethical thinking, depending on the issue. When I then asked David a general question about his perception of his participation in the bioethics class at this mid-point of the course, he responded:

I don't really participate; I just listen in and think about it in my own head. I just find it interesting listening to everyone else—sometimes just sitting down and watching everyone who's saying something. It's just interesting to hear everyone else's view on it. It's not that I'm not interested, it's just that I'm thinking about it in my own head. I'm not saying anything but I am thinking about how I feel in my own head, so that I *myself* know how I feel. (David, 100628–04)

David was aware that he had not made oral contributions during small group or full class discussions. However, his comments reinforced my observations that during class, while verbally reserved, David was alert, sat forward and tracked all conversation.

Parent–teacher interviews were conducted at Koru College in the second half of the year. Following the parent–teacher evening, Helen recorded in her personal journal:

At parents evening on the last Thursday of term David Callaghan's mother didn't want to talk about transition—she couldn't stop talking about how much David loves bioethics; how he talks about all the class topics at home ... Actually I thought she was going to cry—he has been a poor academic achiever for so long she was beside herself that we seem to have tapped into something with him.

A significant event then occurred during lesson 25 of the course, when the class were exploring ethical issues surrounding pre-implantation genetic diagnosis (PGD), and selected or 'designer babies'. Beginning with a description and discussion of the use of PGD to select embryos free of serious, life-shortening genetic disorders including Spinal Muscular Atrophy and Cystic Fibrosis, Helen then introduced the issue of creating embryos and selecting only those with particular genetic characteristics, cells from the cord blood of which could be used to treat an older, ill sibling. Helen then shared 'the ability to manipulate the genetics of the child that we choose to have, from a slightly different angle' (Classroom file, 100909–01), and through a recent BBC news video clip, introduced two British artists, who profoundly deaf themselves, and having had a naturally conceived daughter who was born deaf, wish to use genetic selection techniques to ensure that their second child will be unable to hear. This drew a general expression of abhorrence from the class. Carrie, Amber, Pat, Tyson, Hemi and Hayley took turns to freely and animatedly express their disagreement building arguments

that it was unfair to the second child, especially when the child had no say in the matter. During these exchanges, Helen offered alternative arguments including that the second child would not miss their hearing as silence would be 'normal' for them; and the perspective that the child would be growing up in a household with a sibling and two parents who are deaf. At this point, David spoke up and made an oral contribution to the whole class:

There is taking away an inherited disease and then there is adding a difficulty that will potentially ruin their life. They are not taking away a potential problem, they are creating it. A hearing child can learn sign language. (Classroom file, 100909–01)

In unison, several class members offered their immediate agreement with David's statement. Suppressing her surprise and delight until the class has been dismissed at the end of the lesson, Helen excitedly declared to me:

David! I've never heard him speak in front of the class before! For him to have the confidence to speak in class is quiet extraordinary! I've never heard him speak like that! Ever! (Classroom file, 100909–01)

From this point on, Helen and I observed David contributing with increasing frequency and confidence, initially to small group activities, and then more and more to whole class discussions. Like the content of his first contribution with respect to using reproductive technology to select for a deaf child, David's contributions were considered, logical, supported with reason, and frequently included the use of appropriate vocabulary, including the application of, or reference to, correctly named ethical theories. That David was employing higher order thinking skills; that he understood the science behind issues raised; that he had learnt, understood and could apply bioethical principals and ethical theories was evident in his oral contributions.

Seven weeks later, during the EOC interviews, David reiterated to me that he perceived that he thought 'differently' as a result of participating in the bioethics course. I asked him:

What does 'differently' look like?

It's just thinking about things in not the normal way, but thinking about other parts that could potentially be affected; and other ways of thinking that are not necessarily what you think. So you have got to think 'Looking at that, does it change it?' Things like that. [The course] allows you to see it the way you want to see it. You may not say what you think, but you've thought about it. (David, 101028-03)

I then asked David how he showed he disagreed with someone, to which he responded:

I have a firm conversation—I have a conversation seeing what their views are; seeing what my views are; seeing differences. Coz I'm not going to go 'Well, you're wrong'. I just say 'This is what I think'.

So do you feel confident in your ability to defend your point of view once you've thought about what your point of view is?

Yes. I'm not 'in your face' defending it, but I am making sure that I am heard; and what I am saying, whether it is right or wrong, is this is how I see it, and I want to be heard. (David, 101028-03)

David expressed the confidence he had developed in his own views and values, his ability to express and defend these to others, and thus his confidence in his ability to master the material and offer a reasoned perspective. Participating in the bioethics course had a significant effect on how David perceived his student identity, particularly his ability to master material. David's perception that 'there's no one set view' in bioethics but rather 'this is what is here; now what do you think of it?' reassured him. This,

together with developing thinking skills, including the ability to consider different perspectives; learning skills of argumentation, including supporting an opinion with reasoned thought; and gaining philosophical and scientific knowledge, assisted him to develop the courage and confidence to participate in class debate, and to relate to his peers, family and teacher in a more direct way.

When I enquired of Helen during her final interview what sense she had that bioethics may have engaged students with their own values, she responded:

Well for David it certainly has. He's engaged with his values enough that he can now actually tell you about them, which is interesting. Because most of his teachers would not believe that. I told you, his mother shook my hand at parents evening. She said that she was amazed. And he actually started to achieve in class, not so much because the bioethics was useful to him in doing the work that he was doing, but simply because he had more confidence. And so he was actually willing to come and ask questions and get help. I know that he has some sort of processing disorder—he loses his train of thought very quickly—it disappears and then he has trouble retrieving it—and previously he'd have given up, but he actually passed quite a significant amount of work for us this year.

So it changed his perception of who he was?

I think so, yes! And also about him being accepted for himself. He just needed that little bit of confidence to be able to push for himself.

(Helen, 101118)

During his interviews, David acknowledged the multiple-perspective, non-black and white/right-wrong aspect of the bioethics course, together with the student-, discussion- and scenario-centred teaching method as fundamental

to his engagement, enjoyment and learning in the course. These themes are fully discussed in Chapter Seven.

6.7 SUMMARY

This chapter has concurrently interpreted the mixed-methods data generated across the case study year, particularly the written surveys and KSI interviews, in order to develop a deep understanding of Year 12/13 students' affective and cognitive response to participation in the stand-alone bioethics trial. Vignettes of a teaching and learning activity, changes in participation and altered relationships between participating students, were found to be a useful way to describe and reinforce emerging themes. Strong evidence of academic learning and retention over significant periods has been presented. All 31 (100 per cent) Year 12/13 KSIs reported development in their thinking processes as a result of participating in the bioethics course.

Through the observed and reported high levels of contribution and participation in the bioethics class, students developed and demonstrated good skills of argument and communication. As corroborated by the data, the substantial majority of students who participated in the Year 12/13 case study listened during bioethics lessons. They felt confident and uninhibited to ask questions to improve their understanding. Students felt free to share their personal opinion, which they learnt to justify and defend through reason and evidence. The increased confidence to participate and contribute substantially resulted from the students' perceptions of the bioethics course content as multifaceted and not categorically right or wrong, as they described the content of other school subjects to be. Through the teaching, learning and sharing of different perspectives, participating students' worldview was broadened. Students were prepared to accept the views of others that differed from their own, and developed tolerant and respectful methods of communication towards, and a genuine curiosity about, different perspectives. The competencies of managing self and relating to others were

developed through contribution and participation in the student-centred teaching and learning methods. These included waiting to speak and courteously asking others to substantiate differing claims. Critical thinking, philosophical argument and competency skills learnt within the bioethics course were transferred out of the classroom and into the other school subject, home, peer and social environments of participating students. Over 80 per cent of students who participated in the Year 12/13 case study reported that in no other school subject they had experienced, had they been given the opportunity or been encouraged to engage with their personal values and worldview, and that the bioethics course was unique in this respect.

The following chapter presents results for the Year 11 predominantly accelerate case study group, and provides a cross-case analysis.

CHAPTER SEVEN: THE YEAR 11 CASE STUDY AND CROSS-CASE ANALYSIS

The classroom is a microcosm of society that gives students the opportunity to prepare for their role as global citizens. (Ponder & Lewis-Ferrell, 2009, p. 129)

7.1 PURPOSE OF THIS CHAPTER

As analysis of the Year 11 data began, it became apparent that the strongly positive responses reported by the Year 11 case study group echoed and validated the responses from the Year 12/13 case study. While it is constructive to provide a description of the Year 11 case study results, in order to avoid duplication and repetition due to the similarity of responses, I determined to look for significant differences between the groups. Accordingly, Part One, which begins at section 7.2, provides a summary of the Year 11 case study results with respect to affective, cognitive, competency and academic learning outcomes and provides evidence of learning specific to the Year 11 case study.

Part Two moves to a cross-case analysis. Commencing at section 7.3, this cross-case analysis begins with a discussion of apparent differences identified between the two case study groups through the application of an independent t-test using a SPSS computer programme. Part Two also presents quantitative analysis that develops a construct to measure affective and cognitive response to bioethics (7.4). These quantitative analyses indicate that there are not significant differences in the response to the trialled bioethics curriculum between the two case study groups and justifies the combination of results from both case studies in Part Three.

Part Three focuses on the pedagogical research question that guided this study and examines the narrative-stimulated and discussion-based teaching and learning framework used in the trial curriculum and whether this facilitated engagement and contributed to student learning. Combining responses across both case studies, Part Three discusses students' and collaborating teachers' self-reported responses and experiences of interest and engagement with the bioethics curriculum and its delivery (section 7.5), and perceptions of learning within the bioethics course (section 7.6).

PART ONE: YEAR 11 CASE STUDY RESULTS

7.2 YEAR 11 CASE STUDY RESULTS: AFFECTIVE, COGNITIVE, COMPETENCY AND ACADEMIC LEARNING OUTCOMES

The strongly positive trends of values engagement, development of critical thinking skills and enhanced competencies of communication, self-management and relating to others that emerged from analyses of the mixed Year 11 case study data sources closely paralleled those of the Year 12/13 case study. The results in this section provide a brief summary of Year 11 case study responses to the initial survey (n=21) and the comprehensive EOC written survey (n=22) relating to the first three research questions. Evidence of philosophical and scientific learning within the Year 11 case study is given in more detail at the end of the section.

Nine Year 11 KSIs participated in interviews. While a smaller group in number, the Year 11 cohort wrote more annotations on their surveys than the Year 12/13 cohort. As section 7.2 is designed to be a succinct summary of the Year 11 case study results, interview excerpts, the nature of which were highly similar and demonstrated the same themes as for the Year 12/13 case study cohort, have not been included. In lieu of interview excerpts, all annotations recorded beneath survey items by Year 11 case study students

have been reported with the relevant results discussed in the summary sections that follow. This provides a sample of student thinking alongside the quantitative data.

7.2.1 Initial survey

Twenty-one Year 11 students completed the initial survey at the end of their first six bioethics lessons. These lessons had introduced the subject of bioethics; explored the case of Baby Theresa; discussed and critiqued utilitarianism and Kantian ethics; and had begun the exploration of what it is to be human, and the concepts of 'personhood' and identity with respect to consciousness and death. Results of the Year 11 case study cohort's responses to the initial survey are tabulated in Appendix Twenty-one.

With respect to students' affective response, the initial survey demonstrated participating in the bioethics course was trending 90 per cent (19/21) of Year 11 students towards thinking about their personal values, while 10 per cent (2/21) responded that it was difficult to say after six lessons. The majority of Year 11 students, 86 per cent (18/21), recorded that the bioethics course was causing them to consider the values of others. No student recorded a negative response to this item. Eighty-one per cent (17/21) of Year 11 students reported that participation in the bioethics course was causing them to analyse things in a different way. Seventy-six per cent (16/21) of the Year 11 cohort perceived that they were participating and contributing more during bioethics than they were in their other subject classes. Ninety per cent (19/21) of the class were experiencing the mix of teacher talk and practical activity as 'just right'. Fifteen of the 21 students (71 per cent) reported finding the course worthwhile at this initial point, with 57 per cent of them giving it the highest ranking of seven and no student responding negatively.

7.2.2 Affective outcomes

This section will briefly summarise the positive expansion of values understanding and expansion of worldview demonstrated by Year 11 students as a result of participating in the full-year, stand-alone bioethics trial. The distribution of Year 11 responses to the EOC survey items are tabulated in Appendix Twenty-two. Appendix Twenty-three graphically compares the Year 11 case study EOC responses with those of Year 12/13 case study students.

Reflecting the 100 per cent response of the Year 12/13 cohort, all nine Year 11 KSI reported that participating in the bioethics course had caused them to think about their personal values. In the EOC written survey, 95 per cent (21/22) of Year 11 students agreed to strongly agreed that they learnt more about who they were in bioethics as the course brought out their personal point of view. Eighty-four per cent (19/22) of the Year 11 case study students agreed to strongly agreed that the bioethics course made them question their personal values. The Likert scale item linking bioethics with the questioning of personal values elicited a high number of annotations:

Sometimes you wonder if you are too selfish, and that you're not always doing the right thing, even though you think you are. (Strongly agree; female)

I never thought I could make such cold decisions so coolly. (Strongly agree; male)

It makes me understand myself and my values more. (Moderately agree; female)

I've found that I have stopped a few times and thought about my opinions and views on certain things because I've been placed in

situations that made me stop and put my opinion in practice.
(Moderately agree; female)

I haven't yet decided what my values are but it has helped me understand other people's values and the values society is trying to impose on us. I realise that these are not always right or logical.
(Moderately agree; female)

In a similar manner to the Year 12/13 case study students, analysis of responses to the three EOC written survey open answer questions (see Appendix Twenty-two), revealed that the sizeable majority of Year 11 students reported no other secondary school subject offered them the same values exploration opportunities as they had experienced in the bioethics course.

Seventy-eight per cent (17/22) of Year 11 students agreed to strongly agreed that participation in the bioethics course had caused them to change the way they looked at the world. One student, who recorded a neutral response to this item, clarified this position with the annotation:

My Mum has always encouraged me to think with an open mind, so bioethics hasn't changed how I look at the world as much as made me think with an even more open mind.

Ninety-two per cent (20/22) agreed that the bioethics course made them think about things from a different point of view, with a substantial 64 per cent strongly agreeing that it did so. Two students annotated the item with respect to thinking from a different point of view:

I have a more open minded opinion now that I have learnt there are more sides to an argument in bioethics. (Strongly agree; female)

The course contains numerous different people each with a different view, so when you are constantly hearing different opinions you

begin to think with the different sides automatically. (Moderately agree; female)

7.2.3 Cognitive outcomes

Reflecting the 100 per cent response of the Year 12/13 cases study students, all nine (100 per cent) Year 11 KSI responded affirmatively when asked if they thought differently as a result of participating in the bioethics class. Themes of thinking 'more deeply' including thinking harder, taking more time to think, listening with greater care and considering alternatives and consequences, emerged from the students' spontaneous responses.

Consistent with the KSI responses, 21 of the 22 respondents (95 per cent) to the EOC written survey agreed to strongly agreed they thought more deeply as a result of participating in the bioethics course, with one student recording a neutral response. Two students made annotations beneath this item:

This course has allowed me to stop and actually take a deeper look into a situation instead of simply giving it a look over. I stop and think about the things behind it. (Strongly agree; female)

I agree, though I'd say I wouldn't always know I'm thinking more deeply. (Agree; male)

Also reinforcing KSI responses, 95 per cent (21/22) of Year 11 students agreed to strongly agreed that as a result of being in the bioethics course they had learnt to take more time over forming their opinions and were less likely to think superficially and make a spontaneous or gut-reaction response. Five students annotated this EOC item:

I've found that over time I have started to view both sides of the situation and now put a lot of thought behind my opinions so that I have reasons to hold that opinion. (Strongly agree; female)

Since joining the bioethics course I think more before I say things and make sure I understand the situation first. (Strongly agree; female)

It also makes me reconsider my answers to situations in the past. (Strongly agree; female)

I still [react spontaneously] sometimes, but nowhere near as often. (Agree; female)

I have more knowledge to consider before forming opinions and better understanding of how there's always stuff I don't know. (Agree; male)

Results from the written surveys (see Appendix Twenty-two), responses during the KSI interviews and the classroom observations all indicate that through the bioethics lessons Year 11 students learnt to think more critically; specifically to take more time and to think in-depth about the concepts and issues covered. These results reflect and support the results from the Year 12/13 case study.

Each of the six Year 11 KSI who were asked whether they thought that they argued better as a result of being in the bioethics course answered 'Yes'. Learning to support opinion with reason, considering alternative perspectives, and having knowledge of argument and ethical theory emerged as themes.

During the survey, 90 per cent (20/22) of Year 11 students agreed that their skills of argumentation had improved as a result of participating in the bioethics course as they had learnt to put a reason with their opinion, with more than one-third (36 per cent) strongly agreeing that this was so. The one student who annotated this item wrote:

Bioethics has made me realise that to have a solid argument you need to have a good reason behind your opinion and not just mindlessly saying it is right or wrong. (Strongly agree; male)

The recognised improvement in students' skills of argument led on from their being less spontaneous, less 'off the top of their head' and was associated with developing the ability to support their argument with reason. In turn, it was the supporting of an argument with sound reasons that was acknowledged by all Year 11 KSI as being necessary for someone to change their point of view. Once again, these results paralleled those from the Year 12/13 case study.

The majority (77 per cent or 17/22) of Year 11 case study students reported that their employment of more considered and in-depth ways of thinking were not restricted to bioethics lessons, but were transferred to other subject areas and to their life outside of the classroom. Two students made annotations beneath the relevant EOC survey item:

Sort of. Not many other classes pose these sorts of questions, but in life, definitely. (Agree; female)

I think bioethics is relevant to the world today and the thinking skills would be useful in debates and arguments etc. This also applies to the next item below 'bioethics is relevant to my life'. (Agree; male)

7.2.4 Competency outcomes

Eighty-six per cent (19/22) of the Year 11 class felt able to freely contribute within the bioethics class, with 72 per cent moderately to strongly agreeing so. Two students wrote annotations beneath the contributing ideas freely in bioethics item:

It's great. I feel like I am finally listened to! (Strongly agree; female)

Sometimes you don't want to offend others. (Disagree; male)

Seventy-three per cent (16/22) of Year 11 students affirmed that participating in the bioethics class included listening carefully, with a third strongly agreeing with this. Three students annotated the listening carefully item, including one of the students who recorded a neutral response:

I actually listen now. (Strongly agree; female)

I can keep my focus for longer than any of my other classes.
(Moderately agree; female)

I try, but I'm very loud and get distracted easily.
(Neither disagree or agree; female)

Eighty-six per cent of Year 11 students recorded during initial survey that the bioethics course was causing them to consider the values of others. Eighty-six per cent (19/22) also agreed to strongly agreed that their skills of argumentation had improved as they understood other people's values better as a result of being in the bioethics class.

Improved skills of argumentation were manifest in improved ways of relating to one another during lessons. Less spontaneous and more considered in their responses, and less judgemental of the views of others, Year 11 students demonstrated development in the competencies of managing themselves and relating to others that paralleled those demonstrated by the Year 12/13 case study cohort.

7.2.5 Academic learning outcomes: Evidence of shift

This more comprehensive section evidences the academic (philosophical, scientific and general) knowledge gained by the Year 11 case study students.

In conjunction with the development of competencies in critical thinking, the research curriculum was also designed to teach and critique philosophical theory, and to reinforce, and in some instances to teach, scientific concepts. Each bioethics lesson that Nick facilitated ended with some form of activity designed to indicate to him whether learning had occurred within the student group. Essentially Nick was looking for evidence of shift: for example, a shift in understanding of philosophical and scientific terms; in a student's use of philosophical and scientific terms; in a student's ability to argue philosophically; in a student's self-knowledge and examples of insight. Often these activities had a linked pre- and post- teaching and learning aspect. This section details one example, lesson six, which aimed to explore the concept of personhood.

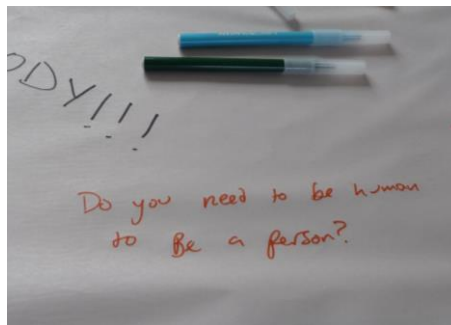


Figure 7.1: Sample of student group response to the question *What is a person?*

As students arrived into the lesson, Nick had the word 'Personhood' displayed on the smart board, and was cutting long sheets from an enormous roll of newsprint. Students were invited to form four groups and to record on the newsprint with colourful pens their collective, brainstormed response to the question *What is a person?* Nick then instructed students to move around each group's sheet and as they were reading the collective responses, to independently decide on what they considered the top three characteristics of personhood. Nick proceeded with the lesson explaining that some philosophers, including Peter Singer, suggest that Chimpanzees are more 'persons' than some human beings, for example, anencephalic infants. At this

point, Nick invited each student to use the Smartboard to place a symbol of their choosing beside an image of a Chimpanzee, the image of an anencephalic infant or on the centre line that divided these two images, to indicate which they thought was more of a 'person'. At this pre-teaching and learning stage, seven symbols were recorded alongside the Chimpanzee; seven alongside the anencephalic infant; and nine students were undecided and placed their symbol on the centre line.



Figure 7.2: Image of first responses to the *Which is more of a person, a chimpanzee or an anencephalic child?* activity



Figure 7.3: Image of second responses to the *Which is more of a person, a chimpanzee or an anencephalic child?* activity

Nick advanced the lesson with definitions of personhood from the perspectives of a variety of philosophers, and introducing the authentic case of Hiasl, a 26-year-old Chimpanzee. Hiasl, who has a penchant for pastries and certain television shows, but who does not like coffee, paints attractive paintings from which he earns an income. However, being a Chimpanzee,

Hiasl is not permitted to hold a bank account and despite being able to more than adequately cover his cost of living, Hiasl is facing the possibility of being released into the wild after a lifetime of domestication, due to the financial failure of his current home. In response to his plight, animal rights activists including the renowned Jane Goodall are campaigning to have Hiasl legally declared a person. Nick followed the Hiasl case with video clips from St Andrew's University, showing that Chimpanzees can memorise a sequence of numerals significantly faster than human adults or children, and can work co-operatively to solve problems. After reviewing the students' prior learning that an anencephalic infant has no consciousness including no ability to see, hear, feel or to be aware of their environment or own existence in any form, Nick returned the original Chimpanzee–anencephalic infant slide to the Smartboard screen, and beginning with students who had placed their symbols on the centre line, invited all students to re-answer the question and to shift their symbol if they wished. As the lesson drew to a close, the symbols of 12 students are placed beneath the Chimpanzee, 9 beneath the infant, while two remain on the centre line.

Seven of the nine undecided students shifted their symbols, indicating that they had additional information and a sense of confidence to make a decision. This included one female class member who as she moved her symbol from the centre line distinguished, 'I have decided which one is more of a person, but that does not mean more human'. However, observation of the class revealed that all students, whether they had moved their symbol or not, had a developed understanding of the issue. Nick reflected this as he commented after the class had left:

I loved the casting votes at the end where it was 'Well it's up to you' and the students were getting behind their own choices. (Classroom file 100421)

7.2.6 Academic learning outcomes: Evidence of philosophical and scientific learning

In a number of instances, the pre- and post- teaching and learning activities Nick utilised with the Year 11 students involved written activities including on occasion a piece of reflective writing or a written questionnaire. One example of this took place across lessons 15 through 17, which explored when life begins and in particular the ethical debate surrounding the use of embryonic stem cells. As Nick approached this topic, he invited the students to complete, independently and in silence, a brief questionnaire. On a landscape A4 sheet beneath the heading 'When does life begin?' that was accompanied by an image of a foetus in utero, were three questions: why is this issue important; what does science say about this issue; and what do different cultures/religions think about this issue? As aquatic sounding music gently played in the background, students were given as long as they needed to respond to the questions. At the end of the 10 minutes, Nick asked the students to name their papers and he collected them. For the remainder of this, and over the next lesson, the class explored the question of when life might begin. Using a series of PowerPoint slides, Nick introduced the class to a comprehensive variety of ethical, scientific, cultural, historical and religious responses to the question, including the concepts of monism, dualism and ensoulment. Students identified that the contemporary dilemma was not so much when life begins in a scientific sense, as when a person is formed (classroom file, 100811). As a summary, Nick played a timed PowerPoint comprising detailed images of human development from ejaculation of sperm and an ovum descending down the fallopian tube, to fertilisation, zygote, first and second divisions, blastomere, blastocyst, formation of the primitive streak, neural development, limb development and many more images through to and including birth. Students were captivated, and during a second viewing, Nick asked them to individually decide for themselves, if they could, at what stage they thought life had begun.

The following lesson, Nick considered stem cells and their potential in the treatment of numerous ailments. Students identified that there are few ethical concerns with the use of adult stem cells especially if informed consent was gained and a patient or donor consented autonomously. Rather, it was with respect to the use of embryonic stem cells that ethical issues arise, because if life has begun, then to extract and use the stem cells from an embryo is to destroy life or 'potential life'. Several students, including Isabella, Dan, John, Miriama and Bree, almost in unison identified and developed the discussion that this would be to use the embryo as a means to an end, much as Judge Moriarty had suggested Baby Theresa would have been used if she had granted permission for Theresa's organs to be transplanted. This demonstrated recall and the linking and development of concepts with prior learning.

At the end of this series of three lessons, Nick issued fresh copies of the *When does life begin?* questionnaire and asked the students to record new responses to the three questions. All students demonstrated an increased understanding of the issues relevant to the question of when life begins. Immediately apparent was that students had a better understanding of the relationship between the questions themselves following the teaching sequence. Students demonstrated a deeper understanding of the variety of philosophical, theological and even scientific answers to the question of when life begins. In learning about embryonic stem cell research, the students also identified that the question pertained to more than the issue of abortion. The pre- and post- responses from Candace, presented in Table 7.1, provide a typical example of the shifts in understanding made by students:

Table 7.1: Year 11 Case study pre- and post-teaching and learning responses with respect to when does life begin?

Pre: When does life begin questionnaire responses: Candace	Post: When does life begin questionnaire responses: Candace
<p><i>Why is this issue important?</i> Because if we don't really know when life begins, we do not know if we are as old as we think we are.</p> <p><i>What does science say about the issue?</i> That the stalk etc. does not 'bring' the baby, but that life begins inside the body and continues on from there.</p> <p><i>What do different cultures/religions think about this?</i> For example, Catholics believe that abortion is wrong, as it is the taking of a life.</p>	<p><i>Why is this issue important?</i> Due to the issues of abortion and stem cells etc. Since we do not know when life begins—be it at birth or when conceived etc.—we do not know if an abortion or use of embryonic stem cells should be considered as murder.</p> <p><i>What does science say about the issue?</i> That life begins once conceived, basically, as the embryo is growing etc. just like a living thing. But science says that the sperm and ovum are living cells. Scientists differ. Some say when you can no longer be twins. Some say when the embryo has brain activity.</p> <p><i>What do different cultures/religions think about this?</i> Some cultures believe that life begins when a baby is born, however, others wait days/weeks after the birth to call it a person and acknowledge the beginning of a 'life'. Catholics believe that life begins at the moment of conception. However, other religions believe that life begins from the moment of birth. There are numerous views on the matter.</p>

Student responses, as illustrated by Candace, demonstrated that they were beginning to engage with the distinction between the technical answer to when life begins and the philosophical and theological issue of when a person is formed.

During his EOC interview, Max unexpectedly commented on the depth of scientific teaching and learning that occurred within the bioethics course.

I was looking at reproduction and when the cells start to split. Bioethics had actually given us a lot more information about how the cells actually divide—like the different stages of division—when we were looking at [when does life begin and] ensoulment, than biology

did. They said the cell gets to this point and they then skipped about three stages and went to some long name I can't remember, and then they said 'and now it's a foetus'. So they completely skipped stages. Further, I came to a question that said 'at what point do the cells start to specialise?' and because they hadn't given us the stages in between, I had to go and look through a book, find all this stuff and find the stage that had the name after the first stage they had given us. And in this whole book they only seemed to have about three stages, when bioethics had shown us about eight stages. I thought that was kind of sad—that I got into human bio where they are meant to teach me a more focused look at biology especially human cells and reproduction, and they hadn't given me nearly any information what so ever. And while I couldn't remember the actual name—'coz in bioethics I was more focused on the thinking part of it—I am glad that I remembered that there were more stages so that I could find where to look in a book to find the [relevant] stage. (Max, 101029–03)

Max's observation demonstrates that a depth of scientific learning is required in bioethics, but this is, perhaps, required for a different purpose. Max has observed with respect to when life begins there are some important stages to the bioethical discussion that appear less important for the requirements of the human biology course. This provides evidence for the need to separate bioethics out as a stand-alone subject. Science courses do not necessarily give some information that is important to bioethical discussion.

7.2.7 Summary

This section has presented an overview of the results obtained through the survey and observation of the Year 11 case study students. Results show that through the teaching, learning and critique of different ethical theories and cultural and spiritual perspectives, the majority of Year 11 students were

encouraged to encounter, consider and evaluate both their personal values and the values of others. Encountering different perspectives and understanding the values of others resulted in an alteration in the way the majority of Year 11 students related to, and managed their response towards, people whose opinion differed from their own. These alterations included developing skills of forming and delivering a well-supported argument. Evidence of significant learning with respect to philosophical and scientific concepts was also presented. All Year 11 students reported an alteration in their thinking processes. These results closely align with results from the Year 12/13 case study group reported in Chapter Six (and as outlined in Appendix Twenty-three).

PART TWO: CROSS-CASE ANALYSIS

7.3 STATISTICAL DIFFERENCES IN EOC SURVEY RESPONSES: EXPLAINING THE SIGNIFICANCE

As the trends in the written survey responses and the themes identified through the interviews recorded with, and observations of, students in both case study groups appeared to be highly similar, the initial focus of the cross-case analysis was the identification of any statistically significant differences in responses to the EOC survey. Statistically, this process involved comparing the means of both groups to each of the EOC Likert scale survey items. An SPSS computer programme was used to compare the means using the application of an independent t-test. Results, which are tabulated in Appendix Twenty-four, indicated a statistically significant difference in the response of the two groups to five of the 25 items:

- Bioethics is no more interesting than any other school subject.
- Bioethics is not just sitting there doing bookwork, you get involved in it.
- You learn more about who you are in Bioethics because it brings out your personal point of view.

- I feel like in the bioethics class I am actually contributing by making some other people think by arguing the other side.
- I never learn or discuss anything like the problem-solving scenarios we do in Bioethics in any of my other subjects.

The focus of this section is discussion of these apparent differences, which can be attributed to the relative and small sample sizes of the two groups. One way that small sample size lowers the reliability of statistical tests is that slight differences in the spread and range of response may have a statistically disproportionate impact on analysis. As will be shown in sections 7.3.1 (spread) and 7.3.2 (range), analysis and supporting qualitative evidence with respect to the relative student identities, suggest that both case study groups demonstrated strong positive trends of response to each aspect of the course investigated.

7.3.1 Apparent differences due to spread of data

A t-test measures the difference between the means of two groups relative to the variability of the scores. What is clear from the data for the first three of the items listed above (see Appendix Twenty-five, Figures A25.1 to A25.6) is that the range for each item is the same for each case study group. It is the spread of responses within this range that differs, and this has resulted in an apparent rather than an actual significant difference between the two cohorts. For each item, both groups of data generate the same strong trend of response. The mode for the 'interest' item (see Figures 7.4 and 7.5) and the mode for the 'bookwork' item (see Appendix Twenty-five, Figures A25.3 and A25.4) are also the same for each case study group. For these two reasons, it is asserted that the statistical difference indicated by the t-test to each of these three items may be explained by the differences in sample size between the two groups, and the spread of individual responses within the range of ratings.

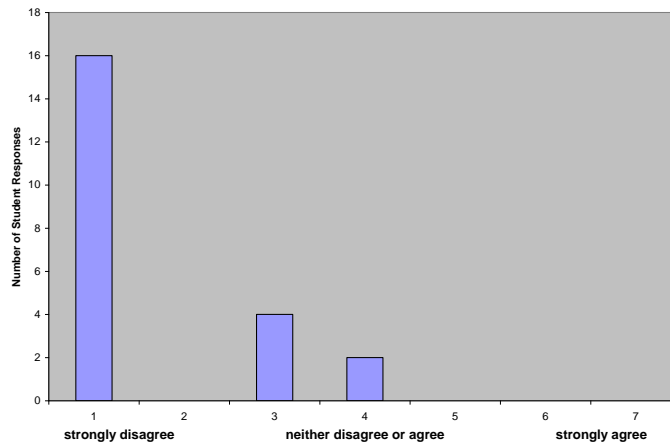


Figure 7.4: Bioethics is no more interesting than any other subject at school (Year 11)

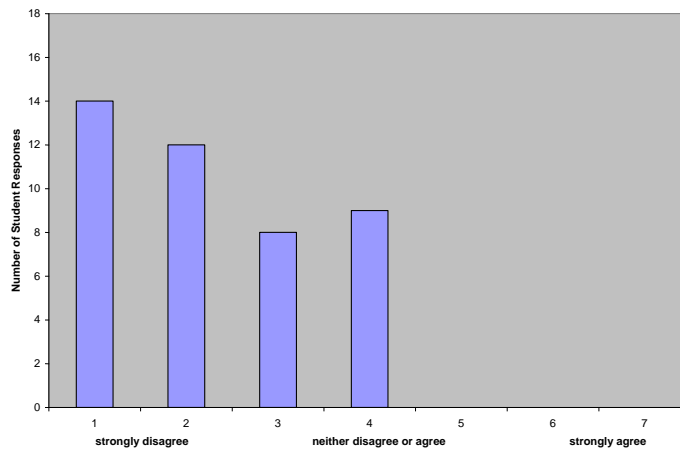


Figure 7.5: Bioethics is no more interesting than any other subject at school (Year 12/13)

Take, for example, the spread of responses to the item *bioethics is no more interesting than any other school subject* (see Figure 7.4 and 7.5). In addition to no Year 11 student recording a moderately disagree response, compared to 28 per cent (12/43) of Year 12/13 students, the number of students who recorded a neutral response to this item, nine per cent (2/22) of the Year 11 and 21 per cent (9/43) of the Year 12/13 students, also differed considerably. However, a similar strong positive trend of response is apparent for both groups. Similarly, the substantial majority of students in both case study

groups reported the same strong positive trends to the other two items; that participation in the bioethics course involved them beyond bookwork and resulted in increased self-knowledge.

7.3.2 Apparent differences due to the range of data

It is contended that the differences between the means of the two case study groups for the two remaining items, 'problem-solving scenarios' and 'contributing to the thinking of others', may be explained quantitatively by the difference in the range of responses and qualitatively by the difference in student identity inherent to the two groups. While the majority of students from both case study groups (Year 11, 95 per cent; Year 12/13, 69 per cent) agreed that they contributed to the thinking of others in the course by arguing a different side (see Figures 7.6 and 7.7); and the majority in both groups (Year 11, 95 per cent; Year 12/13, 70 per cent) agreed that they do not discuss the problem-solving scenarios such as those experienced in the bioethics course in other classes (see Figures 7.8 and 7.9), the range of scores differed between the two case study groups for both of these items.

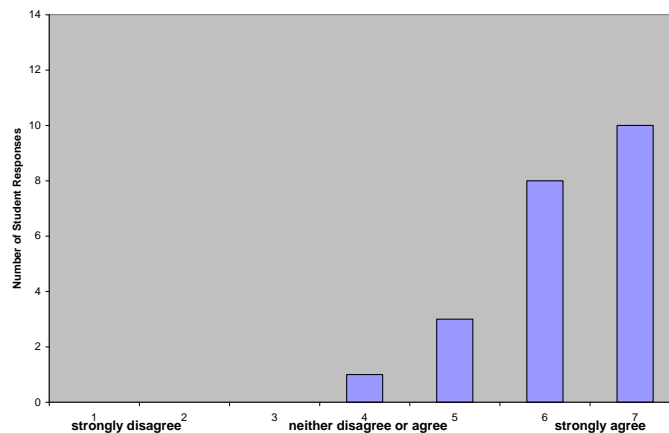


Figure 7.6: I feel like, in the bioethics class, I'm actually contributing; like making some other people think by arguing the other side (Year 11)

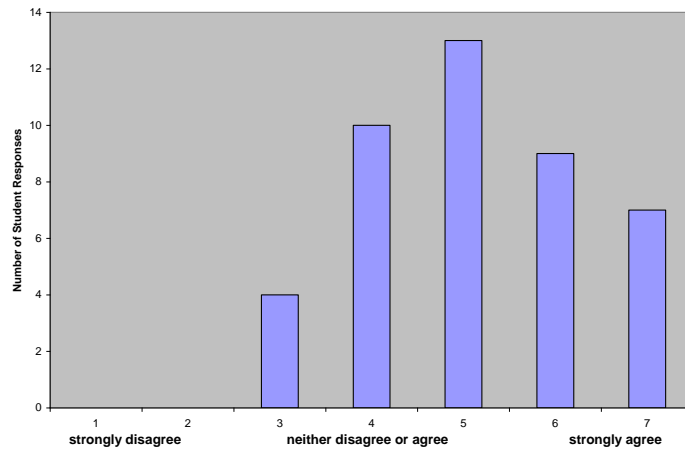


Figure 7.7: I feel like, in the bioethics class, I'm actually contributing; like making some other people think by arguing the other side (Year 12/13)

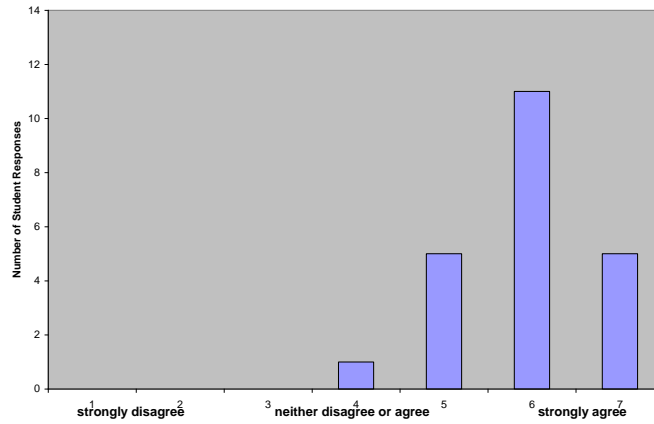


Figure 7.8: I never learn or discuss anything like the problem-solving scenarios we do in bioethics in any of my other classes (Year 11)

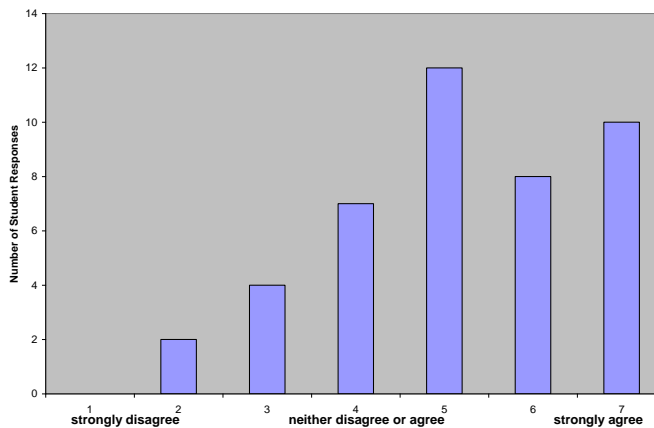


Figure 7.9: I never learn or discuss anything like the problem-solving scenarios we do in bioethics in any of my other classes (Year 12/13)

With respect to the relative discussion of problem-solving scenarios, while five per cent of Year 11 students were neutral for this item, and no Year 11 student disagreed (see Figure 7.8), 16 per cent of Year 12/13 students recorded a neutral response and 14 per cent disagreed to moderately disagreed (see Figure 7.9).

A possible reason for these differences may lie within the relative accelerate student versus transition student constitution of the two groups and the corresponding subjects that the students from each case study group learn. The Year 11 case study student comprising an above average to accelerate learning group were predominantly enrolled in what are often considered the more academic subjects including languages, mathematics and the sciences. These students were enrolled for significantly more NCEA credits than are required to achieve at each level and it is reasonable to assume that, based on both the students reports of their teaching and learning experiences in other subjects (see section 7.5), and the academic evidence that supports that classroom curriculum is assessment driven (for example, Jones et al., 2012), that both the nature of the subjects and the assessment emphasis limited the Year 11 students experience of life-based problem-solving scenarios.

In comparison, all of the Year 12/13 case study cohort were enrolled in transition, a subject designed for students who require 'their learning to be presented in a more individualised manner' (Koru College, 2011, p. 77). As described in Chapter Five (see section 5.4), transition includes practically based courses including legal aid; courts, youth and the law; employment agreements; and human rights. While the majority of the Year 12/13 group were enrolled in English, relatively few were enrolled in mathematics and/or any of the sciences or languages. Subjects such as community, sports and leadership, physical education, drama, media studies, tourism, food technology, and retailing, comprised the bulk of Year 12/13 case study

students' timetables. This contention is supported by the annotations recorded by two Year 11 case study students beneath this item:

In other classes, we are set work and have to follow the status quo. It does not allow us to grow mentally. We are just told what is right and wrong and we are not allowed to challenge it. In bioethics we are encouraged to do the exact opposite. (Strongly agree)

I've found that in the classes I take I haven't come across any other chances to learn about the things I have since joining bioethics because it isn't viewed as necessary to be taught. (Moderately agree)

While the spread for the respective case study results differed for this question, both case studies demonstrated that the majority of students did not encounter problem-solving scenarios such as those used in bioethics in their other school subjects.

The difference in student identity may also have relevance to the t-test results for the 'contributing to the thinking of others' item (see Figure 7.6 and 7.7). While the majority of students in each case study group (Year 11, 95 per cent; Year 12/13, 69 per cent) recorded an agree to strongly agree response to this item, a larger proportion of Year 12/13 students, 23 per cent, recorded a neutral response, compared to five per cent in the Year 11 group. Further, nine per cent of the Year 12/13 (4/43) students disagreed with this item, while no Year 11 student disagreed. Observationally, a number of the Year 12/13 students preferred to listen rather than speak during whole class discussions, with many of these students also attentive but silent during small group discussions. As Helen observed during our debriefing session following the tabulation and graphing of the responses to the initial survey, when I noted that several items would be improved through a change of wording:

And also I think what you'll have to bear in mind there, is that a lot of our [transition] kids are the Ivans of this world, who actually don't

respond in any class, so therefore the fact that bioethics hasn't *changed* the way—you know because that is just the people that they are. Some of them are just the people that sit at the back and who don't ever say anything. But they are quite happy to be in there. Now Doug is an example—I walked by Doug on my way to the café this afternoon, and he said to me 'Oh, Hi Miss, I'll see you soon' and then he said 'Oh—we've got bioethics—Oh Yay!', yet he never speaks [in class], never. (Helen, 100506)

As it was not their pattern to contribute their ideas verbally, it is possible that these quiet students would have responded neutrally, or disagreed with this item. This contrasts with the Year 11 group, field observations of which record that every student made oral contributions to both whole and small group discussions on a regular basis. Paradoxically, this item was a direct quotation made by a Year 12/13 case study student during their mid-course interview. No Year 12/13 student annotated this item. However, two Year 11 students added annotations:

I am allowed to voice my opinion in Bioethics. It makes me feel important (Strongly agree)

It is good to know and understand others opinions. (Strongly agree)

Quantitatively the differences between the means of the two case study groups for the 'problem-solving scenarios' and 'contributing to the thinking of others' items may be explained by the difference in range and spread of responses. Qualitatively, the apparent differences for these two items may be explained by the differences in perceived student identities within the two groups, which effect the choice of other subjects taken, and relative contributions during class.

7.3.3 Summary

A thorough examination of the five items that appear to generate statistically significant differences between the means of the two case study groups reveals that these apparent differences may be explained statistically through the relatively small sample sizes resulting in any slight variation in range and spread of response having a disproportionate effect. It is contended that no significant difference exists between the survey responses of the two case study groups and that the positive trends of agreement for all items in the EOC survey are evidentially highly similar for both case studies. Each of these items was designed to explore student responses to a particular aspect of the bioethics course, being values engagement; teaching method; relative interest; student contribution; and course content, respectively. Each of these areas was investigated through other items in the EOC survey and no statistical differences were observed for these similar items.

Qualitatively, the contention that no significant difference exists between the responses of the two case study groups is supported through the highly similar responses given during the interviews by KSI from both groups. Collaborating teacher and researcher observations that support a difference in perceived student identities, further explain the apparent differences recorded for these items.

7.4 ENGAGING DIVERSE LEARNERS

This section explores whether Year 11 accelerate students and Year 12/13 transition students of Koru College respond differently to the same bioethics curriculum, through the creation of a valid and reliable construct to measure affective and cognitive response to bioethics. As will be shown, a variety of statistical tests applied through SPSS affirmed the proposition that all students, regardless of their academic histories, affectively and cognitively engage with the subject of bioethics.

7.4.1 The construct

The small sample size across the two case studies (n=65) of the 2010 EOC student survey limited the quantitative analysis that could be applied. As described in Chapter Four (see section 4.6.5) the decision by Koru College to continue with bioethics as a stand-alone subject in the timetable beyond the research year provided and opportunity for an increased sample size through the survey of the 2011 bioethics course students. These extra students were not used in any comparisons involved with the purpose of the research. However, the aggregate data from the 14 questions selected from the 2010 research survey to form the 2011 student survey were put under a series of statistical tests including factor analysis using SPSS, in order to create a valid and reliable construct for *affective and cognitive response to Bioethics at Koru College*. A definition of reliability and validity within quantitative statistical research; the validity and reliability testing; and the results of the SPSS calculations of the statistical values stated in this section, can be found in Appendix Twenty-six.

Prior to testing the relationships in the conceptual model, it was necessary to test the robustness of the research data (Nunnally, 1978). As shown in Appendix Twenty-six, the Cronbach's alpha value (a measure of reliability) for the scale developed for this research was determined as 0.892. Stating that a Cronbach's alpha value of between 0.8 and 0.9 is very good, Nunnally (1978) refers to scales with a Cronbach's alpha value of 0.9 and above as excellent, as they indicate strong reliance on the scales ability to measure the construct. The Cronbach's alpha value for the final scale used within this research approaches 0.9. The KMO of 0.890 together with a Bartlett's test result significant to $p < 0.001$, deemed the affective and cognitive response to bioethics scale developed within this study as suitable for factor analysis (see Appendix Twenty-six, Table A26.1).

In addition to eigenvalues (see Appendix Twenty-six, Table A26.2 and Figure A26.1), factor analysis generates communality values for each item. What the construct is that the items are loading on to must be interpreted. Communality and component scores assist with this. For statistical validity, communality values of 0.5 are required (Field, 2005). Accordingly, this study adopted a communality cut-off of < 0.5 . The communality ratings from the factor analysis of the original 14-item scale are presented in Table A26.3 of Appendix Twenty-six. This table revealed that four items had communality values that were too low. While these items provide important feedback, statistically speaking, they were not measuring the same construct as the other items. Therefore, from the initial 14 items, 10 were retained. The factor analysis was then run without these four items, and this 10-item scale became the final construct. The factor analysis of the final 10-item scale showed that all items had satisfactory communality values (see Table 7.2), allowing further statistical analysis.

Table 7.2: Table showing communality ratings from the factor analysis following removal of four items with communality values < 0.5. (extraction method: principal component analysis)

Item	Initial	Extraction
I think more deeply	1.000	.642
Think about things from a different point of view	1.000	.578
Use new ways of thinking outside the classroom	1.000	.566
I argue better due to reason	1.000	.675
Thinking about what was discussed when I leave the class	1.000	.557
Makes you question yourself and your values	1.000	.688
Learn more about who you are	1.000	.679
Can contribute my ideas freely	1.000	.563
Caused me to change the way I look at the world	1.000	.630
Caused me to think about my personal values	1.000	.625

The component matrix is an additional measure of shared item variance, and reveals the level that each item loads onto a factor. Field (2005) suggests that 0.5 is a suitable cut-off value for component scores as it shows that the variation in the item is at least 50 per cent explained by the factor attributed to the construct. As the scale was determined to have only one factor, each item had only one 'component' or 'factor' score (see Appendix Twenty-six, Table A26.5). Using interpretation of the communality and component scores, the 10 items appear to be measuring a construct with respect to affective and cognitive engagement, including critical thinking about the bioethical issues included in the research curriculum and a participant's personal engagement and analytical response. Therefore, the 10-item construct was determined to be a statistically sound measure of affective and cognitive response to bioethics.

7.4.2 Proposition testing

Once all items were assessed for reliability and validity, the items were combined by the SPSS computer programme to generate an individual factor score for each respondent. This factor score is a single aggregate measure of the data that each respondent reported across their 10 survey answers.

Therefore, this factor score is a more solid measure of affective and cognitive involvement in the bioethics course than any individual survey question.

SPSS was then used as a tool to determine if there was a significant difference between the factor scores of one class to the factor scores of another; that is, the Year 11 accelerate students and the Year 12/13 transition students. The correlation test results are presented in Appendix Twenty-six, Table A26.6. This test showed that year group was significantly correlated with age and gender. This was expected in both cases, given the gender-biased sample between the two 2010 case study groups. However, a closer look reveals that the correlation of REGR factor score, which is the constructs factor score, and year group of 2010 (the way of measuring the different case studies) is only significant to $p = 0.089$. Therefore, the Pearson's test cannot show that the two groups respond differently to bioethics because it cannot show a relationship between year group and the construct.

A suitable test for determining whether the two case study groups are the same is an independent samples t-test. This test suits two groups of different people (independent variable) and seeks to discover if their distribution of answers results in a significantly different result in the dependent variable (the construct). Levene's test for equality of variances seeks to determine whether the independent samples can be suitably compared with a t-test. If Levene's test is satisfied to the $p < 0.05$ level, then the samples are *not* suitable for independent t-testing. As shown in Appendix Twenty-six, Tables A26.7 and A26.8, the Levene's test was 'failed', essentially deeming that the two 2010 classes were suitable for t-test analysis. The t-test, which shows that the two samples were only different to the $p = 0.089$ level (see Appendix Twenty-six, Table A26.8), indicates no significant difference within the mean and distribution of the construct between the two case study groups.

In essence, the independent samples t-test is not able to show that the two case study groups reported different levels of affective and cognitive

response to the trialled bioethics curriculum. This provides support to the theoretical proposition that regardless of where they sit on the distribution of academic abilities, participating students had an affective and cognitive response to bioethics. This strengthens the propositions that bioethics, taught in the manner of this research investigation, has a high affective and cognitive engagement factor, and that engaging in such a bioethics course enhances students' critical thinking and analytical skills.

PART THREE: ENGAGEMENT AND PEDAGOGY

7.5 PERCEPTIONS OF EXPERIENCE IN THE BIOETHICS COURSE

It is both the student's learning experience and her perceptions of those experiences that have educational value. (Boghossian, 2006, p. 715)

Having established in section 7.3 that the results from the two case study groups are highly similar, and following the testing of a construct that indicates that students have an affective–cognitive response to regardless of their academic histories (7.4), Part Three of this chapter combines the Year 11 and Year 12/13 results as responses relating to Research Question 4, the ways the narrative- and discussion-based pedagogy may facilitate student engagement so that academic, social and emotional learning may proceed, are addressed. As engagement is a prerequisite for learning, this first section of Part Three will present results related to participating students' and collaborating teachers' perceptions of their experience of the bioethics course. Following this, section 7.6 will present results related to participating students' and collaborating teachers' perceptions of learning within the stand-alone bioethics trial.

Throughout Part Three, data from the pool of 40 KSI across both case study groups is supplemented by data from collaborating educators and from written survey items (n=65). Additional tables and graphs that support the percentages quoted may be found in the appendices.

This section presents data related to participants' engagement with the bioethics course. Two themes that emerged vividly in connection with the substantial levels of engagement reported by students, and observed by the collaborating teachers, were the relevant, high interest content, and the narrative- and dialogue-based, student-focused pedagogy utilised in the research curriculum. Beginning with why students chose to participate in the bioethics course at the outset, this section will show that students' initial interest and curiosity in the bioethics curriculum was maintained throughout the year, with a minimal novelty effect operative (7.5.1). Teaching methods, which students perceived as allowing them the opportunity to participate and contribute and to act as co-creators of their knowledge, were spontaneously identified by participating students as the most enjoyable aspect of the course (7.5.2 and 7.5.3). Students' high levels of engagement were demonstrated through their perceptions of teaching and learning within the bioethics class and their reported continuation of discussion of bioethical issues beyond the boundaries of the classroom (7.5.4). Section 7.5 concludes with the unanimous perception by participants (students and collaborating staff) of bioethics as a worthwhile, relevant and vital subject, which should be included as a discrete field of study in the national curriculum (7.5.5 and 7.5.6).

7.5.1 Interesting, different and relevant: Students' perceptions of the bioethics course

As evidenced in this section, students joined the bioethics course because they were curious about the curriculum content, which they perceived from the taster session as 'interesting', 'different' and 'relevant to their lives'. By the end of the year, 'interesting' remained the word used by the majority of

students to describe the course. Contrary to any novelty effect, the majority of students perceived the course as becoming progressively more interesting throughout the year as they gained knowledge and developed thinking and communication skills.

Thirty-five of the 40 KSI were asked at the beginning of their first interview why they had *decided to join the bioethics class*? Two-thirds (24/35; 69 per cent) of students spontaneously responded that following the introductory taster session, they were curious about the content of the bioethics course and wanted to learn more. Twenty-one students (60 per cent) described the course as looking 'interesting', and 16 students (46 per cent) reported that from the taster session, the course content sounded 'different' or 'like no other subject'. An excerpt from Bree represents a typical response:

[I joined the bioethics class] because of the presentation they did in assembly and they showed what we would be doing in that class and it looked really interesting. It looked like something different and things that I like to discuss—things that people don't think about in everyday classes. Yeah, it sounded different from any other class that you take at school. You don't talk about say euthanasia and stuff in say Social Studies. Actually, it was euthanasia that was in the 'You can take bioethics and this is what it's about' presentation. And I didn't know what euthanasia was at first and it kind of got me interested; wanting to know what it was and why it was such a big deal. (Bree, Year 11, 101029–06)

More than 50 per cent of students' interview responses (18/35) expressed the perception that the content of the bioethics course was relevant learning. The following excerpt from Carrie is a representative example:

[I joined] because it seemed like no other subject. And definitely I am not really interested in school subjects but I am interested in things—I mean I am sure science and stuff relates to work and jobs and stuff, but bioethics relates to life in general. And it just seemed a lot more

interesting than any other subject. And, I've found it good because it opens your mind up to a whole lot of different things and it makes you think. It's hard to explain—but you are going to use these decisions in everyday life; [they are decisions] that you have to make, and you have to have an understanding of everything that's related to everyday life. (Carrie, Year 12/13, 100628–07)

Similarly, Hiria, a Year 12 student supported through the Athena Unit, expressed the notions of relevance and engagement in thinking; particularly thinking about different perspectives on an issue as the motivation for her joining the course:

Sitting in there and listening to all the bioethics things made me feel like 'Oh yeah, I need to listen to this for the future. I need to know what to expect' and I've found it very interesting. You know, before I thought that 'Oh yeah, nothing could affect your opinion' but now there is a lot to think about. (Hiria, Year 12, 100624–04)

Having described the bioethics course content as relevant to their lives, a third (12/35) of students reported their perception that they did not get to explore such material elsewhere at school in their response to the question of *why they had joined the bioethics course*. As Holly explained:

It's like stuff that you really don't talk about in other subjects, but it's quite vital information. (Holly, Year 12, 101101–03)

As will be shown in section 7.5.6, the themes of the relevance of the bioethics curriculum to everyday life, and the perception that such content was not generally available elsewhere in the curriculum, emerged strongly when students were asked at the end of the year, whether bioethics was a worthwhile subject to include in the curriculum.

The final question of the EOC written survey read:

If someone asked you to describe the bioethics course, what three words would you use to complete the sentence

The bioethics course is _____, _____ and _____.

Responses to this question, which are tabulated in Appendix Twenty-seven, show that the word ‘interesting’, used by two-thirds of responding students, was utilised twice as frequently as any other descriptor. One-third of students used the word ‘fun’ and 20 per cent of students used the word ‘different’. A variety of other words, including ‘enjoyable’, ‘engaging’, ‘awesome’, ‘thought provoking’, ‘useful’, ‘challenging’, ‘educational’, ‘informative’ and ‘worthwhile’, were also used.

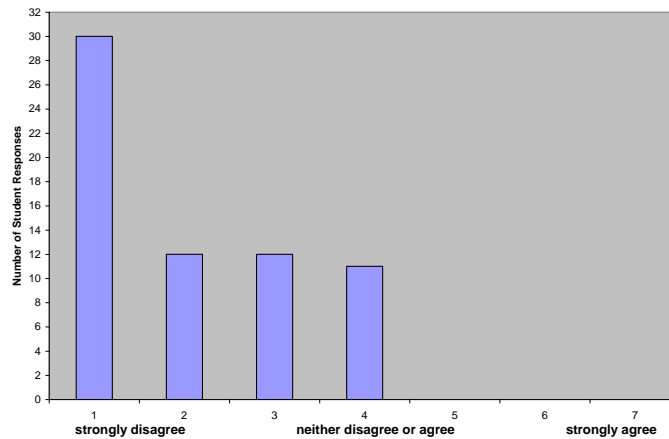


Figure 7.10: Bioethics is no more interesting than any other subject at school (Year 11 and Year 12/13)

Providing a relative measure of the interest value of the bioethics course were responses to the EOC Likert scale item *bioethics is no more interesting than any other subject* (see Figure 7.10).

Eighty-three per cent (54/65) of students disagreed, with 46 per cent strongly disagreeing with this item. This suggests that for the sizeable majority of participating students across both case study groups, bioethics had a high ‘interest’ value relative to their other school subjects.

One of the concerns with respect to validity within an approach such as this investigation has taken, is that the response expressed by students may be the result of a novelty effect. Therefore, I asked collaborating teachers explicitly whether the positive response to the bioethics course reported by students was a result of a novelty value. The teachers were quite clear that the positive student response was not about the novelty. They highlighted the students sustained level of interest across the year:

I was actually surprised at how we were able to keep the level of interest. And the students would say 'Oh, is it Thursday today! Oh excellent, its bioethics today!' And so that surprised me—they got right into it. I wondered whether they would, but they did—because I thought at the start of the year, I thought the big concepts and the big words might scare them away, but no. They were keen right to the end ... throughout the year, they were always aware that Thursday was the special day, where they would be finding out something new. The enthusiasm didn't go at all. (Helen, 101118)

As the bioethics classes were optional and there was an alternative (study in the case of the Year 11 students and returning to their fourth period of transition for the Year 12/13 students), it was reasonable to expect that numbers attending each class would decline over time if the novelty of the subject was wearing off. No such decline was observed, with numbers in all three classes remaining consistent throughout the year. In contrast to a novelty effect that wears off, it was noted by Koru College's principal that the bioethics course may have held students who might otherwise have drifted away from learning throughout the year:

Again, I think the students that you had—with Nick's group being a very good group of academic students who I think would be engaged and connected anyway—but it's that Year 12/13 group that you were working with, because they are always a little bit difficult to keep here

and to keep engaged and to keep on track. And their response was that they are still here, they are still here. (Principal, 101123)

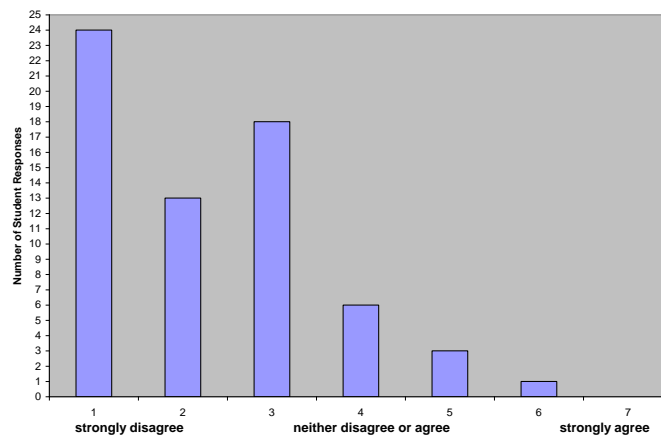


Figure 7.11: The bioethics class was interesting to begin with because it was new, but then the novelty wore off (Year 11 and Year 12/13)

The existence of a novelty effect was explored through the design of the written survey and the semi-structured key informant interviews. Figure 7.11 presents the distribution of responses to the EOC item *The bioethics class was interesting to begin with because it was new, but then the novelty wore off*. Eighty-three per cent of students disagreed with this item, with more than one-third strongly disagreeing that bioethics lost any interest value throughout the course. Eight students made an annotation to this item. Seven annotations (six strongly disagree and one moderately disagree) reported interest had not worn off as topics were varied and were ‘new’ each lesson. This theme was echoed by the six KSI (four Year 12/13 and two Year 11), who were asked during the interviews whether being different made the bioethics course novel to begin with, but that the novelty might have worn off. All six (100 per cent) responded that they felt no novelty effect was operative, reporting that as the issues being explored changed almost every lesson, the lessons were distinct and diverse and, therefore, maintained interest. Leah’s comment is illustrative of such a response:

because we were doing different stuff every day or every two days, then it’s a change. And you have a different opinion on each thing.

You don't think the same way about everything. (Leah, Year 12/13, 101026–01)

Five of the six, as the following excerpt from Aroha exemplifies, spontaneously reported that rather than become less interesting, they perceived that the course had become better over time:

No [the novelty didn't wear off]. As we kept doing the bioethics class, it got better and better. And I've ended up learning things that I hadn't learnt before. (Aroha, Year 12/13. 101026–06)

The observations of collaborating staff and the self-reported perceptions of participating students imply a minimal novelty effect operative with respect to the bioethics curriculum. However, collaborating teachers did highlight a possible prestige effect. That is, being involved in the research project may have had an element of prestige that contributed towards the positive response reported by students. When discussing how students were different at the end of the course compared to the beginning, Helen observed:

I think they are quite proud because they have got to do it and other people haven't. I think they found it quite good that other people would say to them 'Oh are you in that bioethics class! We've heard about that', so it was kind of a bit special for them; it was a self-esteem boost for them. (Helen, 101118–01)

Nick also observed a prestige factor, not just for the students, but also for himself:

I think it had quite a bit of prestige amongst the students—just telling people 'I do bioethics'—as it did with me! You know, at parties or you know with other teachers, 'Oh yes, I teaching bioethics'; 'Bio-what?!?'; 'bioethics—it's a radical new subject'. [laughter] And like with [the principal] mentioning it—it was the first thing she mentioned in her prize-giving speech—was that this year bioethics had taken place, and being very proud of that. I think it has given the school a

lot of mana. The idea of it being a more academic school because it is perceived as being a more academic subject. (Nick, 101118)

The mixed-method approach that sought to give a thick description of participants' experiences in the investigation assists in mitigating such a prestige effect.

7.5.2 What students enjoyed most and least about the bioethics course

Twenty-eight students were asked during the interviews *what, looking back over the year, they had enjoyed most about the course*. Seventy-five per cent (21/28), spontaneously identified the active and interactive nature of the class as the thing they had enjoyed most. Susan provides an illustrative example:

Getting joined in with the class. Not like having to sit there and write everything. Being able to do physical things as well—not just sitting there and reading and writing all the time—like actually being in a panel game, or actually acting something out. (Susan, Year 11, 101029–04)

Building on the discussion, active and interactive theme, excerpts from Year 11 Dan and Year 12/13 Dougal provide illustrative examples of the 75 per cent (21/28) of informants who included sharing, hearing and learning different perspectives on issues, among the aspects of the bioethics course that they had enjoyed the most:

As in aspect of the class, probably, I think, group discussions. Group discussions and the interesting activities as well that got your mind going. Debates and things like that were good as well. So the whole sharing, listening, debating, discussing thing. (Dan, Year 11. 101104–01)

Like critically discussing and looking at both sides of arguments and figuring out, like is there an issue or isn't there an issue or is it blown

out of proportion and stuff like that. And the teaching—like the teacher gets involved 100 per cent with the students. And like the different scenarios and like the theories—the greater good and things—they were really what I like talking about. Like I really like them—they made me think a lot—think about other things; a lot of things. (Dougal, Year 12/13, 100623–02)

Fifty-four per cent (15/28) of students, including Tua, joined Dougal in incorporating the opportunity to learn new things, including new vocabulary and ethical theory, when responding to *what is it about bioethics that you've enjoyed most?*

Um, the information that you are getting, and like the stories that Miss talks about. Yeah. I like learning something new, like just yesterday in bioethics. And I think about it more. (Tua, Year 12/13, 101029–05)

Narratives, wherever possible authentic, formed the stimulus material for the discussion of each new ethical issue explored. More than one-third of those interviewed (11/28 or 39 per cent), including the 25 per cent who had not immediately identified the active, interactive and discussion-based themes as their favourite feature, spontaneously identified the use of stories and scenarios as the aspect of the course they had found the most enjoyable. Emma's response to *what have you enjoyed the most about the course* is illustrative:

I like the stories. How interesting it is and it makes you think. Like with Baby Theresa and how she was brain dead and like choosing whether or not to give her organs. It was really interesting, because I thought yes and no at the same time. I thought what it would be like to be that person and what I'd choose; or that person. (Emma, Year 12/13, 101027–02)

Of the 30 KSI who were asked *what have you liked least about the course?* or *what haven't you enjoyed?*, 83 per cent (25/30) replied that they could not think of anything that they had not enjoyed, with 70 per cent (21/30) adding that all of the course had been interesting. The following excerpt from Dillon illustrates a typical response to the question *what have you enjoyed least about the bioethics course?*

Nothing at all. I have enjoyed all of it. There is nothing to be bored about. It's very interesting. It is especially fun to listen and to watch other stuff that you didn't know about. It is very interesting knowing what's happening all around the country and the world. (Dillon, 101026–07)

Relating to the interactive, discussion and story-based pedagogy being what the substantial majority of students reported as enjoying the most, three of the five students who named something that they had not liked about the bioethics course, specified a particular lesson that involved working independently. The two Year 11 students named the single lesson where they were set an independent research task in the library, while the Year 12/13 student named an occasion that had involved silently reading a story. The other two respondents who named what they had not enjoyed about the course, Ishani and Sophie, referred to face transplantation discussed during the Allotransplantation topic:

Argh—maybe about the faces—about the girl that had the accident and she had skin [grafts]. That made me a bit uncomfortable about how she looked. Because of the way she is looking when she goes out in public people will make fun of her and that will be hard and harsh for her and I don't know if she will take it or not—it will be hurting to her. (Ishani, Year 12/13, 100628–06)

Specifying the same example, Sophie alluded more generally to situations that made her sad as the aspect of the course that she did not enjoy:

Mmm ... I don't know, what I didn't like. I don't know—there were things that made me sad, like the people having face transplants; like that girl who was in the car crash and her whole face was burnt, that was sad. (Sophie, Year 12/13, 100625–04)

Both Ishani and Sophie demonstrated compassion and empathy in their response, and demonstrated how the bioethics curriculum provided an opportunity to develop and practice these values.

7.5.3 Perceptions of teaching methods

This section details participants' perceptions of the teaching methods used in the stand-alone bioethics curriculum trialled in this research investigation. The section is divided into areas detailing students' identification of the narrative-stimulated, discussion-based teaching method integral to the research curriculum as different (7.5.3.1); that the teaching method used in the bioethics curriculum was fun (7.5.3.2); that the narrative-stimulated, discussion-based teaching method required active rather than passive thinking (7.5.3.3); and that the teaching method led to students' perceptions of themselves as collaborators in the construction of knowledge (7.5.3.4).

7.5.3.1 Narrative and dialogue teaching method was 'different'

Having identified the content of the bioethics course as 'different', the perception of the active, student-focused, dialogue- and narrative-based teaching and learning method used in the research curriculum, also described as 'different', arose repeatedly during the interviews as KSI discussed a variety of aspects of the bioethics course. 'Different' is a relative measure, and students spontaneously compared the interactive teaching method used in the bioethics trial to what they described as textbook, whiteboard and writing focused teaching methods, which they portrayed as common to many other subject classes. While some survey and semi-structured interview

questions were designed to give a relative measure of, for example, interest level, engagement, and the opportunity to explore personal values and to discuss ethical issues, much of the inter-subject comparison arose spontaneously as students assessed and described their experience of participating in the research trial.

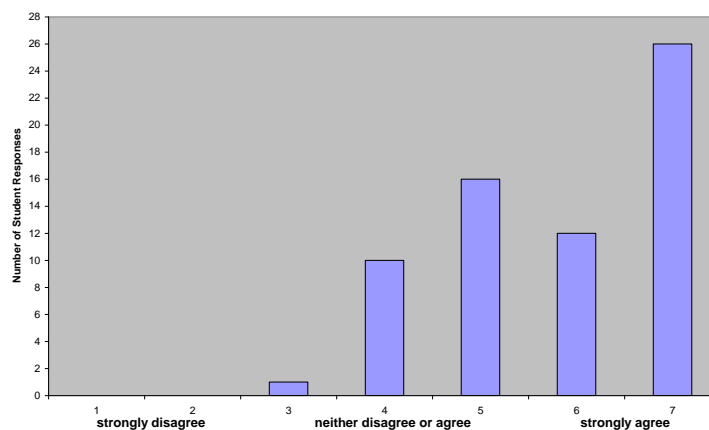


Figure 7.12: The teaching methods used in bioethics differ from those used in my other school subjects (Year 11 and Year 12/13)

During the mid-year interviews, 81 per cent of the KSIs spontaneously identified the teaching methods used in the stand-alone bioethics trial as ‘different’. Seventy-two per cent stated that they did not experience the discussion-based teaching and learning methods used in bioethics in their other subjects. One-third of students (34 per cent) spontaneously identified the use of stories and scenarios as unique to the bioethics class. All but a half (47 per cent) of the students used the phrase ‘it is not just bookwork’, or similar when talking about their experience of the bioethics course. Given these emerging themes, I decided to incorporate a selection of associated items into the EOC survey. As shown in Figures 7.12 to 7.15, the mid-course interview responses were endorsed by responses to the four related EOC items. Tables showing the distribution of responses for these items can be found in Appendix Twenty-eight.

Eighty-three per cent (54/65) of Year 11 and Year 12/13 students agreed that the teaching methods used in bioethics differ from those used in their other school subjects, with 40 per cent (26/65) strongly agreeing so (see Figure 7.12).

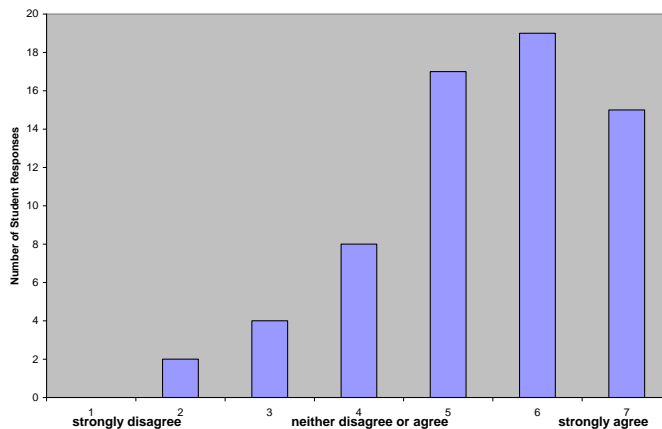


Figure 7.13: I never learn or discuss anything like the problem-solving scenarios we do in bioethics in any of my other classes (Year 11 and Year 12/13)

Seventy-eight per cent of students across the two case studies agreed to strongly agreed that they do not discuss anything like the problem-solving scenarios that they encountered in bioethics, in any of their other subjects (see Figure 7.13).

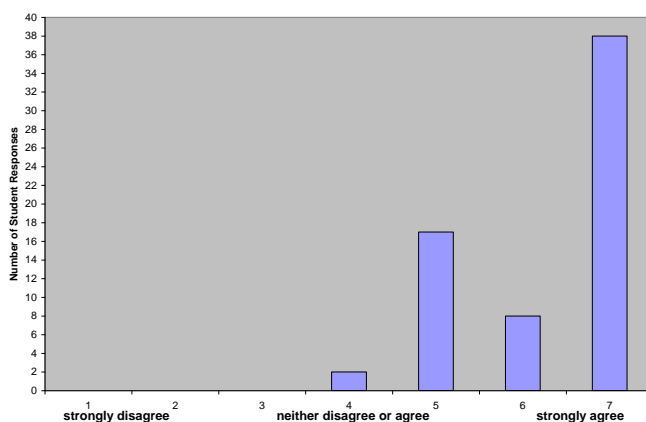


Figure 7.14: Bioethics is not just sitting there doing bookwork, you get involved in it (Year 11 and Year 12/13)

When surveyed, 97 per cent per cent (63/65) of participating students agreed that bioethics involved them beyond bookwork, with the majority (58 per cent, 38/65) strongly agreeing that this was so, and no student disagreeing (see Figure 7.14).

Acknowledging the variety of teaching methods and resources used throughout the bioethics course, a question in the EOC invited students to rank a list of techniques utilised on a five-point Likert scale from 'very boring' through to 'highly engaging'. Two students chose not to respond to this question. Responses (tabulated and graphed in Appendix Twenty-nine) show that 'You Tube and film clips' (57/63), 'Whole class discussions' (56/63) and 'Teacher telling stories' (55/63), ranked highly for engagement, with 'Teacher telling stories' the only method that did not receive any ranking of 'Boring' or 'Very boring'. This was followed by 'Hypotheticals' (49/63), 'Group discussions' (46/63), 'Teacher reading stories' (41/63) and 'Role plays and dialogues' (38/63). Forty-one per cent (26/63) of students found the use of 'Songs and lyrics' engaging, while 46 per cent (29/63) were indifferent, and 13 per cent (8/63) ranked this teaching tool as boring to very boring.

'Student reading stories silently' ranked poorly for engagement, with more than half the students (56 per cent, 35/63) recording a boring to very boring rating, 30 per cent indifferent and just 14 per cent ranking this a very engaging to engaging teaching method, This corresponds with the responses presented in the previous section, where independent reading and research were identified by three students as the only things they did not enjoy during the course.

Surprised that the use of narrative and discussion, for her a fundamental pedagogy in the individual programme learning environment of transition, was not more generally used, Helen reflected her professional understanding of the role of student-focused teaching, particularly for reluctant learners:

I was actually quite surprised about discussions and that they don't have them in other classes ... I guess that shows me that it is not a generalised thing. There is still a lot of change that is needed to discover how reluctant learners tick. Sit down, write this; copy page 21 is not going to do it for them. ... They like being read too and they like to feel like they are part of the whole delivery and that they can ask questions. Narratives help you to build relationships. If you've got the relationships you can teach the students anything and they will do stuff for you—but if you don't have the relationship, then you are fighting them all the way and it doesn't matter how clever your lessons are, they are going to resist them. (Helen, 101118)

Engaging students in learning, fostering classroom interaction and building relationships with and between students are important aspects of the narrative-stimulated, discussion-based teaching method integral to the research curriculum and employed by both collaborating teachers. These aspects of the narrative, discussion-based pedagogy will be developed further in the chapter that follows.

Pat perceived the differences between teaching and learning in bioethics and teaching and learning in his other subject classes as related to assessment. He viewed learning in bioethics as completely different to learning in his other subjects, and during the interview, raised the issue of learning and assessment in association with the absence of traditional bookwork:

I definitely do enjoy taking the [bioethics] course—it's helped. I do think different views on things afterwards and I mean I do learn things in there all the time—it's just that it's not worth many credits; it's not anything we are being tested on. In other classes that are like English, maths, that kind of thing, it is all assessed and we are all kind of expected to learn everything, but in ethics it's not assessed or anything so you can't compare it—they are two different types of learning. (Pat, Year 12/13, 100623–03)

Acknowledging the ‘two different types of learning’ and a perceived non-existence of a necessity to ‘learn everything’ due to the relative absence of assessment, Pat nevertheless felt he was gaining knowledge in the discussion-based course. Participating student and collaborating teacher perceptions of the degree and depth of learning in the absence of written notes and compulsory formal assessment will be expanded in section 7.6, which examines perceptions of learning within the stand-alone bioethics trial.

7.5.3.2 Fun and energising

After ‘interesting’, ‘fun’ was the term most used by students to describe the bioethics course in the EOC survey written-answer question. The bioethics class was also spontaneously described as ‘fun’ by over a third of KSI when describing how bioethics compared to other subjects. An excerpt from Praveena exemplifies a typical description:

It [bioethics] is fun and interesting. Like, other classes aren’t as fun.

Tell me more about ‘fun’.

Like learning new things and getting to share your opinions and no right or wrong answers. So, all the other classes are like writing and yeah ... You get to speak your opinions in the bioethics class. Yeah. It’s not as—like in bioethics you’ve got things to offer your opinions to, like the scenarios. Yeah, like what to do and why you should do it. (Praveena, Year 11, 100624–06)

Aligning the teaching methods she utilised in the bioethics curriculum with a metaphorical ‘spoon full of sugar’, Helen observed:

The fun part of it means that you can sneak the learning in and they don’t really notice, and they don’t really realise that they have done it. I know that they liked anything that involved a story with people—you

could tell. They like the story with real people because they don't regard that as really learning stuff, it's just 'Oh, we are getting told a really good story', which for them is not learning, it's just a story. And I think for those students that works really well, because the learning can be hidden and you can go back to it and they know what you mean. Whereas if it was just in a paragraph in a book, it would be 'forget it!' ... The fun thing, whether you like it or not has got to be in there. If they think it's fun they will want to do it. (Helen, 101118)

As will be described in the immediately following section (7.5.3.3) and in section 7.6, students acknowledged that although they were having fun, they were nevertheless actively engaged in learning. Nick described his sense of excitement as an educator observing the engagement of his students:

Certainly it was overwhelmingly exciting to see everyone so wanting to talk on this issue, or this point—'I want to respond to what she just said!' and 'Woop!—OH!—I ...!' People bursting with excitement at this idea of learning; at this idea of new things to them. Topics they had not come across but which they soon became very passionate about, which I thought was very exciting. (Nick, 101118)

Nick then went on to describe the link between the sense of fun and excitement experienced in the bioethics class, with engagement and learning through the narrative-stimulated, activity and discussion-based pedagogy:

It's exciting seeing students so engaged and putting forward thoughts and then listening to people's responses and coming back. Yeah, it was that bouncing off each other I think drove that excitement. ... They got a sense of fun from it. It was fun. I mean students walking into class and you are giving them an envelope with half a card in it, and 'What's this?', 'Oh, you'll find out'. And that sense of delivering learning in a completely new way—a fun way; and an engaging way. And using the Smartboard, that lent to a lot of fun.

I think students understood that they were in a different sphere—they were in a bioethics class and that was completely different. ... You don't really get that in many classes where you have got people really stating 'I think', 'I feel'. You know, 'I feel this, but I am not sure why I am feeling it', so questioning their own feelings about something. And exploration was certainly part of it. That engagement through exploration. And the situation of stories of real life. And a lot of it was 'what would you do in this case?' It's using that imagination to bring these ideas and concepts to life. That's what made it 'fun'.
(Nick, 101118)

Nick observed the critical thinking required as students shared ideas, in addition to the courage and confidence to explore and test ideas and opinions. The sense of fun established in each case study class by Helen and Nick and reported by KSI, translated into a sense of exhilaration for a majority of participating students. When I asked 25 KSIs how they *felt after a bioethics class*, 17 (68 per cent) expressed a positive sense of being energised; a 'Wow' factor as 7/17 (41 per cent) described it; a sense of exhilaration:

I always feel kind of happy, kind of exhilarated—because I'm excited about how we have had the huge discussion and everyone is still arguing even after class. And I argue with my friends about what we were talking about in class and it just goes on and on and on, and it feels—I guess when I come out of any other classes, usually I'm just like 'Oh yes, class is finished' but with bioethics I don't notice that the hour has passed. (Isabella, Year 11, 100625–02)

Like Isabella above, more than half of the KSI reported absorption in the class to the extent that they did not notice time passing. Students, including Leah, reported being totally focused, alluding to being in a state of flow:

Like I get involved in the conversation and I just feel like my brain hurts I've been thinking so much. It feels like I've gained more

knowledge about stuff. It just gets you thinking, like focused I mean. Once we start talking about it I just focus on it—I don't see anything around me; I'm just like focusing and listening. I find it really interesting. (Leah, 100623–06)

Half of the KSIs variously described looking forward to the next class as they left the current one, or reported their disappointment that the current class was over. Year 12/13 Tariana, and Year 11 Sabrina are examples:

[At the end of a bioethics class, I feel] like I've let out my own thoughts and then heard everybody else's and then I can't wait till the next one. (Tariana, Year 12/13, 100624–05)

You've kind of got a little 'rush' from all the arguing and stuff. It's like kind of 'Wow! That was good!' But at the end you are also 'Oh, crap, now I don't have it for another week!' (Sabrina, Year 11, 100628–02)

As the facilitator of the class, Nick also described feeling energised at the end of a class in an unsolicited comment:

And it left me with an energy, which you don't often get in teaching, where you are energised by having taught that lesson—by having such a wonderful lesson; such an interesting lesson. You know, that was enjoyable; that was enjoyable. (Nick, 101118)

In responding to the question of how they *felt after a bioethics class*, 60 per cent (15/25) of students stated they were still thinking about the content of the bioethics class, including the different perspectives expressed, as they left and for some time thereafter:

It makes me think—it makes me think for the rest of the day. [Laughs.] And it makes me think, if I was in that person's position, or what if it would happened to people I know, what would I do?—It makes me think deeper into the situation even after we've talked about it in class. (Carrie, Year 12/13, 100628–07)

Like I've just learned some new things that I normally wouldn't have heard in a normal day. Like with the Baby Theresa thing, we would never normally like do that in a class. (Dion, Year 12/13, 100623–07)

Like Dion, 56 per cent (14/25) of the students who were asked how they *felt at the end of a bioethics lesson* responded that they felt they had learnt something new. Praveena's simple response 'Yay, I've learned something new!' (Year 11, 100624–06), conveyed the positive feelings of enjoyment and the satisfaction and confidence gained from acquiring new knowledge, and relates to the feelings of exhilaration explicitly expressed by two-thirds of students when asked how they felt at the end of a bioethics lesson.

7.5.3.3 Active thinking and construction of own knowledge on relevant topics

When recounting their experience of the bioethics course, 66 per cent of KSI described the teaching method and the content of the class as provoking active thinking. Rather than being told what was right or what was required by the teacher, two-thirds of the KSI (21/32) reported that the teaching method used in the bioethics course required, and permitted them to think actively. An excerpt from David, who integrates specific comment about engagement using visual clips and discussion rather than bookwork, is illustrative:

There's no one set view—it allows you to think more about things—It's not 'this is the way it is done'. It's, 'this is what is here; now what do you think of it?' It fits the way I learn. It's kind of showing it—I can see it—it's not just a book. You get the real, actual situations. It's kind of not just looking at a book and reading from that, which doesn't work for me. But if you show me—like the Food Inc. video and all that—because it is right there in front of me I have the chance to process it, which I can't do as well with a book. (David, Year 12/13, 101028–03)

As the facilitator of the Year 11 case study class, Nick also perceived that trialled bioethics curriculum required an active and deep level of thinking:

It's a high-level thinking subject—it is encouraging students to think at a really high level, or a higher level than they normally would in other subjects. (Nick, 101118)

Through practical thinking and active participation in discussion by listening and contributing, students perceived themselves to be more directly and interactively involved in the creation of their knowledge within the bioethics class. Dan provides an example from the Year 11 case study:

In bioethics, we kind of, we are being really original, rather than doing 'learning' of what's already been done. We are coming up with our own ideas and then working on them and discussing them, rather than doing something, or learning something that has already been decided on. You've got opinions and you work things out. Whereas in another subject you are just being told what you need to do and what you need to understand and you just work away at understanding it. And because [in bioethics] you have to think, you have to justify the decisions you make and you have to think about why you are justifying it, so then you kind of understand your opinions on the things. (Dan, Year 11, 100625–07)

An excerpt from Shane exemplifies students who reported the opportunity provided to practice decision making in bioethics:

Bioethics is different. It's more things that are going around in the world—like things that are happening around you all the time; that people have to make decisions about every day. So, it doesn't matter what it is, like big or small, you are still going to have to go through the process. It's like, make a decision. In other subjects, you just get given the work—like there isn't any way you choose. (Shane, Year 12/13, 100624–01)

Shane's response also reflected his perception of learning done within the bioethics class as relevant learning, a theme spontaneously expressed by two-thirds (66 per cent) of students when describing an inter-subject comparison. In clearly enunciating the theme of relevance of learning Carrie's response also canvassed the themes of bioethics requiring students to think more deeply than other subjects; the freedom to participate; and interesting, engaging and changing topic content motivating students to learn:

[Bioethics] makes you think about everything more deeply. ... It's hard to explain—but you are going to use these decisions in everyday life. They're decisions that you have to make, and you need to have an understanding of everything that's related to everyday life. ... And in other subjects, not everyone can join in, because not everybody gets what's happening. Not everybody is interested in what's happening. Just say it's a chemistry equation, not everybody is going to know the answer and some people won't have listened in the first place. But in bioethics, everyone can actually relate to in some way. And it's interesting. It brings up things that happen in everyday life and that you have to deal with. And I just think it captures everybody's attention because everyone can relate to it in some way. (Carrie, Year 12/13, 100628–07)

In her response, Carrie described how material that is perceived as relevant is inherently more interesting. Relevant and, therefore, interesting material is engaging; and engaging material motivates students to learn.

7.5.3.4 An 'open' and interactive class

During the interviews, 53 per cent of KSIs described bioethics as an 'open' class. Excerpts from Year 11 case study participant Isabella and Year 12/13 participant Michelle provide examples of typical responses by students:

[Bioethics is] more open ended. Like the other subjects they just teach you—like in history, they just teach you all the facts; in maths they teach you two plus two is four and stuff; but then you get to express your opinions in bioethics. You get to think more for yourself instead of just taking information in and you get to express yourself. And in other classes, whenever you want to talk you have to put your hand up and stuff, whereas in bioethics we are always arguing—it's a bit less organised, but more friendly, I think, because everyone gets to express their opinions. (Isabella, Year 11, 100625–02)

It's more open—everyone has their own opinions and stuff—It makes it like everyone gets involved and we are all like 'Ra-ra-ra'. We don't really have anything, any discussions like that, in other classes. (Michelle, Year 12/13, 100623–08)

Two emerging themes are exemplified in these two excerpts. Firstly, the sense of openness appears to relate to theme of students creating their own reasoned views rather than being passive receivers of information. Here, 'more open' conveys the perception by students that they were not being directed towards one pre-prescribed outcome or understanding in the bioethics class. This was previously described, for example, by David and Dan in section 7.5.3.3 above, and Dougal, 'it's not just the teacher telling you and you put it away in your head' (see section 6.4.1). The second theme described by openness relates to students' perception of having greater freedom to participate, contribute and share personal views. The content within the bioethics course was perceived as more open ended; more open to personal interpretation and opinion; and more open to the sharing of these.

Also describing the bioethics class as 'more open' and acknowledging 'the sort of setting it is', Kate alluded to an increased opportunity to learn and practice values, for example, respect, within bioethics, a theme previously described in sections 6.3.1 and 7.2.2.

I reckon it's more respectful in there because of the sort of setting it is, and like how we need to be open to saying what we think—It's more open I guess, than in other classes. (Kate, Year 12/13, 100623–05)

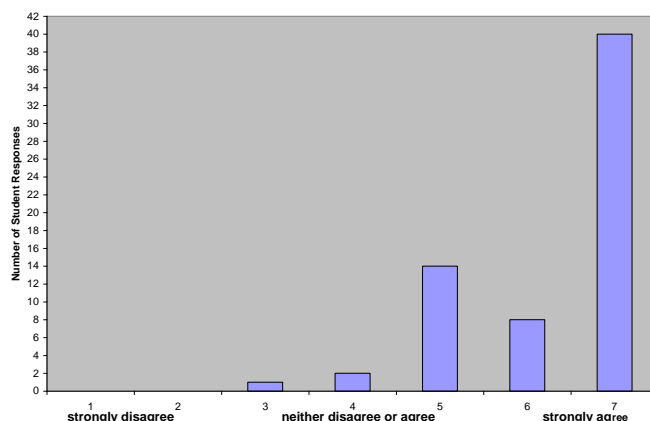


Figure 7.15: Bioethics is completely different to any other class I've been in (Year 11 and Year 12/13)

In summary, 95 per cent of the combined Year 11 and Year 12/13 case study students perceived the bioethics class as completely different to any other class they had been in, with 62 per cent (40/65) strongly agreeing that this was so (see Figure 7.15). As evidenced in this section, the perceived difference related to the teaching method used in the bioethics trial. The story- and scenario-based issues that were presented to students through a variety of genre, and that were the foundation of the discussion-based teaching and learning, were perceived by students as requiring them to think in a wide and deep manner, and as actively involving them as co-constructors rather than passive receivers of knowledge. As a result of the teaching method used in the stand-alone bioethics trial, students perceived an openness including a freedom from being right or wrong and a freedom to contribute. This reinforced themes previously described in sections 6.5.1 and 7.2.4. In addition to facilitating practice in the competency of critical thinking, the narrative-stimulated, discussion-based teaching method perceived by many as fun, facilitated the expression of respect and developed students'

confidence. The relevance of the bioethics curriculum content was also described.

7.5.4 Relative engagement

This section presents results that describe students' levels of engagement with the bioethics curriculum relative to their general levels of engagement in other areas. As a measure of engagement, data was gathered, during both survey and interview, on whether students continued thinking about the bioethics curriculum content outside of class, and in what way, if any, this might differ from thinking about the content of their other classes. In responding to these questions during the interviews, many KSI expressed a heightened engagement with current events in the television and printed news media.

Students' reported high levels of engagement with the bioethics curriculum were evidenced through their continuing discussion of issues raised in the bioethics class in their home and social environments. In the survey, students reported that they trended towards talking about bioethics more at home in comparison to other subjects (see Figures 7.16 and 7.17).

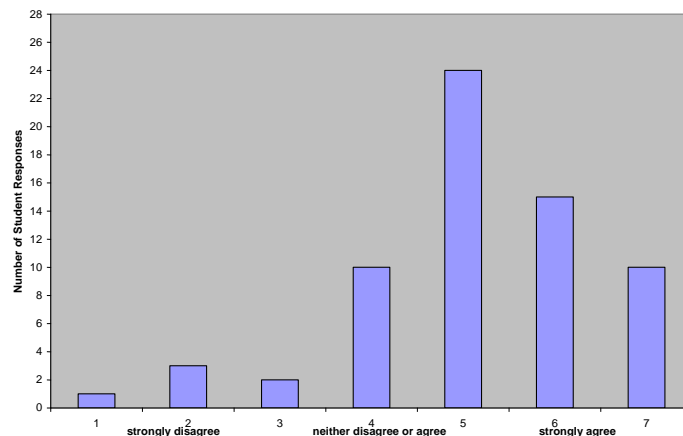


Figure 7.16: I often discuss things that we have explored in bioethics at home (Year 11 and Year 12/13)

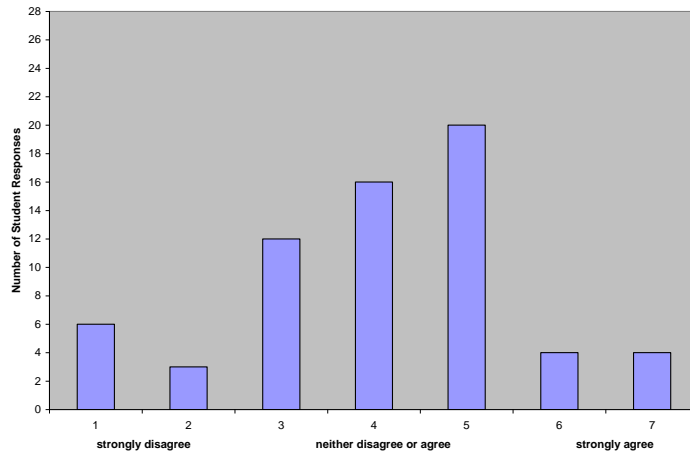


Figure 7.17: I often discuss what I do in my other subjects at home (Year 11 and Year 12/13)

Signifying engagement with the course, numerous students spontaneously reported that the topics and scenarios discussed in the bioethics class had become part of their conversations with others outside of class time. For example, when asked *do you think you think differently as a result of doing the bioethics course*, Hayley responded:

Yeah, about quite a few things, I do. [Pause.] Like the cultural relativism one—like that really opened my eyes to stuff I hadn't really thought about before. I love the class and I talk about it with heaps of other people, like heaps of my friends who go to this school, who think it is really interesting. Heaps of my friends ask me 'Oh what did you do in bioethics today?—what did you do today, tell me!' and I think that a lot of people would take the class and would love the class, and would learn a lot from it—learn a lot about different cultures; learn to accept stuff—we wouldn't have like, this barrier between different people—I think that's a huge one, the cultures of people—I definitely understand them a lot better. (Hayley, Year 12/13, 1010260–04)

When I specifically enquired of students during the interviews whether they *had talked about topics that were discussed in bioethics with people outside*

of the class, 93 per cent (26/28) replied that they had. During the interviews, students frequently reported talking about bioethical issues with their peers, while parents, siblings and grandparents were also mentioned. The following excerpt from Zac, in which he also demonstrated correct recall of philosophical concepts, exemplifies a typical response:

Definitely about utilitarianism, definitely that, because it is all about helping the greater good. Yeah, Mum and Dad definitely. I talk about it a lot. And the slippery slope. Like if people make allowances for something, then other people find something else that is just a little bit different and then it just keeps on from there. So you don't sort of know when to stop. And you are sitting there watching the news sometimes and it pops up all the time. (Zac, Year 12/13, 101029–01)

That they were now more engaged with what was happening in the news, particularly through television and newspaper, was spontaneously mentioned by numerous students during the interviews. Reasons for this appeared to include a curiosity about what values and motivations underpin choices, behaviour and actions developed through the course, and the pleasure students began deriving from critiquing alternative perspectives on a controversial issue, rather than simply dismissing them as 'wrong' or 'weird'. Students also reported feeling confident about new knowledge that they had gained and their ability to apply it. An excerpt from Tom, who was responding to whether he had found himself talking about topics that were discussed in bioethics with people outside of the class, demonstrates this:

Yeah, at times. Especially at home and that when things come up on the news and you can say that you know quite a bit about that sort of topic and that. I think my family have been quite stunned that I knew about that sort of thing, because not many people know about those sorts of topics and that. Like the Baby Theresa and just the whole 'greater good' and that sort of thing. This is the first time I have really thought about those ways of thinking. (Tom, Year 12/13, 100628–05)

Student's engagement with the content of bioethics lessons and taking issues home for discussion was described by Nick as he reflected back on the year:

Parents came up to me and had a discussion which was great. Like John's Mum, early in the year, she came up and said 'What's this bioethics? John talks so much about it!' Then later on Ashleigh's mother came up and said 'Oh she comes home with the most outlandish things!' And that shows learning because they are actually going home and talking about it, and they are talking about 'a utilitarian would think this', so that's part of it. And Dan's Dad is on the staff and he would say 'Oh Dan was talking about it all the way home'. So it's pleasing to hear that, because you don't hear that often as a teacher. Perhaps sometimes you will hear about a novel, like a parent will say 'I am trying to help them along with the novel', but certainly not 'Oh we had this discussion!' Habitually as well, you know, just going home and talking about it, which I think is wonderful. (Nick, 101118)

Reports such as Zac, Tom and Nick's reinforce the notion of 'family education' expressed by teachers of the 14-week optional bioethics course at the High School Affiliated to Beijing Normal University (see section 3.4.2), and the observations I made at Wellington Two prior to this investigation (see Chapter One). In addition to demonstrating engagement with the content of bioethics lessons, the excerpts in this section demonstrate practice in the competency of relating to others (Ministry of Education, 2007, p. 12).

7.5.5 Whether and how participants would like to see bioethics taught in schools

As already noted, KSI responses would frequently incorporate several emerging themes simultaneously, and questions intended to elicit information on one aspect could elicit a response with respect to a different theme. When talking about his interest in the course, Tua spontaneously offered his

perception that establishing bioethics as a subject within the timetable for all students would be beneficial:

It's like an opportunity to know and to learn new stuff, and you need to know the stuff. Some people don't even know the stuff that is going on, but everybody thinks they do. You should get it into other schools—because I know that other people will enjoy it as well. (Tua, 101029–05)

The perception that bioethics should be taught in the mainstream curriculum of all secondary schools was shared by 100 per cent (20/20) of the KSI who were asked specifically during the interviews *whether bioethics should be taught in secondary schools*. Sixty-two students completed the associated question in the EOC survey. All 62 (100 per cent) felt that bioethics should be included as a separate subject within the secondary school timetable. However, students did differ on what levels bioethics they thought should be taught, and whether it should be a compulsory or optional subject. During the survey, 15 per cent (9/62) stated that bioethics should be compulsory throughout a secondary school (Years 9 through 13); 11 per cent (7/62) that bioethics should be compulsory for senior students; 27 per cent (17/62) that bioethics should be an optional course available from Year 9 through to Year 13; 43 per cent (27/62) that bioethics should be optional for senior students; and 3 per cent (2/62) that bioethics should be compulsory for Year 9 and 10 students and optional for seniors in Years 11 through 13.

Both KSI comment and annotations written beneath the survey question reflected the perception of some students that a certain level of maturity was required by the bioethics course. Therefore, these students suggested, the course would be better in the senior secondary curriculum, or alternatively course content would have to build progressively if bioethics was available in the junior years also.

If I was in charge, I would probably make it compulsory. Yeah. [And] probably for the older age groups like sixth and seventh form,

because you've got more idea of the world and you are actually kind of more mature ... Yeah. And older people have probably had more experience as well, in their life to like think about those questions more than someone who is younger. (Shane, Year 13, 101026–08)

Through both survey and interview, all participating students reflected that bioethics should be a stand-alone subject. However, during the survey (3/62) and interviews (4/20) several students suggested that in addition to being a named subject in the timetable, bioethics units should also be incorporated into other subjects, including the sciences, English and health. This not only acknowledged the cross-disciplinary nature of bioethics, but was also suggested so that students who did not choose bioethics if it were offered as an optional class, would at least be exposed to some bioethics teaching and learning. As Miriama explained:

I think that it should be as integrated with all the other subjects as possible so that people that don't take it as a subject understand the issues that affect all of us in our everyday life, but I think it should be taken as a class to expand those ideas. (Miriama, Year 11, 101028–01)

The themes of values development and expansion of worldview were expressed by the majority students as they articulated why they thought bioethics would be a worthwhile subject to include in the secondary curriculum. Excerpts from Year 12/13 Holly and Year 11 Susan provide typical examples:

I definitely think it should be taught, because you don't realise the things that you learn about—like you never know that stuff—you wouldn't learn that stuff in everyday subjects. It's good. I think that students need to know stuff like that. It makes you more thoughtful; considerate. It would make some students, I think, more interested. Do you know what I mean? More open minded kind of thing. (Holly, Year 12/13, 100625–04)

I would say that we should have it in the timetable because it is really useful. In a way it is more useful than some of the other subjects that we have—it teaches you more life values—like it's the only subject that does that in a way. Like there is a subject, PCH, that teaches you about life skills and helps you decide your career path and stuff, but this one teaches you about values. And juniors have health—but it's not the same. It [bioethics] teaches you different people's opinions. Other people's values and like the other ethical theories—describing what they mean and then thinking 'Yeah, that's how people can see it differently', and that is more useful. It makes you think deeper into a topic than just going 'Oh Yeah, that person thinks that' and just leaving it. (Susan, Year 11, 101029–04)

Describing how bioethics had assisted her to understand different ethical theories and cultural perspectives, Susan's last comment alluded to the bioethics course being able to address the general relativism acknowledged as pervasive within Western society (see Chapter Two), and to engage students in deeper consideration and critique of worldviews. Sophie also reinforced the theme that bioethics encouraged students to consider beyond their individual, self-centred view, and to engage with a wider social perspective:

I really want it as a class because it's like good stuff and it's stuff that we can take where-ever we go ... It's kind of like news, if you know what I mean. It's like very good information that we should be thinking about and we should be like helping with, or interfering with. Like instead of sitting down and playing Play Station all day, we should be thinking about what else is happening outside of the box and like trying to help prevent that thing from happening, or—you know what I mean? I think we need to discuss more about things so people are aware, if you get me. Bioethics should be like a class at school because we learn so much and it's like things that we should

know. Like we should know it and if we don't then people won't care.
(Sophie, Year 12/13, 101101–03)

Affirming her perception that bioethics should be a full course within a school timetable, and including the theme of expansion of worldview, Year 11 student Isabella reflected that the intrinsically interesting nature and relevance to daily life of the bioethics curriculum content might re-engage disinterested learners:

It should become like a full-time class, not just like once a week; it should be a full subject because people open their minds way more in it and they learn a lot more. And, maybe students would come to school just for that class because it is so more interesting, or maybe not, but it is very interesting, so it would catch people's attention and make them more interested in school maybe ... It is so different from anything that I have ever taken before and we talk about so many different things—it's not just about one subject, it's about everything and it actually applies to our lives. It just makes you think about how the world works and whether what you've been taught is actually true or not. And about stuff in history—It's worthwhile—It's good.
(Isabella, Year 11, 100625–02)

In describing that bioethics should be firstly a separate class, but also integrated into other subjects, Year 12/13 case study participant Zac similarly observed that bioethics may re-engage some students in learning, particularly science learning:

[And] I think if it was [also] in a science class or something like that, I reckon it would get people more interested in the subject and it would make them more enthusiastic towards their work, I reckon. (Zac, Year 12/13, 101029–01)

From the educator's perspective, both collaborating teachers perceived bioethics as a subject that would enhance the national curriculum. When

asked if he would like to see bioethics as part of the national curriculum, Nick replied:

As a teacher, I would—as someone who has taught it I would. Mind you, there are things like Maori that I would like to see in the curriculum as well, as being compulsory. Yes—I think it is valuable. And I think we need to move away from perhaps the traditional way of thinking about subjects. Because bioethics opens up—it would open up a lot of subjects and enrich other subjects and student's understanding. Yes, I would really encourage it. (Nick, 101118)

During her EOC interview, Helen asserted her perception that the trialled bioethics curriculum 'was the whole new curriculum' and that it should become an established subject nationally:

It's the key competencies—you've got thinking and social interaction—it's the whole thing; awareness of the world and where you fit and all that it is trying to encompass in the backbone of the new curriculum. So yes, [bioethics] is it. It's essential really. I think everybody should do it! (Helen, 101118)

7.5.6 Bioethics: A worthwhile subject

While a number of students, of whom Isabella is an example, spontaneously described bioethics as a worthwhile subject, 27 KSI were specifically asked if they felt *bioethics was a worthwhile subject*. All 27 (100 per cent) declared it to be so. The theme of relevance, raised by 77 per cent (21/27) of KSI, and the theme of development of useful and transferable critical thinking and decision-making skills (74 per cent, 20/27) emerged strongly once again within student responses to this question. The excerpt from Rawiri exemplifies a typical response:

Yeah, definitely. I just think it is a good chance to do things that happen in life. Yeah—I enjoy it. It's a subject especially for—to learn about life. It's like a life skills sort of thing; how you can deal with

things; with situations, if you come into a situation that you don't know how to answer. Yeah, bioethics will fit you up sooner or later. Because it seems real. 'Coz when you look at it on paper and you see bioethics, you don't really think about life skills or what you do in life—you just immediately think 'Oh, that's going to be hard work'. But—it's the thinking hard that you like thinking, if you see what I mean. Like you like thinking about it and putting your mind to it. (Rawiri, Year 12/13, 100628–03)

In addition to the relevance of the course content and the development and practice of thinking skills, the perceived distinction between the teaching and learning methods used in bioethics in comparison to students' other subject classes was reiterated by all but a half (13/27; 48 per cent) of students in response to this question on worthwhileness, as exemplified by Tom and Zac:

Bioethics is a good break from all your other sort of subjects that you just have to do bookwork. Sometimes it can be more relevant learning than other things; there's nowhere else that you are going to see that sort of stuff and it just gets pointless really, but with bioethics, you can use your new ways of thinking outside the classroom and that. And it will just be more relevant to life. (Tom, 100628–05)

I would say that it's definitely worthwhile because it is something different—I think it gets the students thinking about different things, rather than, yeah, in your English class sitting there not really bothered about things. I think it just gets you really thinking. I think that class this year was probably my best class to get my brain going, because other classes you just sit there with all this paper-work and think 'What am I doing here?' But in that class, everyone gets involved—everyone is sort of active and actively thinking. (Zac, 101029–01)

Dougal, who simply stated ‘Yes, I think it is worthwhile. I have learnt more out of this class than I have out of my other classes’, (101027–03) reflected the link between degree of learning and worthwhileness made by 63 per cent (17/27) of KSIs.

As described throughout this section, students were highly engaged in the bioethics curriculum, perceiving it as worthwhile, interesting, relevant to their present and future everyday lives, and different to other subjects they had experienced. High levels of engagement were sustained throughout the year, with the student-focused, discussion- and narrative-based pedagogy being reported by students across the academic spectrum as open, fun, and allowing them to actively co-create rather than passively receive new knowledge. Having reported the high and sustained levels of engagement throughout the year, the following section moves to consider students’ and collaborating staffs’ perceptions of learning.

7.6 WHAT DO YOU LEARN IN BIOETHICS? PARTICIPANTS’ PERCEPTIONS OF LEARNING

This section moves from students and collaborating teachers’ perceptions of their experiences in the bioethics class, to their perceptions of what was learnt. Described and supported by excerpts from KSI interviews, this section will show that learning about personal values; the ethical, cultural and spiritual values of others; developing critical thinking skills including thinking from and about different perspectives; that ethical dilemmas may frequently have no right or wrong answer; and how to mount a robust philosophical argument emerged as the dominant areas of learning (7.6.1). While students acknowledged that the absence of one right or wrong answer might lead to confusion, such confusion was viewed positively, as it was perceived to result from gaining new knowledge, and developed students’ capacity to be comfortable with uncertainty (7.6.2). Students and teachers alike perceived that learning was occurring in the absence of writing information down and

formal assessment (7.6.3; 7.6.4). It was not only participating students who were challenged to encounter their personal values, but the collaborating teachers also. Accordingly, this section concludes with a description of the personal and professional learning experienced by both Nick and Helen (7.6.5).

7.6.1 Values, competencies and academic knowledge: Participants' perceptions of what was learnt in the bioethics class

Themes relating to values education, development of key competency skills including critical thinking and relating to others, and the learning of philosophical and scientific concepts emerged strongly when 29 KSI (nine Year 11 and 20 Year 12/13) were specifically asked *what do you learn in bioethics?*

Values education, in particular learning about personal values; the values of others; and the importance of considering the impacts of life choices on self and others, comprised the immediate response of 59 per cent (17/29) of KSI. Excerpts from Jess (Year 12/13 case study) and Sabrina (Year 11 case study) convey these themes:

Oh gosh—I don't know where to start! You learn about yourself; you learn values for yourself; you learn how to make decisions, like life decisions that will actually affect you ... Bioethics makes you think like from different perspectives—Like go through a whole different thinking process—like different decision-making process—that actually involves real-life scenarios. (Jess, Year 12/13, 101026–03)

I think I have learnt to value people's opinions more, and to listen to what they are saying. Because normally I would just say something, but I've learnt to think about it before I say it, so I don't embarrass myself, or I can't back up my opinion. And I've learnt more about why people make decisions about what they do and about how it affects

their lives, but then they think about how it will affect others. And I've also learnt more about utilitarianism and Kant ... Yes, I've basically learnt more about valuing other people's views, and to at least listen and to stop and think before I say anything or give a counter-argument. And then I have learnt all the interesting ethical theories and everything, to sum it up. (Sabrina, Year 11, 101028–02)

From the teaching perspective and during his final interview, Nick expressed his conviction that bioethics teaches values and contributes to the development of a participating student's personal worldview and moral reasoning:

It [bioethics] very clearly teaches values—rather than other teachers trying to do it in bitzy way, it is actually teaching values. Not teaching what values to have, but teaching *about* values and what values students have and why they perhaps have them; what values other people have; what schools of thought there are about values and then linking them to topics. Global values and global issues, and bioethics is a wonderful media to do that. [Bioethics] taught them that morality is an important subject and it's worth thinking a lot about. (Nick, 101118)

Helen also acknowledged values development in the transition students as a result of the stand-alone bioethics trial:

The fact that our students have been really sort of almost hungry for this stuff, I think there is a need for us to be talking about, not just the safe politically correct stuff, but some of the hard values stuff—and you know making them think about what they decide—putting them in the hot place—so that they can work out actually where they are coming from and why ... We have added to their banks of information about the world. (Helen, 101118)

Learning how to think was a second strong theme of student response to the question of what they learnt in bioethics. Fifty-nine per cent of informants (17/29), including Tyson, described thinking and the impact this had on general learning and decision making as what they had learnt:

I've learnt a lot. As a person, I just think I've gained from it. Learnt like, just to take time to think—that's like something big for me, because I don't want to be a 'meathead' and just be like 'Oh, yeah, whatever ...' I want to really think about stuff, yeah. (Tyson, Year 13, 101029–02)

Tyson's response references both affective and cognitive outcomes. Similarly, Nick observed affective and cognitive outcomes in the Year 11 students:

This idea of what is right?/What is wrong? Can we say something is right or wrong? How can we approach this? What other ways are there of approaching this? What views have I taken on? If I make that decision what are the impacts? It's a way of ordering thoughts. It's a way of not just taking an issue for granted or to just follow the main stream of something. (Nick, 101118)

In distinguishing decision-making skills, Sophie's response was indicative of students who included the values related consideration of the impact of personal decisions on others:

There are so many things in bioethics that you could learn. It seems to me that everything has something to do with ethics ... We all make decisions all day every day don't we? And sometimes those decisions impact on a lot of other people and we've all got to live together. (Sophie, Year 12, 100625–04)

Sophie's response references the competencies of critical thinking, managing self and relating to others. Learning to relate to others was explicitly enunciated by majority of KSI, including Max and Susan:

[I have] definitely [learnt] things in the way of communicating. In the class, because we started off with discussions, I learned how different people reacted, what they know, and also—well I could listen to people and sometimes say things to provoke other people. I actually got to know the class. Because in other classes you actually sit a lot in silence and you don't really get to know people. (Max, Year 11, 101029–03)

[I've learnt that] like all people are different and not to judge them before you know them properly—because. Yeah, you don't know what they are like personally and stuff. Yeah—I don't see things like just straight up now—like that person is at fault or anything or that they are just 'eggs' or whatever. I think more into it—I don't just judge them straight away. (Susan, Year 11, 101029–04)

Over half the 29 informants (16/29) included learning about relevant life situations and the development of life skills in their response to what they had learnt in bioethics. Shane is one such example:

We discuss different matters that happen in the world and what your decisions on those matters are compared to other people. The best is finding out about other cultures and how different they think in a different environment than what we do. Yeah. It actually gives you some kinds of life skills. Just the whole thinking process of somebody asking you a question just changes you completely. Like you come out with a better answer than you used to. (Shane, Year 12/13, 101026–08)

Helen acknowledged the social and emotional learning that students had experienced through participation in the bioethics course, and the effect this had on communication, contribution and relating to others.

Students have certainly learnt about tolerance and the fact that it is actually okay for you to have an opinion, and it doesn't matter if

everyone else doesn't agree, it is okay for you to have it ... The fact that you get somebody like David who were very threatened by school in general; and Wei, who never said much then suddenly—and Zac; the people who sparked into life from half way through onwards, I think that's evidence to me that they have learnt that it's okay for them to have their say, and to have their opinions, and to contribute. (Helen, 101118)

Validating Helen's observation, Kate's response to the open question of *what do you learn in bioethics* encompassed values learning and critical thinking, and was also indicative of the numerous students who cited learning skills of philosophical argument including how to support an opinion with reason:

You learn so much! ... And you don't just learn about the topics that you get given in the class, you learn more about yourself, more about your values, how you can overcome situations that you wouldn't have been able to before you did the class. And how to actually think through things properly; and how to argue your point of view properly without being like 'Just because that's what I said! And I believe it!' You actually have reasons to back up your answer, and that kind of stuff. It's a confidence building thing as well. (Kate, Year 12/13, 101027–05)

More than one-third of the informants named specific theories, topics or concepts in response to the question of what they learnt in bioethics. John was typical of this category of response:

Basically that 'bioethics' is 'bio' as in life, and 'ethics' is what's right and wrong, so we're learning about what's right or wrong about decisions with life. You learn how to think more deeply about things. You learn about your values and you learn about different points of view. Things like utilitarianism, libertarianism, Kantianism, things like that. (John, Year 11, 101029–07)

Learning to consider different perspectives was reported by all 40 (100 per cent) of KSI at some point during the interviews. When responding to the specific question of what you learn in bioethics, Leah acknowledged that considering different perspectives can lead to confusion:

I guess just learning what other people think. It changes the way I think, kind of, coz I'll think something, then someone else will say something and I'll think that as well, and then I'll be like banging my head 'What one's right—Ohh!?' (Leah, Year 12, 100623–06)

7.6.1 Doesn't bioethics just confuse you?

During the interviews, 22 KSI were specifically asked whether they had wound up more confused at the end of a lesson than they may have been at the beginning. Ninety-five per cent (21/22) reported that this had happened, while one student reported that it had not. Ninety-one per cent (20/22) felt that being more confused was not a problem. The majority of students actually felt that confusion was 'good' as it equated to having more information and enhanced learning by making them think more actively. The following excerpts from Shane and Holly are illustrative:

Like I get confused in my own head, like 'Why would I think that, when this other way might be right?', or 'that makes sense'. Hmmm. That's mostly because everybody has said things that I've never thought about, so there's like heaps of stuff and it's like 'Argh, what's the best thing to go by?' I reckon it gives you more to think about. More information to work with and to sort through. The more you know the more questions there are to ask. (Shane, Year 12/13, 101026–08)

There's so much more to just what I was thinking; to just the one answer. So yeah, it does leave me with heaps. Often no-one can prove if they are right, so I guess you don't know, so you are confused. It leaves you thinking quite a bit. I definitely think it is better

knowing more than just what your single view is, though, because, if you have just got your view, you don't know what else is out there, sort of. (Holly, Year 12/13, 101027–01)

John is an example of the students who rather than viewing any confusion that may arise as negative, perceived that confusion inspired research and communication as conundrums were grappled with and that confusion was relevant to the real world:

No! Because if you are confused, it makes you want to find the answer. No. It's not a problem. Because we will have to find out sooner or later if the world is grey or black and white, and it is grey. It is very grey sometimes! (John, Year 11, 101029–07)

A number of students described an increased capacity to be comfortable with uncertainty, developed through participation in the bioethics course. The following excerpts from Aroha and Dougal provide examples:

Sometimes it can be a good confusing and sometimes it can be an annoying confusion—Not knowing if it is right or wrong or the actual outcome of it. I felt more confused at the start when I didn't know much about [bioethics], but now it's okay not to reach a decision and just think about it. (Aroha, Year 12/13, 101026–06)

Have you ever finished a lesson more confused than when you started?

Yeah I have. When the whole 'when life begins came into it', looking at when the different cultural views think life begins, when doctors think life begins, when parents believe life begins and it's all different—and I guess no-one can choose a right or wrong answer, it will just have to be what you believe. There are people who think life begins at conception, and some when it's born—a lot of different

things; and cultures for whom it's not until the first birthday and stuff like that. So I did come out a bit confused after that one. Yeah.

Is it okay to be confused?

Yeah, yeah, yeah. It just gets you thinking. It's a little bit confusing—and I was thinking about it for the next couple of days afterwards. Yeah, my girlfriend got a bit sick of hearing about it. Yeah—I kept asking her about it, and my parents and people like that, trying to get their ideas on it. I was looking at different views really. Like we had considered brain death and stuff, so like whether it can be considered we're alive once brain activity can be shown; stuff like that. Or whether it's the heartbeat, or—I haven't really come up with an answer yet.

Are you quite comfortable with that?

Quite comfortable, yeah. (Dougal, Year 12/13, 101027–03, 7:09)

Eight of the 22 (36 per cent) of students spontaneously included an example when responding to the question of confusion. The question of when life begins was used in seven out of eight instances (88 per cent), with the train conundrum given as the other spontaneous example.

7.6.3 How can you learn if you don't write things down?

As students were not required to take notes and no compulsory formal assessments were undertaken, I asked participants in the research how they knew learning was taking place in the predominantly discussion-based course. In affirming her perception that learning had definitely taken place throughout the year-long bioethics course, the Principal of Koru College

reflected on learning by stealth facilitated by the activity centred teaching method used in the research curriculum:

There hasn't been any written work in the course [No] and there has been no formal assessment of the course, but have you got a feeling that the students have actually been learning?

I do have that feeling; and probably learning without even recognising that they are learning, as well. So it's not 'Oh, I've got to go and do maths, or I've got to go and do this class', it's actually we are going here and we are just going to do these things without even realising the thinking skills and all those kinds of things that are being used. (Principal, 101123)

Verifying the principal's observation, students themselves perceived that they were learning in the discussion-based bioethics class with minimal written content, as an excerpt from Jess exemplifies:

I think every school should have a class like this, because it makes you actually think about stuff more and it's not like every other class, so you go there like 'Yes! we're not doing work!', But you are actually doing work, you just don't think you are doing it—you are just working out your brain more, and like thinking about stuff, more. (Jess, Year 12/13, 100623–04)

Within her response, Tariana also related teaching method with student engagement and perceptions of learning, stating her perception that although things were not written down, the bioethics class was nevertheless intensive learning:

Bioethics makes you think about things. Like think more, you know, into like the situation. It makes your mind work. It's like a whole hour of learning. Like with other classes, you just read off the board or something, or out of books. [In bioethics] everyone has their own opinion and you don't get shut down. Yeah. And you don't do writing.

But some people would say 'Well you can't be learning anything if you're not writing it down'.

Yeah! Like if it's a subject you like, I reckon you keep it in your head.
(Tariana, Year 13, 101028–04)

When asked specifically *whether not writing things down had concerned him*, Zac responded by explicitly identifying the practical, thinking aspect of the course:

No, no—I think that's great! You're still learning. Definitely! It just gets you really thinking about things. I think some people, they thrive under the practical side of things rather than the theory—and I'm one of them. I would much rather be sitting there talking about something than writing it down. (Zac, Year 13, 101029–01)

The practical, active thinking aspect of the course was referred to by every KSI as they described how they could 'take away' and remember content from the bioethics course. This is a further example of how the teaching method used in the trial was spontaneously compared by participants to other subject areas. The following excerpts representing the Year 11 accelerate and Year 12/13 transition case study groups are illustrative:

It makes my brain think, so that's always good, to make the brain work. Because generally at school I will just skim through classes because I am able to. Like I skimmed through all of Year 9 and Year 10, and I have semi-skimmed this year. But like in this class, it's not just going and doing the work. I don't skim though it. I learn things that I take away and remember. I don't know why, but I will always remember the Baby Theresa case. Like that has always stuck in my head and I won't forget that. (Sabrina, Year 11, 101028–02)

It makes you think—like *think*. And that's good because we don't have classes like that at school ... bioethics is like a different type of topic. It's not like when you go into class, you get your book out, and you just write it down ready for an exam. It's not like that. When you go in there you look forward to doing it and you wonder what you're going to learn about. And it's stuff that you can kind of take with you. Like you keep it in your mind; you keep it in your head, but then it's like something you can always talk about with someone else. It's important because it's real-life stuff; like the stuff you learn about. (Holly, Year 12, 101101–03)

That the bioethics curriculum engaged students in active and deep thinking was perceived by students as a practical pursuit building relevant knowledge that could be taken away and applied elsewhere, in a similar manner to physical exercise in sports performance building muscle and physical skills. When I asked him how he would respond if someone said 'Oh, you don't write things down? But you can't be learning anything', John pointed out that there were different ways to learn and to remember, and that writing notes was only one of these ways:

Well, actually there are plenty of things to do with memorising. There is this book in the library *Study better not harder*, and there are all these graphs of things that you see, hear, do and these are things that you do remember. [In bioethics] we do a mix of hearing and seeing and doing stuff and sometimes we read stuff. All round it is just very easy to learn stuff. And when we start discussing it at home, we start revising it pretty much, so that helps us to learn it. Things like 'Oh Kantianism—can't quite remember that', so go on line and look it up. (John, Year 11, 101029–07)

The concept of fun also emerged in students' responses to not writing anything down. For example, Bree:

I never remember this much stuff from my other classes! It's fun! It's like if someone recites you a paragraph of words, you don't remember it. If someone sings you it in a song, if the tune gets stuck in your head, you will remember more of the paragraph because it's fun and it's interesting. Bioethics is fun and interesting. You think of it more as fun, not as really work, but then when you look back on it you think 'Gosh, we did that, and that, and that, and that!' (Bree, Year 11, 101029–06)

From the teacher's perspective, both Helen and Nick cited development and the correct use of academic vocabulary and the appropriate application of concepts as evidence of student learning, in the absence of written notes and assessment.

How did I know they were learning things? They started to pick up the jargon ... For sure, the students in transition would never, ever know words like utilitarianism, or slippery slopes and stuff if we hadn't introduced them, and yet they are all quite comfortable with them now. The vast majority of them in there would be quite able to tell you what utilitarian thought is, and what a utilitarian situation is and what the options are. They would know that. And that's quite an achievement for kids who are written off as at the bottom. (Helen, 101118)

In addition to increased vocabulary and the appropriate application of concepts Nick also cited developed skills of argument and communication as evidence of student learning:

I think you need only look at their discussions on any of the topics really ... they talked about what a Kantian would do, or what a utilitarian would do in this situation. But that's not only vocab, it's a lot about their thought processes as well and how they are approaching it. You know they are not just saying 'utilitarian' without knowing what it means and knowing that with any issue you can approach it from a

certain way with certain views ... they were using the different theories, you know, 'that's natural law'. They are using all these different ways of approaching the topic and students are checking each other. Like 'Well actually, is that actually an absolute what you are saying there or?' Or 'but you are not thinking about this ...', or 'you need to think about this'; 'have you thought about that?' (Nick, 101118)

Nick observed that not having books was difficult for him as a teacher to adjust too at first:

I mean the students didn't have books and that was hard for me at first. Because I am so used to 'Right, take your books out, we are starting with this'. This idea of not having books because that's not what is important here. It's not about the writing—it is not about the work that is produced. It's about the thinking. And as a teacher that's quite hard to get around at first. But certainly amazing. [The students] weren't looking to fool around because they didn't have books out—they were engaged; they were listening. (Nick, 101118)

Although minimal writing was done during the bioethics course, students and staff alike perceived that affective and cognitive learning was occurring.

7.7 SUMMARY

Data were gathered in order to address four research questions concerned with: students' affective response to participating in a stand-alone bioethics course; students' cognitive development as a result of participating in the course; the relevance of teaching bioethics to the values and key competency aspects of the NZC (Ministry of Education, 2007); and the use of a narrative- and discussion-based pedagogy. Student, collaborating teacher, school principal and researcher data has provided plentiful evidence that students developed skills in values clarification and appreciation, critical thinking,

argumentation, managing self and relating to others, in addition to gaining academic knowledge, through their participation in the stand-alone bioethics trial.

Participating students perceived the bioethics course as interesting, different, varied and directly relevant to their current and future 'everyday' lives. Students expressed their high level of engagement and participation within the bioethics course and described a consequent motivation to learn. Both the course content and the method of delivery were significant in student engagement. Common themes in the written surveys and interviews included that the bioethics course altered students' thinking and communicating processes, encouraging them to think critically, especially with respect to considering multiple perspectives about issues. The course caused students to assess their personal values and worldview, and to understand a variety of ethical, cultural and spiritual perspectives that underpin the values and worldview of others. Students acknowledged that learning to consider different perspectives assisted them to discipline their initial tendency to instantly dismiss as wrong or misguided the views of others that were in conflict with theirs. The majority of participating students perceived the opportunity provided in the bioethics class to engage with their personal values, to debate relevant real-world issues and to learn about the values of others as something not generally available to them in their current schooling.

Although formal assessment towards the national NCEA qualification was optional within the bioethics trial, participating students and teachers were confident that substantial emotional, social and academic learning had occurred throughout the trial. Affective and academic learning was not restricted to participating students, with the two collaborating teachers reporting engagement with their personal values, and professional and personal development through their participation in the trial. Through their participation in the year-long trial, students, the collaborating teachers and the principal of the case study school each perceived bioethics as a worthwhile

subject that they would like to see become part of the national curriculum in a stand-alone format.

The survey and interview results presented in this and the immediately previous chapter provide evidence to support three dominant findings in relation to students' learning and engagement during the year-long investigation. These findings were that the trialled stand-alone bioethics curriculum engaged learners with diverse academic histories, and the trialled stand-alone bioethics curriculum proved an effective vehicle for explicit values teaching and learning for participants in both case study groups. The efficacy of the narrative- and discussion-based pedagogy used in the trialled bioethics curriculum emerged as the third dominant finding of the research. The real-world, discussion- and student-focused nature of the research curriculum appears not only to have contributed to participant engagement, but also to students' understanding and retention of philosophical and scientific concepts. The following chapter will discuss the results of the qualitative and quantitative data presented in this and the previous Year 12/13 case study chapter and synthesise outcomes from the analysis of these data.

CHAPTER EIGHT: DISCUSSION

We tend to make ethical choices as we develop in life, but very often these are unconscious ... We talk about values, but we don't always systematically explore the underpinning philosophies of those values. We tend to be a bit un-intellectual. One of the most important things that we can take away from school is learning how to think. (Dame Sian Elias, 2012, p. 1)

8.1 PURPOSE OF THIS CHAPTER

The general objective of this research project was to investigate how teaching bioethics as a stand-alone subject in the senior secondary school curriculum may be a vehicle for comprehensive values education and support the development of competencies in students, so that they 'may make ethical decisions and act on them' as required by the NZC (Ministry of Education, 2007, p. 10) mandatory in all schools from January 2010. A specific objective of this research project was to investigate the teaching and learning experiences of two collaborating teachers and 78 Year 11 to 13 students at an urban, co-educational secondary school, who participated in a stand-alone, full-year bioethics programme, based on the researcher's previously developed curriculum and syllabus.

Beginning with a review of the aims of the study, the methodology adopted and the research questions that guided the study (see section 8.2), this chapter will discuss the findings that have emerged from the data and answer the research questions. All research outcomes can be summarised within three dominant findings. The first dominant finding is that the affective, cognitive and character-behavioural outcomes demonstrated for all participating students, and which combine to form dominant findings two and

three, arose from the student-focused, narrative- and discussion-based teaching method integral to the research curriculum (8.3).

The second dominant finding is that all participating students, regardless of their academic histories, had an affective and cognitive response to the bioethics curriculum (8.4). Dominant finding three is that the stand-alone bioethics curriculum taught within two bounded case study groups proved an effective vehicle for explicit values teaching and learning (8.5). Incorporating both theoretical–cognitive and character–behavioural aspects, the values learning included development of the key competencies prescribed by the NZC (Ministry of Education, 2007). The values and competency outcomes, including participating students’ emotional, social, cognitive and academic learning, are each discussed in sections of 8.5. The contribution of this research to knowledge is discussed (8.6) prior to the conclusion of the chapter (8.7).

8.2 REVIEW OF AIMS, RESEARCH METHODOLOGY AND THE RESEARCH QUESTIONS

A principal aim of this study was to examine in a wider secondary school setting, the affective and cognitive outcomes for participants in a stand-alone bioethics course, delivered for one hour per week across the academic year. The investigation arose from the researcher’s prior experience of writing and facilitating a stand-alone bioethics curriculum at decile 10, single-sex, Independent Wellington Two. The research sought to determine whether the outcomes and benefits observed by teachers and the parent body, and self-reported by students who had participated in the discrete bioethics course timetabled for six years at Independent Wellington Two, could be observed under research conditions in a broader secondary school setting. These outcomes included the development of skills in critical thinking, logical reasoning, and communication; discernment and critique of personal values; an appreciation of the values frameworks that underpin a plurality of

worldviews; and the acquisition of knowledge of ethical theories and philosophical and scientific concepts. Accordingly, this study, based in a large decile 6, urban, co-educational secondary school, investigated the effects on 78 Year 11, 12 and 13 students' values, cognition and learning-engagement through their participation in a full-year, stand-alone bioethics course. The study curriculum was based upon the researcher's previously developed syllabus, which had been timetabled and delivered at Independent Wellington Two.

A triangulation mixed-methods design that generated both quantitative and qualitative data was employed. Division of the student cohort into two case study groups afforded additional comparison. Students completed two Likert-style surveys; a brief initial survey administered one-third of the way through the course and a comprehensive EOC survey. These surveys examined aspects of participating students' perceptions of, attitudes towards, and interest in learning bioethics. Also examined were students' engagement with their personal values and the values of others, and their response to the pedagogical methods employed. Descriptive and statistical analysis was undertaken with these quantitative data using Excel and SPSS computer programmes.

Pre- and post-teaching and learning activities were performed to assess the learning of philosophical and scientific concepts. Analysis of semi-structured interviews conducted with 40 KSIs, two collaborating teachers and the school principal, together with classroom observations, lesson plans and collaborating teacher and researcher journals, formed the qualitative component of the research. Cross-assessment of the data generated from the mixed sources increased the reliability and validity of the outcomes and made possible the thick descriptions given in Chapters Five, Six and Seven.

The study was guided by the investigation of four research questions:

1. What are the affective outcomes for students participating in the bioethics curriculum?

That is, in what ways does the teaching and learning of bioethics as a stand-alone subject contribute to the development of a participating student's personal values, moral reasoning and worldview?

2. What are the cognitive outcomes for students participating in the bioethics curriculum?

That is, in what ways do the teaching and learning of bioethics as a stand-alone subject contribute to the development of a participating student's cognition, including academic learning and critical thinking?

3. How do the affective and cognitive outcomes demonstrated by students participating in the bioethics curriculum relate to the values and key competencies requirements of the NZC (Ministry of Education, 2007)?

4. In what ways does the student-focused, narrative- and discussion-based pedagogy facilitate student engagement so that academic, social and emotional learning may proceed?

The outcomes that have emerged from the combination of quantitative and qualitative data gathered through investigation of the research questions can be summarised within three inter-related findings:

1. The outcomes observed for participants in this research arose from the narrative-stimulated, discussion- and activity-based pedagogy utilised in the bioethics curriculum trialled in this investigation.
2. The participating students had an affective–cognitive response to the bioethics curriculum regardless of their history of academic achievement.
3. The bioethics curriculum proved an effective vehicle for comprehensive values education, both theoretical–cognitive and character–behavioural.

These findings will be discussed in the following sections.

The student-focused pedagogy central to all outcomes of the investigation will be discussed first (section 8.3) and will address Research Question 4 (engagement through a student-focused, narrative- and discussion-based pedagogy). Discussion of Finding 2 (section 8.4), will be followed by a discussion of Finding 3 in section 8.5. Section 8.5 will address Research Questions 1 (values understanding), 2 (cognitive development) and 3 (development of key competencies).

8.3 THE SIGNIFICANCE OF THE NARRATIVE- AND DISCUSSION-BASED TEACHING METHOD

The bioethics curriculum trialled in this research was anchored by exploration of applied ethical issues where narratives, wherever possible authentic and not fictitious, were used as the stimulus material for student-led discussion. In response to Research Question 4, this section discusses how and why the narrative-stimulated, discussion-based, student-focused method of delivery utilised in the research curriculum was efficacious in engagement and learning for all participating students, who ranged across the academic spectrum from supported to accelerated learning.

8.3.1 Engagement through narrative: Arousing curiosity through relevant content

KSIs unanimously reported their engagement with the narratives of bioethical dilemmas presented during the initial ‘taster’ session. Interview comments reflected that the stories were interesting; that students wanted to know more about the content; that topics covered sounded relevant; ‘like stuff we should know’; and like ‘no other subject’ (7.5.1). These repeatedly articulated comments indicate that the content of the bioethics course engaged students’ curiosity across both case study groups.

As demonstrated in section 7.5.1 and section 7.5.6, students reported that the content of bioethics lessons felt relevant to their lives and to their current and future roles as decision makers and participating members of society. The narratives presented curriculum content in ways that assisted students to identify with the bioethical issue and the perspectives of the central characters. The discussion-, inquiry-based pedagogy then developed the sense of relevance further. This supports literature, for example, Brough (2008), that identifies how relevant the curriculum material is perceived to be as a leading factor in student engagement and that when inquiring and critique of self and the world is encouraged, students perceive a direct sense of relevance.

Students across both case study groups demonstrated and reported high levels of retention over significant periods (6.4.6; 7.2.6). The current study validates research on effective pedagogy, which demonstrates that higher levels of engagement and retention are apparent when people are occupied with situations that have a clear connection with their lives (Barnes, 2007; Beane, 1997; Cook, 1996); that authentic learning contexts are influential in improving student achievement (Brough, 2008); and that connected knowledge structured around powerful ideas is more likely to be retained and understood (Brophy, 2001). This investigation supports research by Barnes (2007) and Holden and Hicks (2007), and suggests that students in contemporary media infused New Zealand society, like their counterparts in the US, UK, Sweden and Canada, are increasingly interested in topics with controversial and emotional features including environmental sustainability, pollution, hunger, war, disasters, health and relationships. As will be discussed further in the following section on values education (8.5), critical inquiry into socially significant issues assists students to develop an understanding of themselves and the world in which they live.

Student engagement was enhanced within both case study classrooms using technology. Narratives were often presented using videos, songs and static

images conveyed using PowerPoint and Smartboard; often being accessed directly through the internet. The use of the Smartboard in and of itself was engaging. Students perceived these technologies as instantly recognisable, relevant and appropriate to their personal lives and learning. Today's increasingly infotainment, sound-bite culture provided numerous media through which to engage students and harness the increasing visual literacy that is part of contemporary society. Movie clips, videos, music, graffiti art, billboards and creative use of activity-based media such as dramas, role plays and games proved engaging modes of narrative through which bioethics was taught and learnt (7.5). Both collaborating teachers presented the inherently controversial bioethical dilemmas in ways that aroused students' curiosity and incentivised engagement. This included creating suspense and leaving the situation tantalisingly unresolved for a period within, and occasionally between, lessons. In this way, the collaborating teachers not only told stories, they did things with them, which shaped the narratives meaning for the listeners (Gubrium & Holstein, 2009; Wittgenstein, 1953).

As evidenced through this research (7.5), stories may affect not simply the individual, but also the environment in which they are told, helping to create an ambience of safety, equality and respect and enhancing affective engagement. Essential to this are the experiential elements and social interaction that occur as stories are shared. Participating students reported that narratives concerning real people and situations made the curriculum content relevant and meaningful to them. The majority of students reported being able to identify with people in a narrative. Placing themselves in the position of the characters facilitated the development of values including empathy and compassion. Further, as narratives were discussed and students shared their personal stories and viewpoints, classroom interaction developed relationships within the student cohort. Similarly, on occasions when their teacher shared a personal experience students perceived the humanness of their teacher and relationship between teacher and students

was enhanced. This supports literature and previous research that stories are humanising and develop and sustain relationships (Lindemann Nelson, 1997, 2000, 2001; Levinson, 2006b; Nussbaum, 1990; Tietjens Meyers, 2003; Truebridge, 2010), and that students who feel connected to their classmates, teachers and school community are more engaged in learning (O'Donnell et al., 2008).

The bioethics curriculum induced a positive affect within students; a subtle experience of feeling good in the class; of feeling confident in their learning, and confident and satisfied that their contribution and participation was pertinent, appropriate and of value. The experience of positive good feelings at the end of a lesson were variously described as 'exhilarated', 'energised' and 'that I've learned something new' (see section 7.5.4). Students reported feeling empowered and experiencing a sense of autonomy and satisfaction through the choice-making, narrative-based activities and through having to advocate for their personal view. This sense of autonomy was boosted further by experiencing self-direction in the regulation of personal behaviour, including the decision to contribute, and their response to the differing views and opposing arguments of others. Participation in the narrative- and discussion-based activities enhanced participating students' sense of competence, and therefore their perceived student identity.

Emotional and cognitive engagement are exhibited through behavioural engagement. Behavioural engagement includes the extent to which the student is concentrating; the extent to which the student is involved in, and attentive to, the activity; and the degree of effort and perseverance demonstrated. As shown in Figure 5.3, students' engagement with a lesson was physically represented through paying attention, leaning forward, tracking class interaction and active listening. As shown in sections 6.5.1, 7.2.4 and 7.5.4, students reported listening attentively during their bioethics classes, and participating and contributing actively. Students were regularly observed to achieve a state of flow; that transient state of concentration in

which a person becomes entirely absorbed in an activity (O'Donnell, 2008; Robinson, 2006; Robinson & Aronica, 2009). This was reinforced by KSI comments, including, for example, that of Leah (see section 7.5.4), which reported intense focus and attention during discussion of the lesson content. These findings support research that indicates performance is linked to enjoyment (Cowie et al., 2011; Moreno & Mayer, 2000; Programme for International Student Assessment, 2006; Robinson, 2006; Robinson & Aronica, 2009) and what we learn is affected by how we feel (Elias, 2003).

Ninety-five per cent of participating students reported that the bioethics class was different from other classes they had been in. The absence of board and bookwork and the dominance of discussion, together with the openness of participation this afforded, were identified as essential differences. KSI responses to the question of what students had enjoyed the most about the year-long, stand-alone bioethics trial were divided between an immediate naming of the active, discussion-based teaching methods, and the narratives that raised awareness of and illustrated the bioethical issues, which stimulated the discussions.

8.3.2 A summary of student engagement through a narrative- and discussion-based teaching method

A narrative-stimulated, discussion- and activity-based pedagogy was integral to the bioethics curriculum utilised and adapted by the collaborating teachers within this investigation. Addressing Research Question 4, Figure 8.1 and the explanation beneath it summarise the ways this pedagogical method engaged participating students across both case studies. Once engaged, emotional, social and academic learning proceeded within these diverse learners.

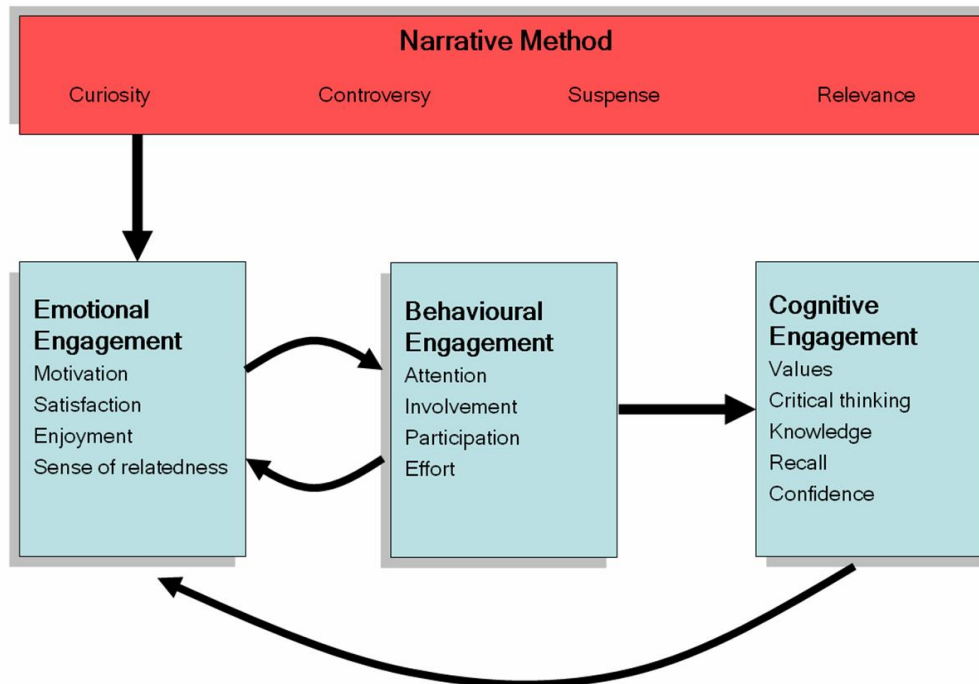


Figure 8.1: How the use of narrative in the trialled bioethics curriculum promoted emotional, behavioural and cognitive engagement

Contemporary ethical issues that were perceived by students as relevant to their current and future lives were presented through narrative using culturally relevant media. The use of authentic narratives in a variety of genre aroused curiosity, gained students' attention and incentivised emotional, behavioural and cognitive engagement through the use of controversy and suspense, while simultaneously humanising the bioethical dilemmas, and enabling the development of empathy. Discussion of the narratives enhanced students' experiential engagement with the characters within a dilemma, and created interaction, connection and relatedness between classmates. Students experienced a reduced sense that their responses might be judged right or wrong, which led to an appreciably increased sense that the material could be mastered. Simultaneously, students experienced a sense of autonomy over their learning; that they were not passive receivers of standardised information, but co-creators of knowledge. These experiences induced positive emotions, including enjoyment and satisfaction, and a sense of

confidence within individual students. Increased confidence enhanced behavioural engagement, empowering individual students to higher levels of involvement, participation and effort. The rewards and satisfaction embedded in participation in the class increased students' intrinsic motivation to learn. Narratives were easily recalled and the academic knowledge that they anchored was retained.

The use of narrative- and discussion-based, student-focused pedagogy such as that used in this research is applicable in a wide variety of subject areas. Discussion of student-centred or experiential pedagogy is not new. Dewey (1938) emphasised the connection 'between education and personal experience' (p. 25) within general education. As previously described in Chapter Three, Freire (1970; 1993) contrasted the 'authoritative', 'banking system' of education where information is handed down from an all knowing teacher to passively receptive students with his preferred 'liberal' education, which offers students the opportunities they require to engage with information in a collaborative and exploratory way. In the context of socio-scientific education, Zeidler et al. (2009) assert social interaction and discourse to enable students to evaluate claims, analyse evidence and assess multiple viewpoints. The principles of the NZC (Ministry of Education, 2007, p. 9) promote the placement of students at the centre of teaching and learning, and requires that curriculum content be relevant and curriculum delivery engaging, challenging, future orientated and inclusive. As evidenced through the response of participating students and collaborating teachers reported in the previous two results chapters, the stand-alone bioethics curriculum trialled in this research fulfilled each of these requirements. Results from this research trial affirm literature on the importance of critical reflection in learning. Research outcomes also support literature on the importance of learning activities that provide students with opportunities to practice co-operation and trust; a willingness to listen to alternative viewpoints; to think creatively; and to develop skills in decision making and

problem solving, conflict resolution and the giving and receiving of feedback (Daniel et al., 2005; P4CNZ, 2012b).

A narrative-stimulated teaching and learning method was integral to the bioethics curriculum trialled in this research and proved efficacious in developing affective and cognitive competencies within participating students. Students' capacity to imagine and be empathetic to life stories and worldviews other than their own were enhanced, together with their understanding of the values that underpin a variety of cultural, social and religious perspectives. Students developed competencies in self-awareness and self-critique; listening carefully; the ability to follow complex plots; and observing and identifying patterns of meaning and argument in both their own and others' communication. These outcomes endorse literature on the efficacy of narrative-based pedagogy (Daniel et al., 2005; Montgomery Hunter et al., 1995; P4CNZ, 2012b).

Engagement within an educational setting involves a student's emotional and behavioural disposition towards, and personal investment in, a learning activity (O'Donnell et al., 2008). As will be discussed in the following section, the bioethics curriculum trialled in this research engaged students from across the academic spectrum and facilitated an emotional, social, cognitive and academic response within them.

8.4 STUDENTS' AFFECTIVE AND COGNITIVE RESPONSE IRRESPECTIVE OF ACADEMIC HISTORY

This section discusses Finding 2; that all students participating in the stand-alone bioethics trial had an affective–cognitive response to the bioethics curriculum regardless of their history of academic achievement. From the predominantly advanced learners of the Year 11 case study, to the transition based learners of the Year 12/13 case study, the two cohorts participating in this investigation included students from across the academic spectrum.

Descriptive analysis conducted on the initial and EOC survey results using Excel revealed similar strong positive trends in engagement and emotional, social and academic learning in both case study groups. Statistical analysis using the SPSS programme led to the formation and testing of a construct for affective and cognitive response to the trialled bioethics curriculum. No statistical difference in the way both case study cohorts responded was revealed. These quantitative results were supported by the qualitative data, particularly the KSI responses, which also evidenced an affective and cognitive response in all participating students, irrespective of their history of academic achievement and position across the academic spectrum. The narrative-, discussion-based pedagogy integral to the research curriculum was fundamental to students' affective and cognitive response. Accordingly, this section builds on the immediately prior discussion (8.3) of the significance of a narrative-stimulated, discussion-based teaching method to student engagement and learning.

When sustained, satisfaction and enjoyment in one class can lead to enjoyment of the subject. The bioethics curriculum appeared to move pupils from situational interest, that is, short-term attraction to a learning subject or activity, to a sustained interest in the subject material. An important factor in this appeared to be the applied opportunities to practice skills of critical thinking and philosophical argument. Learning to support opinion and personal worldview with reason enhanced students' perceptions of autonomy over, and active participation in, knowledge construction, and improved students' confidence in their ability to learn. This reinforced satisfaction and motivation to learn.

Students across both case study groups had the opportunity to experiment with their ideas, to formulate and express arguments, and to question. The narrative- and discussion-based teaching and learning method provided students with immediate feedback on their opinions and judgements. Such feedback often required students to refine their arguments, and therefore

develop their higher order thinking skills. It also developed their emotional resilience. In this way, students taught each other. Students did not passively consume or accept knowledge, but rather, they felt they were co-creators of the knowledge gained within the bioethics classroom. Students reported a notably reduced sense of having regulated knowledge imparted for assimilation and regurgitation and in this way, the bioethics course educated minds rather than trained memories (Adams & Hamm, 1996). The learning field was perceived as more level, in that generally a number of ethical approaches to a dilemma could be taken. This led to an appreciably reduced sense of 'being wrong', which in turn boosted individual student's confidence, and sense of autonomy and empowerment. Students all heard the same scenarios, but were free to explore, challenge and respond in their own way. This involved distinguishing their personal response; explaining their response; and supporting, defending and/or refining their response, themes that will be explored further in the Values Education section (8.5) that follows.

Full commitment in an activity also brings a sense of enjoyment and links to emotional engagement. Reporting a high level of thinking about, and discussing bioethical issues raised in the curriculum in their family and social environments (7.5.4), participating students from across both case studies demonstrated affective and cognitive engagement beyond the straightforward learning of the classroom setting. This supports literature, for example, O'Donnell et al. (2008), that suggests a student is cognitively engaged when they are actively thinking about the content material and are going beyond the basic requirements of a learning activity to invest themselves mentally in a committed way.

Discussion of the affective and cognitive responses of participating students is included in the following section on values education, which addresses Research Questions 1, 2 and 3. Analysis of the mixed data gathered indicates that students who participated in the research trial had an affective–

cognitive response regardless of their academic history. The following section provides further discussion of the nature of this response.

Having engaged students from diverse academic backgrounds in learning at the outset, the teaching method utilised in the trialled bioethics curriculum sustained students' engagement, and therefore learning, throughout the course. Given the essential role of the pedagogy to the outcomes evidenced in the research, discussion of the narrative-stimulated, discussion and inquiry-based teaching method is intrinsic within the sections on values education, cognitive development and enhancement of key competencies that follow.

8.5 BIOETHICS: A VEHICLE FOR COMPREHENSIVE VALUES EDUCATION

Through discussion of Finding 3, that the stand-alone bioethics curriculum trialled in this research proved an effective vehicle for both character-behavioural and theoretical-cognitive values education, this section addresses Research Questions 1 (affective outcomes), 2 (cognitive outcomes) and 3 (competency outcomes). Affective outcomes for individual students included acknowledgement, critique and development of their personal values (see section 8.5.1). All students participating in the research recognised that a particular issue may be viewed from a variety of valid perspectives underpinned by values arising from a plurality of established ethical theories and cultural and spiritual traditions (see section 8.5.2). Engagement with the narratives and scenarios facilitated the development of empathy and the understanding of others. Participation in group and class discussion required turn-taking, which developed patience and self-control. Students developed critical thinking and communication skills, including skills of philosophical argument (see section 8.5.3). These emotional, social and intellectual developments altered how individual participants perceived their student identity and elicited a further affective response. Developed emotional, social and cognitive competencies, including personal confidence

and courage, altered the way individual students behaved, including how they participated in the class and how they related to and disagreed with people who held differing views (see section 8.5.4). The development of skills in critical thinking, self-managing behaviour, participating and contributing to discussion, and relating to others reported by participants, establishes the bioethics curriculum trialled in this research as an effective method of teaching and learning the key competency and values aspects of the NZC (Ministry of Education, 2007).

8.5.1 Personal values, social-emotional learning and the development of personal identity

This section addresses Research Question 1, the affective outcomes for students. The section discusses how students' awareness and critique of their personal values was enhanced, and their social-emotional learning and personal student identity was developed through participation in the stand-alone bioethics trial.

Students reported that experiences of generating and sharing their views towards narratives enabled them to engage with and to explore their personal values, and in this way to learn more about themselves (see sections 6.3 and 7.2.2). Asking a student to justify a response induced reflection, analysis and critical thinking, and frequently prodded the student into examining their opinions and thoughts as underlying assumptions, beliefs and personal values were encountered. As new thoughts were generated and shared, students, for example, Jess (see section 6.4.3), reported that they examined each idea for fit with their view of the stimulus narrative, including examining a new idea for ways it might clarify or change their personal view. A student's view on an issue expanded as ideas were shared and tested in this way during class and group discussions and the identification of their feelings, attitudes, understandings and aspirations often resulted in a student modifying their initial position. Such student responses endorse literature on

the use of narrative as both a mode of representing an ethical issues and a mode of reasoning issues through, which allow students to 'try on' alternative decisions and behaviours and to assess what fits best with their value systems (Brody, 2002, p. 202; Richardson, 1990; White, 1987).

The justification of beliefs and views shared during discussion provided the class with more material to 'open up' and from which to learn as a situation was explored. Teachers Nick and Helen skilfully used student comments to name and teach ethical theories including utilitarianism, proportionalism, situation ethics, virtue ethics, natural law, Kantian ethics and libertarianism. Through this process, the degree of complexity and sophistication of opinions, reasons and solutions generated progressively increased throughout the year, as did students' academic understanding of ethical theory and personal values construction.

The situational context created through the student-focused, active and interactive teaching method influenced individual student's perception of their learning experience and their social interaction. Students made meaning of their experience within the bioethics class, including that it was 'more open' and actively participated in the learning process. Within the setting of the bioethics classrooms, students interpreted new information through their values, their previous knowledge and experiences, and in this way constructed new meaning and new knowledge. As the excerpt from Dan in section 7.5.3.3 exemplifies, the majority of participating students perceived themselves as creating 'original' knowledge; coming up with our own ideas that they then discussed and developed, 'rather than doing something, or learning something that has already been decided on'. These results endorse constructivist learning theory and socio-constructivism, which assert the interaction between the emotional and the cognitive and acknowledge the essential influence of individual perception on the effective acquisition and application of knowledge. That is, the results affirm the construction of knowledge through the interaction of new information presented in a certain

socio-cultural context with an individual's current knowledge, beliefs and values (Birisci & Metin, 2010; Bulman, 2005; Gergen, 1994; Hunter & Krantz, 2010; Tennyson, 2010; Zembylas, 2005).

The stand-alone bioethics trial fostered development of personal identity through students' engagement with and development of their personal beliefs and values. In addition, for the Year 12/13 case study cohort in particular and as exemplified by David's story, participating in the bioethics course changed some students' self-belief that they were not good learners. The need to develop a sense of personal identity is acknowledged as a necessary factor in a student becoming an independent learner (Berliner & Bernard, 1995; Carr-Gregg, 2008; McCutcheon, 2004). As described in section 8.3, an increased sense of confidence and empowerment led to increased engagement, which led to increased participation, which increased confidence and so on, in an upward spiral.

Students derived pleasure, satisfaction and confidence from determining and sharing their personal responses, and being able to sustain their view with reason if it was challenged. Students derived confidence and satisfaction from an increased vocabulary and the mastery of terms and concepts including, for example, utilitarianism. Confidence, pleasure and satisfaction were also gained from distinguishing a lack of reasoned argument, or inconsistencies in the arguments of others, and through the identification of types of argument, including, for example, the slippery slope. In these ways and through developing skills including the ability to listen; to understand different perspectives; to recognise the emotions of others; and to manage strong emotion (their own and others), the sequenced, academically robust bioethics lessons facilitated weekly throughout the research year elicited an affective–cognitive response in all participating students. These outcomes validate research and literature on social-emotional learning, for example, Elias (2004) and Payton et al. (2000).

8.5.2 Expanding students' worldview

This section continues discussion of Research Question 1, the affective outcomes for participants, and addresses the ways in which participation in the stand-alone bioethics trial contributed to the development of participating students' worldview and moral reasoning. The sharing of personal views during the predominantly discussion-based course, provided students with an appreciation of viewing an issue from different perspectives, expanded individual student's worldview, and provided students with a deeper understanding of the values of others.

As expressed by students participating in the current research, the exploration of issues within bioethics was a challenging endeavour that involved the skill of regarding and appreciating different perspectives and the views and values that underpin them. Having developed the ability to discern the ethical issue within a given narrative; to identify their personal perspective on the issue; to understand that others may respond differently; to recognise what these different perspectives may be and the values that anchor them; and responding well to those whose views and values differed, the significant majority of students across both case study groups developed what Verkerk et al. (2004) define as 'moral competence' (p. 32) through participation in the stand-alone bioethics trial. Participating students learnt to take time to consider their personal response at a level beyond the immediate and superficial; to assess their personal values and to compare the views and values of others against these; to express their personal view supported by reason and evidence and to expect the same of others. In this way, the substantial majority of participating students developed the ability to hold themselves and others to moral account.

Students learnt that they held multiple perspectives; they acknowledged that they may be utilitarian at times, but Kantian or virtue ethicists at other times (for example, Pat in section 6.4.5). To be able to recognise, hold and

acknowledge multiple viewpoints is an important and sophisticated skill to possess, and evidences both academic knowledge and high order critical thinking skills. In addition to learning that different perspectives exist, the majority of participating students, including for example, Leah and Wei (see section 6.5.2), went beyond being able to describe different perspectives within an ethical dilemma, and developed the ability to analyse perspectives and to take and defend a position. Thoughtfully engaging with and critiquing the views of others, as opposed to giving them a superficial nod of acknowledgment then dismissal (often as simply 'weird' for being different) moved students beyond a simple relativist position (for example, Susan and Sophie in section 7.5.5 and Sabrina in section 7.6.1). In the context of the current study, values education in the form of exploration of personal values, expansion of worldview and developing an understanding of the views of others served as an important co-requisite for the development of students' critical thinking skills.

8.5.3 Critical thinking

This section discusses evidence to support the deduction that students' competence in critical thinking was enhanced through participation in the stand-alone bioethics trial. In so doing, this section addresses Research Question 2; the ways in which the teaching and learning of bioethics contributed to the development of a participating student's cognition, including their academic learning and critical thinking.

The narrative- and discussion-based teaching method utilised in the research was integral to the improvement in thinking skills reported by all participating students. During the exploration of scenarios narrated throughout the bioethics course, students drew on their personal values and intuitions, asked questions and learnt to challenge assumptions and perceptions, each of which is described by the NZC (Ministry of Education, 2007) as part of the key thinking competency. Open debate within the class, with frank exchanges

of opinion, led participating students to carefully consider differing points of view. Throughout the stand-alone bioethics trial, students learnt to identify unforeseen consequences of an argument offered, and contradictions within an argument. In this way, students learnt, practiced and sharpened their skills of reasoning, critical thinking and rational persuasion. Using their imaginations and incorporating the use of inference and speculation, students demonstrated skills of conjecture in exploring what the ethical issue was and how it may be approached. Improved critical thinking skills were demonstrated through enhanced skills of communication, particularly skills of reasoned deliberation, use of academic vocabulary and managing debates with others.

In learning to determine if an argument was well constructed, supported with reason and inclusive of consideration of consequences, students learnt to make decisions. This involved developing skills of evaluation. The acquisition of this skill was aided by the large group discussion where one student recognising and challenging the premises in the argument of another helped all students listening to compare and contrast the different points of view. Learning higher order thinking skills was facilitated through the social interactions with fellow students in the co-operative environment.

Critical thought that led to the construction of a cogent argument capable of withstanding the analytical scrutiny of others, resulted in the scrutinising of intuitive 'gut reactions', and students reported that they learnt not to respond emotionally 'off the top of their head' (see sections 6.4 and 7.2.3). The bioethics curriculum engaged students beyond the everyday level of moral reasoning, to the more reflective, critical level (Hare, 1981), encouraging them to go beyond narrow, shallow and frequently relativistic responses, which they acknowledged as their previous norm (see section 7.5).

8.5.4 Key competencies

This section addresses Research Question 3 and discusses how the affective and cognitive outcomes demonstrated by students participating in the stand-alone bioethics trial relate directly to the values and key competency requirements of the NZC. Once again, the narrative-stimulated, discussion- and inquiry-based teaching method utilised in the trial was fundamental to the outcomes deduced.

Described as ‘both end and means’ (Ministry of Education, 2007, p. 38), the five key competencies of thinking; managing self; relating to others; participating and contributing; and using language symbols and texts; together with values including equity, diversity, excellence and integrity, are considered vital for lifelong learning, and for living and participating in a progressively more complex society. The competency of managing self requires students to be self-motivated and self-disciplined. During an inquiry into a bioethical scenario, students learnt to take turns, not to interrupt and to listen attentively. When defending an argument, students demonstrated resilience and learnt to be analytically thoughtful. Students reported and were observed to learn to make a philosophical argument, rather than to personalise a disagreement. This, together with acknowledging the existence of different perspectives and learning to understand the cultural, philosophical and/or spiritual values that underpinned them, enhanced how students related to one another.

While a sense of community pre-existed to some degree within both case study groups, a core group of students in the Year 11 cohort having been together as accelerate students over a number of years and the Year 12/13 case study being based in the more community-orientated Transition Department, social bonding was enhanced in both groups through participation in the bioethics course. Significant examples of positive changes in relationships as students developed their sense of personal identity and

their understanding and acceptance of who others were, included Jess and Kate in the Year 12/13 case study (see section 6.6.1) and Max in Year 11 (see section 7.6.1). Activities that provided opportunities for students to engage with each other nurtured a sense of relatedness. Some students, including Max and Kate, felt quite 'unrelated' within their peer group, including not in the 'cool group'. Activities that mixed students beyond such social groups were useful in breaking through perceived barriers and were a catalyst for establishing relationship. Relatedness and a sense of school connection have been demonstrated as significant factors in student motivation and engagement with learning (Blum, 2005; Saelhof, 2009). The competency of relating to others extended beyond the classroom as students reported discussing bioethical issues with peers not involved with the course and at home.

The stand-alone bioethics trial pedagogy supports research that indicates that learning how to interpret ideas, to question and to seek clarification of the ideas of others enhances student understanding and learning. Such skills are recognised by the National Centre for Research of Teacher Learning (1993) as providing students with the 'flexibility to respond to new situations' and serve as a 'foundation for a life-time of future learning' (p. 2); an aim shared with the NZC.

The narrative- and discussion-based teaching method offered students the opportunity to consider other viewpoints; to experience situations outside of their own; to learn about and understand the theories and values that underpin the variety of philosophical, cultural and spiritual traditions explicitly taught; to think critically; and to share and to negotiate, developing the competencies of managing self and relating to others.

Addressing Research Question 2, the bioethics curriculum trialled in this research proved effective in developing competence in critical thinking for all participating students. With respect to Research Question 3, in addition to

proving an effective vehicle for the explicit teaching and learning of values, the stand-alone bioethics curriculum was efficacious in developing participating students' competencies in the key areas of relating to others, managing self, participating and contributing, and using language, required by the New Zealand curriculum. This was endorsed by the collaborating teachers, principal and Board of Trustees at Koru College, who perceived the curriculum in the stand-alone bioethics trial as comprehensively encompassing the values and key competency aspects of the New Zealand curriculum.

In addition to achieving explicit values education and development of the key competencies of the NZC (Ministry of Education, 2007) within participating students, results from the data gathered in this investigation indicate that the trialled stand-alone curriculum achieved each of the knowledge, skills and personal moral development goals advanced by the UNESCO Asia-Pacific Joint Plan for Better Bioethics Education (UNESCO, 2006).

The results discussed in section 8.5 build upon the literature and previous research into the potential of bioethics education to develop students' higher order thinking skills; develop a student's worldview through the opportunity to engage with, develop and modify their personal values and to consider perspectives other than their own; and to prepare students as informed citizens and decision makers (Dawson, 1999; Jones et al., 2007; Levinson, 2003; Macer, 2004b; Saunders, 2009; Zeidler et al., 2003).

With the exception of a 14-week course offered to senior students at a high school in China, most, if not all, previous research and literature has considered the teaching and learning of bioethics as a unit within science, technology or humanities classes. It was argued in Chapter Three that teaching and learning bioethics as a unit within other subject areas may limit students' understanding, particularly of theoretical ethics and cultural and spiritual values, necessary for informed debate and contribution to decision

making on bioethical issues. As illustrated by the excerpt from Max (see section 7.2.6), where he observed with respect to the question of when life begins that there were some important stages to the bioethical discussion that appeared less important for the requirements of his human biology course, there is an advantage to separating bioethics out as a stand-alone subject. Max perceived that his human biology course had not provided him with some information that was important to the bioethical issues surrounding embryo research and the use of embryonic stem cells. Of course, this works in both directions and it is essential that any bioethics course teaches science and technology to a level that fosters understanding appropriate to engage in informed debate and decision making.

Within this research, teaching bioethics as a stand-alone subject demonstrated the interdisciplinary nature of the field to participating students and fostered engagement and re-engagement in learning in a variety of subject areas, including the sciences. By their nature, the majority of narratives and applied scenarios utilised by the collaborating teachers included current-time scientific or technological issues that posed ethical dilemmas. Some students reported during the interviews that engaging in discussion of these issues increased their awareness of scientific and technological developments and enhanced their interest in learning science. This was particularly so of students from the learning support unit and the Transition Department, who had previously experienced a lack of scientific understanding.

Within this research, teaching bioethics as a stand-alone subject strengthened the identity of bioethics as a branch of learning in its own right, rather than a subset of another area. It enabled the comprehensive teaching and learning of a wider variety of ethical theory, and cultural and spiritual values than was evident in the literature reviewed where bioethics was delivered as a unit within another discipline.

8.6 OUTCOMES OF THE RESEARCH

This research investigation arose from gains in both values and conceptual understanding that I observed for students over a six-year period of writing, adapting and facilitating a stand-alone bioethics subject in the weekly timetable at independent, single-sex, decile 10, Wellington Two. I wished to trial this stand-alone curriculum in a school that did not have a formal values education programme, for example, a religious studies programme, with students from different backgrounds and academic histories. Accordingly, this study investigated the affective, cognitive and engagement-in-learning outcomes for 78 Year 11, 12 and 13 students through participation in a timetabled, stand-alone bioethics subject at the state, co-educational, decile six Koru College. A triangulated mixed-methods investigation of two case study groups found that participating in the weekly, one-hour, stand-alone subject of bioethics across a full academic year enhanced students' awareness and understanding of their own and other's values; developed critical thinking skills and skills of communication when discussing controversial issues; developed students' understanding of philosophical and scientific concepts; enhanced students' attitudes towards theoretical-cognitive learning, through relevant content and student-focused pedagogy; and developed participating students' character-behavioural learning.

Although the teaching and learning of bioethics has been promoted within science, technology and religious studies, I could find no academic study into teaching bioethics as a stand-alone subject at secondary school level at the time this investigation was undertaken. Further, there is a scarcity of evaluative studies at the individual student level within research investigating the teaching and learning of socio-scientific issues or bioethics within another subject. In addition, previous research into the teaching and learning of bioethics has not overtly recognised the pervading cultures of materialism, individualism and moral relativism, which may influence how an individual sees the world and his or her place in it; the values he or she upholds; and,

therefore, impact on the decision-making strategies employed at both an individual and collective level. Addressing these areas, this investigation makes an important contribution to the literature on the teaching and learning of bioethics and socio-scientific issues. If the aims of the recently introduced New Zealand curriculum (Ministry of Education, 2007) including enhancing students' ethical thinking and decision-making capabilities, alongside their understanding of science and developing technologies and the social application of these are to be achieved, then development of effective approaches to teaching and learning bioethics will be of particular value.

The current study makes a significant contribution to literature on the teaching and learning the key competencies of critical thinking, relating to others and managing self within the secondary school student body of our changing times, required by the new New Zealand curriculum. The narrative- and discussion-based teaching methods integral to the trialled curriculum provide schools with a general pedagogical model for implementing the explicit teaching and learning of these key competencies and character-behavioural values.

This investigation also contributes to research on effective pedagogy within education in general, and within bioethics education in particular. The student-focused, narrative- and discussion-based methodology proved effective in student cognitive, emotional and behavioural engagement, leading to academic, social and emotional learning. The participatory focus, together with the use of relevant and authentic narratives in a variety of genre as stimulus material, presented a way of learning not generally experienced. Interview data, quantitative analysis and construct testing suggest that the narrative- and discussion-based pedagogy integral to the trialled bioethics curriculum, enhanced accessibility of learning concepts, retention of knowledge, attitudes and skills for all students regardless of their position on the academic spectrum.

Student-focused practices including inquiry, the posing of questions, problem solving, and negotiation are incorporated in teaching approaches other than the use of narrative and within subjects other than bioethics. However, a distinguishing feature of bioethics is that through the legal, cultural, spiritual, economic, environmental and political issues raised by the intersection of developments in science and technology with citizens' value systems, bioethics considers fundamental, immediate and future-focused questions about life and its meaning. The bioethics curriculum trialled in this investigation provided a forum in which students could explore existential questions, something that research suggests they yearn for (Haigh, 2006), and that data gathered within this research indicates may not be well catered for in the existing curriculum. The narrative- and discussion-based teaching methods enabled students to use their imaginations and to exercise empathy and understanding. Engaging and relevant to students from a cross-section of academic and cultural backgrounds, the bioethics curriculum investigated in this research proved an effective vehicle for comprehensive theoretical–cognitive and character–behavioural values education. This thesis therefore makes a significant contribution to the literature on values education.

The investigation's findings presented and discussed in the preceding chapters support widespread calls for the introduction of teaching and learning of controversial socio-scientific issues within the curriculum, together with the explicit teaching and learning of values and key competencies, and the development of active citizens who participate, learn and adapt throughout their lifetime. However, there are limitations to this study. The following chapter will reflect on the investigation and describe these limitations. It will also consider the wider implications for curriculum developers and policy makers, for teachers and for teacher training, and for researchers that arise from the research findings.

CHAPTER NINE: REFLECTIONS, LIMITATIONS AND IMPLICATIONS

Argument about the values that should 'drive' schooling, education, the curriculum, schools and classrooms is ongoing. Much of the heat in this argument goes back, at the deepest level, to debates about the purpose of schooling. (Keown et al., 2005, p. 68)

9.1 REFLECTIONS

Time has flown. Prepared some scenarios for the last lesson. Kids are genuinely sad that bioethics is over. I have never seen a programme have this impact on so many. (Helen, research journal entry 4.11.10)

This study was based on the contention that there is a lack of theoretical values education, that is, ethical thinking, ethical consideration and understanding of ethical theory, within New Zealand's schools and communities. This is at a time when societies globally are facing significant ethical, legal, social, environmental, economic and political challenges resulting from rapid technological advances. The ethical issues raised by developments in science and technology bring into focus the questions of *how ought I to live* and *what is it to flourish as a human being?* The ethical dilemmas raised by developments in science and technology require competency in critical thinking and communication as they are deliberated on and responded to. Responding to technological, social and political change, the New Zealand curriculum (Ministry of Education, 2007), mandatory in all schools from January 2010, requires explicit values education and the development of five key, socially related competencies that encompass critical thinking and communication.

As articulated in Chapters One, Two and Three, a view of values education and competency development as preparation for citizens to be able to engage with bioethical issues at both an individual and collective level, and to make ethical decisions and act on them, was adopted in this research. Both the researcher's original curriculum and the bioethics programme adapted by the collaborating teachers at the centre of this study were designed to encourage students into what Law (2007) describes as 'the habit of thinking in an open, reflective, critical way' (p. 36) so that cognitive, social and emotional skills and values may be developed, together with skills of decision making. The bioethics curriculum at the centre of this research sought to achieve this open, reflective and critical thinking through the teaching and learning of philosophy (specifically ethical theory), and the exploration of applied ethical issues using an adapted, discussion-based, community of inquiry approach, stimulated through narratives, wherever possible authentic and not fictitious. The curriculum sought to encourage students to think for themselves and to debate freely and openly different ethical, cultural and spiritual responses. Analysis of quantitative and qualitative data generated by the research suggests that the bioethics curriculum was successful in these endeavours. Students' values appreciation, critical thinking skills, skills of argument, attitudes and behaviour towards others, and philosophical and scientific conceptual understanding, improved through their participation in the research project. Recognising the affective and cognitive outcomes for participants in the research year, Koru College has maintained a stand-alone bioethics course in the timetable in the two years subsequent to the trial, expanding the time allocation from one hour to two hours per week.

9.2 SOME LIMITATIONS

A mixed-methods research model generated complementary data sources that enabled thick descriptions of the two case studies and minimised potential limitations to the investigation. Data gathered through quantitative

methods indicated trends, while qualitative data provided an in-depth understanding of participants' emotional, social and intellectual experiences of the stand-alone bioethics course. Quantitative analysis allowed for the investigation of possible class level and gender biases that may have influenced the comprehensive EOC survey responses.

Scalability and potential research bias have been addressed. The sample size of 78 participating students, 65 of whom completed the comprehensive EOC survey and 40 of whom participated in KSI interviews, limits the degree of analysis, particularly quantitative, that may be undertaken. While the effect of the limited sample size was offset to some degree by inclusion of survey responses from 2011 bioethics students at Koru College, a larger sample size of students could confirm the validity and reliability of results, and allow a more accurate statistical comparison of enhancement of learning across students of all academic histories.

This study drew upon the researcher's six-year experience of teaching bioethics as a stand-alone subject at a single-sex decile 10 school and the observations made in that setting required testing in a wider learning environment. Situated in a co-educational decile six school and delivered to students with widely different academic histories, the present study confirms observations through rigorous investigation. However, while divided into two case studies, the investigation is limited to one school. Accordingly, this research should be considered within the context of this bounded environment. As is characteristic of case study research, it is not intended that the findings and deductions be generalised beyond the context in which they occur (Cohen et al., 2007; Hammersley et al., 2007; Yin, 2009). However, it is observed that the affective, cognitive and social outcomes demonstrated for students, and personal and professional outcomes for teachers participating in the stand-alone bioethics trial parallel the 'behaviour, life view and value view' (Jinhua, 2008, p. 77) and 'science and technology', 'society' and 'family' (Wang, 2008, p. 73) outcomes expressed by teachers

and students who participated in the 14-week discrete bioethics course offered at the High School Affiliated to Beijing Normal University described in Chapter Three. Similar research to assess the reliability and generalisability of these research findings across New Zealand schools from a range of socio-economic and demographic settings, and within schools in a wider international setting, is indicated.

While exploring a range of religious and cultural values, a further limitation of the research curriculum is that it is predominantly Western in philosophical approach. Wherever possible, and according to the appropriate understanding of the collaborating teachers, a Maori cultural, spiritual and ethical perspective of the issues being explored was included. This was enhanced by the input of participating Maori students. However, the inclusion of Maori views, including the use of relevant narratives, is an area that needs developing within the trialled bioethics curriculum. Further, expanding the curriculum to include a balanced emphasis of Western, Continental and Asian philosophy would expand the curriculum's relevance beyond its current New Zealand setting.

9.3 IMPLICATIONS OF THIS STUDY

The allocation of scarce instruction time and resources is no small issue. (Sadler et al., 2007, p. 372)

The principles of the NZC (Ministry of Education, 2007, p. 9) promote the placement of students at the centre of teaching and learning and require that curriculum content be relevant and curriculum delivery engaging, challenging, future orientated and inclusive. Possible learning contexts suggested in the NZC include sustainability, globalisation, enterprise and citizenship. The NZC suggests that these contexts can be used to organise a school's curriculum allowing for the natural integration of values, key competencies, skills and knowledge across subject areas (Brough, 2008). Given the positive outcomes

directly aligned to the development of values and key competencies for students in two diverse case study groups in a decile six co-educational school within this research investigation, schools could consider establishing a stand-alone bioethics course. Such a development would also address the recognised need to establish subjects such as post-normal science or SPU (Gluckman, 2011a, 2011b; Winston, 2011) within the school curriculum so that all members of society may engage with the ethical issues arising 'in a world of globalization, cultural diversity and rapidly changing technologies' (Maharey, 2007, the Hon. S., then Minister of Education). However, implementing the teaching and learning of bioethics with a requisite student-focused pedagogy into the curriculum is not without its challenges and implications.

9.3.1 Implications for curriculum

The key competencies, skills and values development required by the NZC are far more complex than those required of the outcomes-based policies of the past, and as a consequence, require more sophisticated approaches to curriculum delivery such as student-centred integration. (Brough, 2008, p. 16)

There are implications for curriculum with respect to the role and effect of the educational and political narrative in which this research was conducted and into which this research speaks. The emphasis on values education, the development of the key competencies and the use of effective pedagogy within the NZC encourages a shift from lineal educating for outcomes, to a more holistic education, which alongside the acquisition of academic knowledge, develops both the emotional and social quotients of an individual, enabling him or her to be insightful, to think creatively and critically, and to reframe issues. However, in opposition to the stated aims and objectives of the NZC to explicitly teach values and to develop the key competencies is an emphasis on outcomes and standardised testing within education. As

contended by participants in this research study, both of these appear to constrain creativity and the use of effective, student-centred pedagogies, such as the narrative-stimulated and discussion-based teaching method used in the stand-alone bioethics trial. As a result of this tension within the current education environment, there is a significant disparity between the intended and prescribed national curriculum and the curriculum taught, experienced, learnt, and assessed in a vast number of New Zealand classrooms.

As Nick described (see Appendix Thirty-two) when he discussed how compulsory assessment might change the way the trialled bioethics curriculum was taught, however willing a teacher may be to diversify teaching methods and place students at the centre of learning, the constraints of an assessment and standards driven curriculum may mean that didactic, hierarchical teaching methods, with an emphasis on how to pass assessments, are retained for reasons of efficiency. Through his participation in the trial, Nick recognised that the focus of his teaching in his principal discipline of English was primarily on teaching skills associated with assessment, for example, the structure required by a well-crafted essay, rather than with the subject content knowledge. Following this realisation, Nick began to alter his teaching practice in English to include greater inquiry through the exploration of values and ethics related questions, and encouraging students to use their imaginations to explore the worldviews of characters within the narratives (novel, film and poetry) being studied in English (see Appendix Thirty-three). Above all, following his experience in the bioethics class, Nick encouraged his English students to talk and discuss.

I think that is the main thing I have learnt; just let the students talk. Don't cut off, 'Alright, we're moving on. No. We're moving on'. Let them have their say, because that is where a lot of the offshoots, those beautiful little stems, came from; that just letting students talk.
(Nick, 101118)

Nick completed the English syllabus with his students in the research year. This would indicate that formal assessment and narrative- and discussion-based pedagogy need not be adversative. Further research is required in this area.

In her personal research journal, Helen observed how curriculum delivery had altered in classrooms over her teaching career under the influence of changes in the education environment.

On reflection I think that bioethics is actually what education should be—free, interesting, involving and non-exclusive. Over 30 years in a classroom much of the other stuff we do is timetabled, formulaic, set to strict criteria. A lot of the fun of learning for its own sake seems to have gone. We are grade, narrow content, skill and assessment driven. Bioethics has given the students permission to explore new ideas and question without pressure. (Helen, journal)

The outcomes from this research investigation identify a tension between the objectives of the NZC to develop theoretical-behavioural values, social competencies and academic knowledge in all students through the delivery of relevant content through a creative and engaging student-focused pedagogy, and the current educational environment that emphasises assessment and standardisation. There are implications for policy and curriculum developers within these findings.

9.3.2 Implications for pre-service training, in-service professional development and classroom practice

The lack of teachers' pedagogic skills required for this kind of course and strategic curriculum support is limiting the achievement of the aims. (Osborne et al., 2002, p. 10)

It may be that like Nick, many teachers require personal experience of student-focused teaching methods in order to include them in their classroom teaching practice. This experiential requirement has implications for teacher training and the professional development of practicing teachers with respect to the development of pedagogical content knowledge, and implications for current and future classroom practice. These implications apply to education across subject disciplines in general and to bioethics education in particular.

As reported in section 7.5, students perceived that the practical, narrative-stimulated and discussion-based activities of the stand-alone bioethics trial required them to explore their values and worldview and to actively think. These were activities that the majority of students reported they did not experience in other areas of the school. The teaching and learning in many other subject areas, particularly those that included assessment toward the national NCEA qualification, was reported by participating students and teachers alike, as involving the passive transfer of information to a strict timetable, in a traditional hierarchical, textbook- and board-focused classroom environment.

For many teachers, adopting an engaging, relevant, future-orientated, challenging and inclusive pedagogy that places the 'students at the centre of teaching and learning' (Ministry of Education, 2007, p. 9), may require a challenging shift in paradigm from 'a position of power to one of empowerment' (Brough, 2008, p. 8). Ensuring that education is presented in a safe and supportive learning environment in which students are encouraged to explore their own, their school and their communities' values means allowing students to discuss and to question. Open, reasoned discussion places the teacher and the pupil on a level playing field (Law, 2007). This has implications for the type of professional development required if teachers across all disciplines are to explicitly and successfully teach the values and competency aspects of the NZC through action- and inquiry-based teaching that facilitates 'reflective thought' and 'shared learning' (Ministry of Education,

2007, p. 34), and poses the question of what type of professional development teachers in general may be engaged into.

Research and literature discussed in Chapter Three described that science teachers recognised the need for cross-disciplinary knowledge and skills, particularly knowledge of philosophy and ethics, if addressing bioethical issues within their lessons. In several research studies, science teachers expressed feeling pedagogically challenged with respect to the discussion- and activity-based teaching methods including story-telling, drama and role play, useful in the teaching and learning of ethics, as demonstrated in this investigation. That is, with respect to teaching bioethics, science teachers felt inappropriately qualified and under-resourced (Grace, 2006; Hall 1998; Jones, 2007; Levinson, 2001; Macer et al., 1994). Similarly, teachers of subjects other than science and technology may feel insufficiently trained to teach the scientific and technological aspects required by bioethics, in addition to the ethical theory.

Research and literature refers to 'subject subculture'. This includes an agreed belief regarding the nature of a subject; how a subject should be taught; the role of the teacher within that subject together with the role of the student; and what each expects of the other (Goodson, 1985; Jones, 2007; Paechter, 1995). As bioethics becomes more established in the curriculum, the subcultures from which teachers come will influence how bioethics lessons are structured and delivered. Referencing the introduction of technology into the classroom (Jones, 2007; Paechter, 1995), as bioethics is a cross-disciplinary subject, the impact of subcultures from other subject areas on bioethics classroom practice may be very complex. International research and literature demonstrate that teachers will resort to the subculture of their primary subject and transfer what they believe is important for students to learn from this discipline when they feel inadequately qualified and resourced to address ethical issues (Hall 1998; Jones, 2007; Macer et al., 1994; Paechter, 1995). If bioethical learning outcomes, such as those evidenced

within this research, are seen to be desirable for students, a clear understanding of the nature and breadth of the subject of bioethics and teaching and learning within bioethics will be required. Until graduates with degrees in bioethics enter the teaching service, there are implications for the training of bioethics teachers who will initially come from a variety of academic disciplines.

While an individual does not have to be an academic philosopher to think critically and concisely about ethical issues, bioethics is constructed from, but not reducible to, other specialist fields and, therefore, requires cross-disciplinary knowledge (Kopleman, 2006). The collaborating teachers each had some, though limited, experience of ethics—Nick, philosophy and Helen, business ethics. Prior to, and throughout the research year, Helen and Nick worked closely with me, with each other, and independently to gain knowledge (see Appendix Thirty-three), plan lessons and to collect and make resources for teaching bioethics. The experience of collaborating teachers within this research reinforces implications for teacher training and professional development, while also raising implications with respect to the provision of teaching resources for bioethics and values education.

9.3.3 Implications for the use of narrative as a teaching method

Bioethics is an applied subject, and as such, it requires a practical or experiential component, including provision of opportunities for students to learn ethical strategies and to argue rationally as they endeavour to reach an ethical conclusion (De Luca, 2010; Jones et al., 2007; Levinson, 2003, 2006a; McKim, 2010; Reiss, 1999, 2003, 2010; Ryan, 2008; Saunders, 2009). As described throughout this thesis, a discussion-based teaching method centred on narratives that were, wherever possible authentic, was integral to the stand-alone bioethics trial. This use of narrative and discussion proved fundamental to the positive affective and cognitive outcomes experienced by participating students. The efficacy of narrative to engage and teach students

has particular implications for classroom practice. In addition to implications with respect to teacher training and the provision of classroom resources as described above, questions raised with respect to the use of narrative include what might constitute narratives that are inclusive of the diverse cultural and ethnic groups within New Zealand society; from where might these narratives be sourced; and how the use of such culturally inclusive narratives in a curriculum may be maximised. Facilitation of inquiry into and discussion of ethical issues and the values and beliefs that underpin the plurality of responses to them, requires impartiality. Narratives used within a bioethics curriculum are generally told in particular contexts for particular purposes, and are therefore constructed and presented in certain ways. The question of how the personal beliefs and biases held by the facilitating teacher may be minimised so that student exploration and autonomy are maximised, is therefore raised.

The factors described above imply that if the teaching and learning of bioethics as a discrete subject within the curriculum in particular, or narrative-based teaching in general, are to be established within the curriculum, specialist teacher education programmes at both pre-service and in-service levels would be necessary, as would the provision of culturally and socially appropriate resources.

9.3.4 Implications for assessment

In terms of measurability of results right now, I think that some of the things we have done in Bioethics might not have results for a few years. I think it is sitting there—the seeds are there and the ideas are there—and I think the students will come up with ideas like Libertarianism later. The ideas are there and they will think ‘Oh—I remember when we. (Helen, 101118)

How to assess values development and competency skills including critical thinking, managing self and relating to others required by the NZC is not a question for bioethics education alone, but is an issue for all academic subjects. This research study demonstrates the efficacy of a narrative-stimulated and discussion-based teaching method delivering subject content perceived by participating students as relevant to their current and future lives, in developing the complex and vital areas of personal and social well-being encompassed by the values and competency requirements of the NZC. Further, this research study demonstrates the positive impact of a narrative-stimulated and discussion-based teaching method on student identity, including building the confidence and motivation to learn. If, as research participants indicate, formal assessment inhibits the use of creative, practical, discussion-based and student-focused learning activities such as those used in the research curriculum, and influences the scope of learning by encouraging focus on how an assessment response is structured rather than subject knowledge, the question of how values and competency outcomes can be assessed becomes more complex. Questions implied within the area of values and competency assessment include, how the tools from bioethics, where responses are not judged right or wrong, but well supported or not supported, can be integrated into mainstream subjects; how in a time constrained assessment and outcomes focused education environment teachers may be encouraged to provide more space for student discussion; and if this space is provided, how teachers are to incorporate acknowledgement of sound thinking. These are questions that require further research.

9.3.5 Implications for researchers

The bioethics curriculum at the centre of this research was determined to align closely with the vision, values, key competencies, principles and effective pedagogy outlined in the NZC and makes a significant contribution to literature regarding the integration and explicit teaching of each within a

school curriculum. A narrative-stimulated, discussion-based pedagogy was integral to the curriculum delivered in the stand-alone bioethics trial and to the outcomes demonstrated. While integral to the curriculum in this investigation, such pedagogy is not exclusive to the teaching and learning of bioethics and these types of interventions are worth exploring in other areas.

The trialled curriculum proved effective for social, emotional, cognitive and academic development in all participating students who ranged across the academic spectrum from supported to accelerated learners. How and why this was so, requires further research. The student cohort within the research reflected the ethnic diversity of New Zealand. How the narrative- and discussion-based pedagogy integral to the trialled curriculum may relate to the oral traditions of diverse ethnic groups, including Maori, Pacific Island, African and Asian who were represented in the trial, is an area for further research.

While the positive outcomes achieved in association with student-focused pedagogy are demonstrated through investigations such as this, the curriculum remains outcomes driven (Jones et al., 2012) in the current educational and political environment. How the vision and intent of the NZC to explicitly teach values, to develop creative and critical thinking, and to support effective pedagogy may be implemented within the environment of assessment driven curriculum is an area that warrants further investigation. This study suggests the need for further research into student-focused pedagogy including the function of emotional engagement in the enhancement of learning, and how assessment driven curriculum delivery may be disabling learning. Research into how the explicit teaching and learning of values may be assessed is also indicated.

The bioethics curriculum adapted in this investigation and its delivery through a timetabled, stand-alone bioethics subject was designed as an introduction to teaching and learning bioethics for senior secondary students. While this

study has suggested a number of successful outcomes, further research will be needed to fully evaluate a full-time course with equal timetable and NCEA weighting as other subjects within the curriculum including, for example, English, mathematics, and history, and the long-term influence of participation in such a course. There is also a need for research into, and development of, a bioethics curriculum for junior secondary school and primary school children, for whom the subject material of this study might prove unsuitable.

9.3 CONCLUDING COMMENT

The vision of education as a holistic endeavour to develop 'motivated', 'reliable', 'resilient' (p. 8), 'life long learners who are confident and creative, connected and actively involved' (p. 4), and who have developed competencies in critical thinking, values appreciation and relating to others, so that they can 'make ethical decisions and act on them' (p. 10) as expressed in the New Zealand curriculum (Ministry of Education, 2007), is reflected across contemporary education literature and within multiple international curricula. My hope is that this thesis will prove a useful reflection on and for the explicit teaching of bioethics as a vehicle for comprehensive theoretical–cognitive and character–behavioural education, at a time when developments in science and technology pose unprecedented bioethical (ethical, social, cultural, legal, economic, environmental, political and spiritual) dilemmas for the New Zealand and wider global community. This investigation explored the affective and cognitive outcomes for participants in a stand-alone bioethics course, in two case study groups within a decile six, co-educational secondary school, taught through a particular narrative- and discussion-based pedagogy. In an age of materialism, individualism and relativism, this investigation suggests that the teaching and learning of bioethics as a stand-alone subject within this particular context holds a key to moving personal and social thinking away from superficial personality towards character; from things to thoughts; from reaction to reflection; from insularity to broadened horizons; and from individualism to community and biosphere.

I leave the final words of this thesis to collaborating teacher, Nick:

Bioethics is eye-opening, energising and ground breaking. Ground breaking in terms of finally a subject that is about learning, and only about student's learning. It has been only about the learning and what students have learnt. I'm not looking at my grades and thinking 'Oh, yes—excellence, merit, merit, excellence, great'. Because the likelihood of students forgetting in two years' time why they got that excellence and how they got it—I mean compared to this, which is about life; in the real world they will use this, and they will use the way they think about things—they have got new brain things happening that they didn't necessarily have before—that is why I think it is ground breaking. (Nick, 101118, final interview)

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APPENDIX ONE: THE FIVE STRANDS OF THE WELLINGTON TWO RaVE CURRICULUM

Bioethics

The 'ethics' strand of the British model, this strand was modified to become a dedicated bioethics strand. Throughout history, people have had to make ethical decisions, including, for example, those around honesty and integrity, and this is no different today. However, the pace of development and the application of new scientific technologies are ever increasing in the current time, as are the ethical, social, political and legal ramifications associated with them.

The bioethics strand teaches ethical theory—including natural law, situation ethics, utilitarianism, virtue ethics, cultural relativism and subjectivism in ethics. This is achieved within applied ethical contexts including human reproductive technologies, nutri-genomics, nanotechnology, just war theory, euthanasia and globalisation. This strand aims to equip students with the ability to appreciate the ramifications of developing technologies, and to recognise and defend their personal perspective towards them with academic rigour.

Philosophy of religion

This strand includes exploration of such topics as the arguments for and against the existence of God; what it means to talk of 'Eternal Life'; the problem of evil and innocent suffering; and what is 'truth'. Issues of truth underlie discussions in science, history, English, media studies and many other subjects. This strand teaches students to question whose truth is being proclaimed.

World religions

In addition to being set in the Pacific basin and having trading links with countries with widely different belief systems, New Zealand is now a multicultural society with a wide variety of religious traditions. This is reflected in the diversity of religious and cultural backgrounds represented within the Marsden student body. This strand seeks to provide students with an understanding of the beliefs of the main world religions and empathy for what it means to belong to these religions, in particular Judaism, Islam, Hinduism, Buddhism and Baha'I, as well as the sophistication of Maori beliefs. The cultural heritage that accompanies these religious movements is also studied.

Christian and Hebrew scriptures

This strand explores the Christian tradition, its doctrines and creeds that underpin laws and social values, and in which New Zealand's roots lie. The Hebrew and Christian scriptures also underlie a great deal of literature. Without an understanding of these scriptures, it may be difficult to fully appreciate Shakespeare, Dante or much European literature and history, as well as a great deal of art (from classical to contemporary, including for example, Colin McCahon) and classical music. This strand includes detailed examination of selected stories from the Hebrew (Old Testament) scriptures and the New Testament. The scriptures are central to the faith of all Christians and Jews (as is the sacred text of the Koran to Muslims). A spiral approach is taken so that students return to the stories at progressively higher year levels. The level of understanding at age 10 and 17 is not the same in science, English or mathematics and nor should it be the same in RaVE. As these are sophisticated stories this strand explores the 'depth grammar', including that 'truth' may be communicated through story without all stories necessarily being literally true. Metaphor, analogy, symbol and art are important in appreciating recent Biblical scholarship hence the need for a

spiral approach in the curriculum returning to the stories at different stages in the educational process.

The Affective strand: Stillness and silence

Life for students, parents and teachers is increasingly frenetic. Woven throughout the RaVE curriculum, this strand provides time for silence and reflection. This is achieved through a variety of methods that teach and facilitate the ability to be still and contemplative, and that are integrated within the teaching of the other four strands.

Overview of the RaVE curriculum at Wellington Two

The curriculum was written for Year 7 through to Year 13. It was not intended that all five strands would be taught to an approximately equal degree at each year level, but rather that by the time a student had progressed through these seven years of the curriculum, they would have received an approximately equal amount of time learning in each area. Students require practice in critical thinking. As they progress through the curriculum students are engaged in tasks of increasing sophistication. Therefore, the curriculum has a spiral nature with many concepts taught being returned to in increasing depth throughout the years.

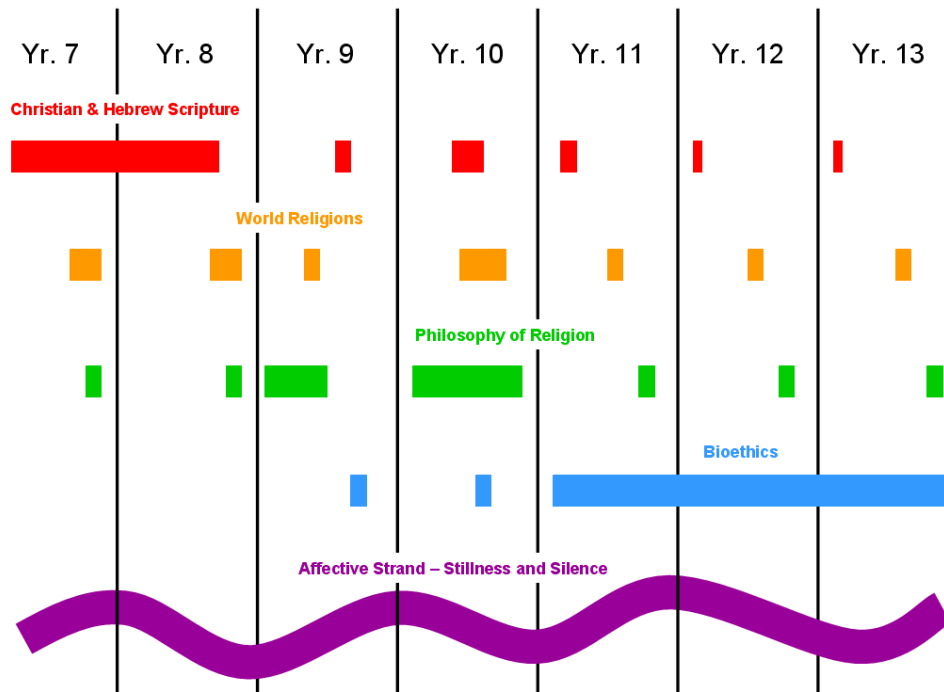


Figure A1.1: Distribution of RaVE teaching strands across year levels at Wellington Two

NB: Stillness and silence activities are woven throughout the teaching of the other four strands.

APPENDIX TWO: OVERVIEW OF THE CONTENT OF THE BIOETHICS CURRICULUM AT WELLINGTON TWO

Year 9	Year 10	Year 11	Year 12	Year 13
<p>Making Moral Decisions</p> <p>What is a moral decision? How do we make moral decisions? What is truth? Truth in science, history, literature Moral Truth Realism and anti-realism Deontological and consequentialist approaches Kohlberg’s theory of moral development Conscience—Doing the right thing Discrimination Desensitisation The role of the media in our decision making Free will and determinism</p>	<p>The Good Life: Pleasure, Happiness and ‘What is Real?’</p> <p>Utilitarianism Jeremy Bentham/John Stuart Mill, principal of utility Hedonistic calculus Pleasure and happiness The good life: Ideal life exhibition Can anything be good except conscious experience? (Sidgwick and G. E. Moore; Norzick, Huxley) Matrix What is real? Prisons of the mind The concept of the matrix as a womb</p>	<p>Making People Better</p> <p>Slippery-slope arguments Arbitrary result and horrible results style premises and conclusions Cultural relativism Female circumcision Theoretical ethics: natural law, situation ethics, virtue ethics, proportionalism via applied issue of assisted human reproductive technology including IVF, PGD, ovarian tissue harvesting and ectogenesis When does life begin? Personhood (Fletcher) Scientific marker points Dualism/Monism</p>	<p>What is of Value?</p> <p>How ideas in science, medicine and society change. Media portrayal of disability and death. <i>Harvie Krumpet</i> (film) Allo and Xeno transplantation <i>Baby Theresa Case</i> Definitions <i>All About My Mother</i> film clip Ethical, cultural and spiritual issues Concepts of autonomy Informed consent Further critique of utilitarianism and Kantian ethics Work of Irving Weisman (mouse) Revision of what it is to be <i>human</i></p>	<p>Love and Death</p> <p>Revise terms ‘ethics’ and ‘moral’ by considering relevant, recent examples of ethical issues from media over summer vacation. Introduction to the year via film study: <i>‘Talk to Her’</i> Themes of consciousness, Persistent vegetative state, Death and love Death The nature of: Bodily death Brain death Role of consciousness Rituals and funerals (revise cultural relativism)</p>

<p>Cultural conditioning: Perceptions:</p> <p>Applied issues: <i>Bicentennial Man</i> film study What is a person? *Free will and determinism *Xenotransplantation Nanotechnology Abortion</p> <p>Introduction to moral language Rights theory Are there absolute moral rules? Beginner's guide to Kant</p>	<p>Are human beings good by nature? (3 Chinese sagas, pilgrim experiment)</p> <p>Evil Relativism, Objectivism and subjectivism</p> <p>Crime and punishment</p> <p>Social contract theory (Thomas Hobbes, Prisoner's dilemma)</p>	<p>Deontological vs consequential approaches Is there are Christian view on when life begins?</p> <p>Does prenatal and pre-implantation diagnosis unjust discriminate against the disabled? Selection for disability (examples of selecting for deafness and achondroplasia)</p> <p>Genetic enhancement and discrimination <i>Gattaca</i> film study</p> <p>Body identity integrity disorder</p> <p>Changing face of the family: new issues in legal parenthood</p> <p>The moral fabric of society (Lord Patrick Devlin)</p> <p>Art as a medium for ethical comment</p>	<p>Notion of a just war Consider recent examples of war: Gulf War Kosovo conflict Origins of just war thinking Proportionalism Jus ad Bellum Jus In Bello</p> <p>What is justice? The point of view of the 'other' Language of war</p> <p><i>No Man's Land</i> film study</p> <p>Globalisation and business ethics Origins and aims of business ethics Kada toy factory case study Wealth and poverty Income ratio Globalisation Production costs 'Free trade' 'Added value'</p> <p>Ethical approaches to business</p>	<p>Love brain function (precursor to situation ethics) Definition Greek categories Narcissism Evil (<i>resource M Scot Peck</i>) Aristotle and virtue ethics, Kant on love and Kant on forgiveness</p> <p>Film study: <i>The Sea Inside</i>—themes of love and euthanasia</p> <p>Euthanasia: Definitions killing and allowing to die Principle of double effect Revisiting situation ethics the 'loving thing to do' QALYs</p> <p>Crime and punishment Developing theories of punishment including retribution, rehabilitation, utilitarian theories etc. Capital punishment</p>
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APPENDIX THREE: LETTER FROM HON STEVE MAHAREY

This letter, from the then Minister of Education, accompanied the draft of the *New Zealand curriculum for English-medium teaching and learning in years 1–13* (Ministry of Education, 2007) when distributed to schools.



Office of Hon Steve Maharey, M.P. for Palmerston North

Minister of Education
Minister of Broadcasting
Minister of Research, Science and Technology
Minister for Crown Research Institutes
Minister Responsible for the Education Review Office

As a nation, we face new issues and new opportunities. The pace of social and economic change is faster than ever before. We live in a world of globalisation, cultural diversity, and rapidly changing technologies. There is increased specialisation and flexibility in the workplace; there are new social roles and new forms of self-expression.

The government is committed to ensuring that all our young people are well equipped to become active and positive members of their local, national, and global communities. *The New Zealand Curriculum* and the parallel document, *Te Marautanga o Aotearoa*, have been developed to address these challenges.

New Zealand's education system is seen as world leading. This curriculum aims to keep us there. It sets a clear direction for teaching and learning that takes account of leading national and international research and of the innovative work that our schools are already doing.

For New Zealand to be successful on the global stage, we need to utilise the resources of all our people. We need to become a nation of achievers – capable, knowledgeable, caring, active, and open to opportunity. The government wants all students to realise their potential. This means recognising that students have a wide range of individual skills and aspirations and that they start at different points and learn at different paces.

This curriculum places learners at the centre of the learning process. It emphasises the importance of literacy and numeracy and of a broad education across a range of learning areas. It describes the key competencies students need in order to live, learn, work, and contribute as active members of our communities and it emphasises the importance of students being able to apply their knowledge and relate it to unfamiliar material.

This curriculum gives schools the flexibility to actively involve students in what they learn, how it is taught, and how the learning is assessed, and it invites schools to embrace the challenge of designing relevant and meaningful learning programmes that will motivate and engage all students.

I wish you all well – principals, teachers, parents, whānau, iwi, and communities – as you work together with *The New Zealand Curriculum* to develop learning opportunities that will give every student the best chance of success.

A handwritten signature in black ink that reads "Steve Maharey".

Hon. Steven Maharey
Minister of Education

Parliament Buildings, Wellington, New Zealand.
Telephone: (04) 470 6552, Facsimile: (04) 495 8443

APPENDIX FOUR: EVOLUTION OF THE NEW ZEALAND SCHOOL CURRICULUM 1961 TO 2007

As described in Chapter Two, curriculum issues occur in historical time and in political and social context (Pinar et al., 1995). This appendix outlines the historical background to the development of the 'New Zealand curriculum for English-medium teaching and learning in Years 1–13' (Ministry of Education, 2007). Contents in this table have been adapted by the researcher from information in the Ministry of Education's Curriculum Stocktake report, Sept 2002 (pp. 9–11) and from the Ministry of Education's 'New Zealand curriculum online' website.

Year	Event
1961–1986	The NZC is specified in English through more than a dozen syllabi and guidelines provided for subjects and, in some cases, aspects of subjects, for example, handwriting. Spanning different vintages from 1961 to 1986, these documents are of different year levels, and are written in different forms.
Mid-1980s	Following a major public consultation on the curriculum, the Department of Education begins work on an overall framework for a revised school curriculum.
1987	The 'Report of the Curriculum Review' is released, proposing eight 'curriculum aspects', including culture and heritage; language; creative and aesthetic development; mathematics; practical abilities; living in society; science, technology and the environment; and health and well-being. Key ideas are represented as strands and developed as achievement objectives at five levels.
1988	Publication of the 'National Curriculum Statement: A Discussion Document for Primary and Secondary Schools (Draft)'
1989, 1990	The reform of the administration of education in 1989, including the introduction of 'Tomorrow's School' and a change of government in 1990 results in suspension of development of new syllabi at the draft document stage.
1991	Curriculum development resumes under an 'Achievement Initiative' policy.

<p>1993</p>	<p>Curriculum development continues under the umbrella of the NZCF and the translated Te Anga Marautanga o Aotearoa. Publication of the NZCF and Te Anga Marautanga o Aotearoa sets out the overall policy direction for curriculum and assessment but is not gazetted. With the publication of the NZCF and Te Anga Marautanga o Aotearoa, curriculum policy shifts from a focus on content, experiences and activities, to curriculum policy based on outcomes.</p>
<p>1992–2000</p>	<p>Curriculum Statements for each essential learning area described in the NZCF are published in English and in te reo Maori and progressively replace syllabi. The statements have a common format of ‘strands’ containing eight progressive levels of ‘achievement objectives’ that specify expected learning outcomes. Curriculum statements are initially published in draft form for consultation and trialling, before publication in final form.</p> <p>Mathematics: Draft 1992 Final 1992 Implementation 1994 Science Draft 1992 Final 1993 Implementation 1995 English Draft 1993 Final 1994 Implementation 1996 Technology Draft 1993 Final 1995 Implementation 1999 Social Studies Draft 1995/6 Final 1997 Implementation 2000 Health & Physical Education Draft 1998 Final 1999 Implementation 2001 The Arts Draft 1999 Final 2000 Implementation 2003 Pāngarau (mathematics) Draft 1994 Final 1996 Implementation 1997 Pūtaiao (science) Draft 1994 Final 1996 Implementation 1997 Te Reo Māori (Māori language) Draft 1994 Final 1996 Implementation 1997 Hangarau (Technology) Draft 1998 Final 1999 Implementation 2001 Tikanga ā Iwi (Social Studies) Draft 1997 Final 2000 Implementation 2002 Ngā Toi (The Arts) Draft 1999 Final 2000 Implementation 2003 Hauora (Health & PE) Draft 2000 Final 2001 Implementation 2004</p>
<p>1994–1995</p>	<p>Ministry of Education publishes curriculum statements for optional programmes in the senior Sciences and languages, and begins a contestable second language funding pool for programmes for students from Year 7 onwards.</p>
<p>1996</p>	<p>In response to widespread concern from across the school sector about the pace and scale of change, the Minister of Education pauses the development and implementation of the new curriculum statements.</p>
<p>1997</p>	<p>The OECD initiates the PISA and <u>Definition and Selection of Competencies</u> (DeSeCo) projects in which New Zealand participates</p> <p>July 1997: New timelines for the NZC and te marautanga o</p>

	<p>Aotearoa are announced. A transition period of at least two years between the publication of a final statement and its mandatory implementation is introduced, along with an undertaking that, following the publication of the full set of curriculum statements and ngā tauākī marautanga mö te motu, a time of consolidation and reflection will occur.</p>
<p>Nov 2000—May 2002</p>	<p>A stocktake of the curriculum begins. The Ministry of Education collates data on student outcomes over the period of curriculum implementation from the National Education Monitoring Project reports.</p> <p>Data on teacher perceptions of curriculum implementation is collected through the establishment of the National School Sampling Study.</p> <p>The Ministry seeks critical comment on the NZCF and the curriculum statements from the National Foundation for Educational Research (NFER) UK and the Australian Council for Educational Research (ACER) with regard to:</p> <ul style="list-style-type: none"> ○ the standing of the NZC in relation to international views of effective curriculum ○ their educational integrity ○ their potential for supporting effective educational practice. <p>A representative group of major stakeholders in education—the Curriculum Stocktake Reference Group—is established to meet with the Ministry of Education in November 2000, March, June and October 2001, March and May 2002.</p> <p>The New Zealand Summary Report <i>'Assessing Knowledge and Skills for Life'</i>, is released in December 2001</p> <p>The Ministry consults with regional and national principals' meetings, the Education Review Office, the business sector, and the occasional visiting academic.</p> <p>Although no formal call for public submissions is made, the Ministry of Education receives a number of communications and submissions from individuals and other organisations. A discussion group is established on the Te Kete Ipurangi Curriculum Stocktake community web page.</p> <p>Stunock and May publish 'PISA 2000: The New Zealand Context: The reading, mathematical and scientific literacy of 15-year-olds: Results from the Programme for International Student Assessment'.</p>
<p>Sept 2002</p>	<p>Presentation of the Ministry of Education's Stocktake report to the Minister and Associate Minister of Education. This report takes stock of the previous decade's curriculum developments (as outlined in this table) and their implications for teaching and learning. The report also considers the implications for future curriculum policy development.</p>
<p>April 2003</p>	<p>The Ministry of Education's Stocktake Report is presented to Cabinet and then published. Cabinet agree that the National</p>

	Curriculum should be revised.
2004–2006	<p>Development and consultation phases of the NZC Project.</p> <p>2006 July–November: Draft NZC (English medium) published for consultation and feedback.</p> <p>Independent survey carried out to gauge penetration and understanding. Independent focus groups operative.</p> <p>More than 10,000 submissions are received on the draft, including 9,117 feedback questionnaires (received and processed by Colmar Brunton between August and November 2006) plus 168 ‘long’ submissions (over three pages) and 774 short submissions.</p> <p>Feedback and reports from experts and commentators including two international critiques—one from the Australian Council of Educational Research and one from a UK consultancy firm—are received.</p> <p>30 November: All feedback and consultation completed.</p>
2007	Draft Te Marautanga o Aotearoa (the NZC for Maori-medium) is published
Nov 2007	Launch of the NZC (English medium). This single curriculum will replace the seven current curriculum documents.
2008	Final Te Marautanga o Aotearoa published.
2008– Feb 2010	Progressive implementation of the new curriculum and its partnership document Te Marautanga o Aotearoa.

APPENDIX FIVE: DEVELOPMENT OF NZC KEY COMPETENCIES 1993–2007

This table summarises the development of the Key Competencies from the essential skills of the previous NZCF (1993) to the ‘New Zealand curriculum for English-medium teaching and learning in Years 1–13’ (2007) mandatory in all NZ schools by February 2010.

Essential skills clusters defined in the NZCF (Ministry of Education, 1993, pp. 17–20)	OECD DeSeCo Project’s conceptual framework for key competencies (1997)	Competencies identified by the Ministry of Education’s Stocktake Report (2002)	Competencies drafted by the Curriculum Project (2005)	The Five Key Competencies of the New Zealand Curriculum (2007) mandatory in all NZ schools by Feb 2010
Communication skills Numeracy skills Information skills Problem-solving skills Self-management and competitive skills Social and co-operative skills Physical skills Work and study skills	Use tools interactively (e.g., language and technology) Interact in heterogeneous groups Act autonomously Thinking as a ‘cross cutting’ competency	Creative and innovative thinking: Making meaning from information. Relating to others; Reflecting on learning, and developing self-knowledge ; and Participation and contribution in communities	Thinking Making Meaning Relating to Others Managing Self Participating and Contributing	Thinking Using language, symbols and texts Relating to others Managing self Participating and contributing

APPENDIX SIX: VALUES IN THE NEW ZEALAND CURRICULUM 1993–2007

The four tables in this appendix trace the evolution of values in the New Zealand curriculum from the 1993 NZCF to the NZC (Ministry of Education, 2007) through the Stocktake (Ministry of Education, 2002), and compare the values of the NZC with the 'National framework for values in Australian schools' (Australian Government, 2005).

Table A6.1: Comparison of the wording of the new curriculum document the 'New Zealand curriculum for English-medium teaching and learning in Years 1–13' (Ministry of Education, 2007), with that of the previous NZCF (Ministry of Education, 1993)

NZCF 1993, p. 21	The 'New Zealand curriculum for English-medium teaching and learning in Years 1–13' (2007), pp. 9–10
<p>Definition: Values are internalised sets of beliefs or principles of behaviour held by individuals or groups. They are expressed in the ways in which people think and act.</p> <p>Values are mostly learned through students' experience of the total environment, rather than through direct instruction.</p> <p>The school curriculum, through its practices and procedures, will reinforce the commonly held values of individual and collective responsibility that underpin New Zealand's democratic society. These values include: honesty reliability respect for others</p>	<p>Definition: Values are deeply held beliefs about what is important or desirable. They are expressed through the ways in which people think and act.</p> <p>Values are part of the everyday curriculum—encouraged, modelled and explored.</p> <p>The specific ways in which [the listed] values find expression in an individual school will be guided by dialogue between the school and its community. They should be evident in the school's philosophy, structures, curriculum, classrooms and relationships.</p> <p>Students will be encouraged to value: excellence, by aiming high and persevering innovation, inquiry and curiosity, by thinking critically, creatively and reflectively diversity, as found in our different cultures, languages</p>

<p>respect for the law tolerance (rangimarie) fairness caring or compassion (aroha) non-sexism, and non-racism</p> <p>The school curriculum will help students to develop and clarify their own values and beliefs, and to respect and be sensitive to the rights of individuals, families and groups to hold values and attitudes that are different from their own.</p> <p>Students will examine the context and implications of their own values and those of others, and the values on which our current social structures are based.</p>	<p>and heritages equity, through fairness and social justice community and participation for the common good ecological sustainability, which includes care for the environment integrity, which involves being honest, responsible and accountable and acting ethically respect, for themselves, others and human rights</p> <p>Through their learning experiences, students will learn about:</p> <ul style="list-style-type: none"> • their own values and those of others • different kinds of values, such as moral, social, cultural, aesthetic and economic values • the values on which New Zealand's cultural and institutional traditions are based • the values of other groups and cultures <p>Through their learning experiences, students will develop their ability to:</p> <ul style="list-style-type: none"> • express their own values • explore, with empathy, the values of others • critically analyse values and actions based on them • discuss disagreements that arise from differences in values and negotiate solutions • make ethical decisions and act on them
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Table A6.2: Table outlining the values identified within the 2002 Stocktake Report and how they have translated into the values to be made explicit in the NZC

Values identified as requiring promotion from the Stocktake Report (Ministry of Education 2002, p. 29)	Values in the 'New Zealand curriculum for English-medium teaching and learning in Years 1–13' (Ministry of Education, 2007, p. 10) to be made explicit in all schools from February 2010
<ul style="list-style-type: none"> ○ values linked to the purposes of the NZC and te marautanga o Aotearoa, such as equity, respect for diversity, democracy, excellence, global human responsibility, active community participation and contribution, citizenship; ○ values linked to the revised essential skills/ngä tino pūkenga ako, such as truth/logic, self-respect/acceptance, honesty, responsibility, justice, fairness, co-operation, tolerance, concern for others, aroha, whānaungatanga, open-mindedness, ingenuity; and ○ values linked to higher level thinking in the essential learning areas/ngä wāhanga ako, such as aesthetics, beauty, mauri, whakapapa, kaitiakitanga, environmental guardianship, whenua, rahui, truth and logic. 	<ul style="list-style-type: none"> ● Excellence, by aiming high and by persevering in the face of difficulties ● Innovation, Inquiry and Curiosity, by thinking critically, creatively and reflectively ● Diversity, as found in our different cultures, languages and heritages ● Equity, through fairness and social justice ● Community and participation for the common good ● Ecological sustainability, which includes care for the environment ● Integrity, which involves <ul style="list-style-type: none"> ▪ Being honest ▪ Being responsible ▪ Being accountable, and ▪ Acting ethically ● Respect, for themselves, for others and for human rights

Table A6.3: Summary of the 11 recommendations made by the Ministry of Education (2002) within the Stocktake report

Recommendation One	That the NZCF and Te Anga Marautanga o Aotearoa are redeveloped and gazetted as foundation policy statements (p. 55)
Recommendation Two	That a section on the purposes of the NZC and te marautanga o Aotearoa be developed. This 'purpose' section should 'clarify expectations for all New Zealand students and contribute to developing the human capability necessary for a prosperous and inclusive New Zealand society' (p. 56)
Recommendation Three	That the principles/ngā mātāpono in the NZCF and Te Anga Marautanga o Aotearoa be revised (p. 56)
Recommendation Four	<p>That the essential skills/ngā tino pūkenga and attitudes and values/ngā waiaro me ngā uara in the NZCF and Te Anga Marautanga o Aotearoa be revised. (p. 58)</p> <p>Attributes, skills and attitudes needed for participation in a knowledge society are identified as:</p> <ul style="list-style-type: none"> ○ creative and innovative thinking ○ participation and contribution in communities ○ relating to others ○ reflecting on learning, and developing self-knowledge ○ making meaning from information (p. 26) <p>The Stocktake report (p. 28) stated that: 'Sector feedback indicates that this section of the NZCF and Te Anga Marautanga o Aotearoa is critical to education in New Zealand, as attitudes and values/ngā waiaro me ngā uara:</p> <ul style="list-style-type: none"> ○ have the potential to aid the effectiveness of the curriculum in fulfilling its purposes ○ have an important role in helping students to understand philosophical questions about their world and their participation in it ○ can improve the climate and morale of classroom environments'
Recommendation Five	<p>That the essential learning areas/ngā wāhanga ako in the NZCF and Te Anga Marautanga o Aotearoa be revised (p. 59)</p> <p>This recommendation aimed to address some of the concerns about manageability of the curriculum and curriculum crowdedness.</p> <p>It was recommended that a number of future-focused themes be made more explicit (p. 60) including:</p> <ul style="list-style-type: none"> ○ social cohesion (including developing resilience and a sense of social connectedness) ○ citizenship (local, national, and global) ○ education for a sustainable future (including sustainable development and environmental sustainability)

	<ul style="list-style-type: none"> ○ bicultural and multicultural awareness ○ enterprise and innovation ○ critical literacy (including digital literacy)
Recommendation Six	That the section on assessment in NZCF and Te Anga Marautanga o Aotearoa be revised (p. 62)
Recommendation Seven	That a section on the relationship between the NZC/te marautanga o Aotearoa and Te Whāriki be developed. (p. 62) The rationale for this recommendation includes that if 'children's early primary school experiences interface appropriately with their early childhood experiences, they are likely to be confident that they can participate fully and successfully in all learning opportunities' (p. 62)
Recommendation Eight	That further policy on the senior secondary school curriculum is undertaken The Stocktake report asserts that the 'present curriculum frameworks do not provide sufficient guidance on how the curriculum relates to post secondary pathways, and these need to be investigated' (p. 63) The report was written as NCEA qualifications were being implemented and the 'need for further work on the links between the senior secondary school and work and tertiary study need to be undertaken once the NCEA has been fully implemented' was identified (p. 63)
Recommendation Nine	That Curriculum guidance materials for parents/whānau and members of the community and business be developed (p. 63) The Stocktake report recognises Parents/whānau, members of the community and business as key stakeholders of the education system. The report identifies 'a lack of knowledge in the general community of the scope and expectations of the New Zealand curriculum'. The report asserts (Lumsden & Hertling, 2002) 'that parental involvement is linked to improved student outcomes, and suggests that providing 'better access to curriculum knowledge for members of the community and business may improve the effectiveness of schooling through active citizen participation and a more connected community' (p. 64) Further: 'Providing better access to curriculum knowledge for parents/whānau has the potential to increase the expectations parents/whānau have for their children and to focus these expectations on educationally significant learning If students are to transfer their learning to the real world, parents/whānau and members of the community have a fundamental role in assisting this transfer' (p. 64)
Recommendation Ten	That the curriculum statements and ngā tauākī marautanga mö te mötu be revised (p. 64) 'Replacing the curriculum statements and ngā tauākī marautanga mö te motu with foundation policies could increase the emphasis of the curriculum on the connectedness of learning, and encourage schools to develop as holistic, connected learning communities' (p. 64)

Recommendation Eleven	That further guidance materials and professional development for teachers be provided (p. 65)
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Table 6A.4: A comparison of the ‘National framework for values education in Australian schools’ (2005) with the values of the NZC (2007)

From the ‘National framework for values education in Australian schools’ (Australian Government, 2005)	From the NZC (Ministry of Education, 2007)
<p>‘Nine Values for Australian Schooling ... reflect shared values ... These shared values such as respect and ‘fair go’ are part of Australia’s common democratic way of life, which includes equality, freedom and the rule of law. They reflect our commitment to a multicultural and environmentally sustainable society where all are entitled to justice.’ (‘National framework for values education in Australian schools’, Australian Government, 2005, p. 4)</p> <p>Values to be modelled and taught include:</p> <ul style="list-style-type: none"> • Care and Compassion • Doing Your Best • Fair Go • Freedom • Honesty and Trustworthiness • Integrity • Respect • Responsibility • Understanding, Tolerance and Inclusion 	<p>‘The NZ Curriculum identifies a number of values that have widespread community support. These values are to be encouraged and modelled, and they are to be explored by students. Schools need to consider how they can make the values an integral part of their curriculum and how they will monitor the effectiveness of the approach taken.’ (‘New Zealand curriculum for English-medium teaching and learning in Years 1–13’, Ministry of Education, p. 38)</p> <p>Personal values to be encouraged, modelled and explored include:</p> <ul style="list-style-type: none"> • Excellence, by aiming high and by persevering in the face of difficulties • Innovation, Inquiry and Curiosity, by thinking critically, creatively and reflectively • Diversity, as found in our different cultures, languages and heritages • Equity, through fairness and social justice • Community and participation for the common good • Ecological sustainability, which includes care for the environment • Respect, for themselves, for others and for human rights • Integrity, which involves <ul style="list-style-type: none"> ▪ Being honest ▪ Being responsible ▪ Being accountable, and ▪ Acting ethically

APPENDIX SEVEN: OVERVIEW OF VALUES EDUCATION PROGRAMMES OPERATIVE IN NEW ZEALAND SCHOOLS

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
<p>Cornerstone Values Project: (CVP)</p>	<p>New Zealand (1989)</p> <p>The project initially registered as the NZ Foundation for Values Education, before becoming the New Zealand Foundation for Character Education Inc. (NZFCE) in 1993.</p> <p>Self-described as ‘An indigenous New Zealand approach to the development of character’ (Cornerstone, 2011),</p> <p>Drawn from research by C. S. Lewis, the CVP acknowledges that its eight key values are upheld by each of the world’s major religions and philosophies</p>	<p>honesty and truthfulness, kindness, consideration and concern for others, compassion, obedience, responsibility, respect and duty.</p> <p>Recognising ‘that each of the eight cornerstone values has knowledge, attitude and behavioural components that are inextricably linked to the three attributes of character—knowing the good, desiring the good and doing the good’, the Cornerstone Values curriculum seeks to infuse the values throughout the school curriculum and school relationships, teaching by ‘precept and example’ the law of consequences and rational decision making</p>	<p>Schools may utilise Cornerstone Values resources in three ways: by including Cornerstone Values in their bank of values education resources; by adopting the Cornerstone Values approach as the school’s values education policy and implementing it across the school; or by fully implementing the Cornerstone Values approach and becoming accredited by the New Zealand Foundation for Character Education to use the Foundation’s registered trademark.</p> <p>Acknowledging the vital role of narratives in values, or character education the Cornerstone Values Curriculum places the use of stories, histories, poems,</p>	<p>Listing six accredited primary schools and one secondary, the website acknowledges that ‘It is not known how many schools there are in the first two levels’ and that ‘To date, the implementation of Cornerstone Values has been overwhelmingly in primary schools’ (Cornerstone Values, 2011).</p> <p>In their 2005 review, Keown et al., (p. 78) state that ‘Cornerstone Values has become a very well know programme throughout New Zealand’. The NZFCE has run five national character education symposia (2002, 2003, 2007, 2008, 2010) and provides resources for values and character education on its instructive website.</p>

	and that 'the eight cornerstone values are principles that are consistent, universal, and trans-cultural (Cornerstone Values website, 2011).	(Cornerstone Values, 2011). CVP promotes a 3-step decision-making process: consideration of all possible alternatives; realistic examination of the possible consequences of the alternatives; & a willingness to accept responsibility for the consequences of decisions made. The curriculum challenges students to contemplate philosophical questions including what kind of person am I becoming?; What kind of person do I want to be?; and How shall I live with others?	fables and other narrative genre at the core of its teaching practice (Cornerstone, 2011; Keown et al., 2005).	
LVTP	New Zealand (1999) The LVTP was a partnership between the Independent Schools of New Zealand (ISNZ), the Ministry of Education and the Fletcher Challenge Trust. It was not affiliated with LVE (1996) described below.	The focus of the project was on assisting each participating school to generate, develop and publish an individual, agreed school values statement and values education plan.* Notably, the LVE Project promoted the Virtues Project and Philosophy for Children (tabulated below) as suitable programmes to support values education in schools (Keown et al., 2005).	The values education plan developed in individual schools was to include a values education training programme for all teaching staff and the production of a bank of cross-curricula resources to support values education within classrooms. Two resource kits were produced during the lifetime of the project, particularly the <i>Living Values Action Kit: A values education curriculum for schools with guidelines and resources</i> (Lawley, 2000.) Material from these kits was commonly available.	25 schools participated in the LVTP. The two kits produced during the project were commonly available and material from these may still be utilised in part or in whole in some New Zealand schools.

* Evaluated during 2001, the LVTP final report, (March 2002), concluded that the whole school model for implementing the values of the then NZC was very ambitious and demanding, with a very limited number of participating schools being able to progress beyond the generation and publication of an agreed school values statement. The LVTP ceased to be an active force in schools at the end of 2002 when Ministry of Education funding for the project ended (Keown et al., 2005).

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
<p>Living Values Education (LVE) and the Association for Living Values Education (ALIVE)</p>	<p>US (1996) LVE was developed in 1996 by 20 educators from five continents who met together at the Education Cluster of UNICEF, in New York, and worked in collaboration with the Brahma Kumaris (a neo-Hindu movement, originating in India in the 1930s).</p> <p>Internationally the rights to the LVE name, logo and trademark, is owned and licensed to ALIVE, formed in 2004, under the Civil Code of Switzerland and registered in Geneva.</p> <p>Although founded in association with a spiritual organisation, the LVE programme states that it is 'not a product of any particular religion or belief system and should not be used as a vehicle to promote any one religion or belief system in preference to another' (ALIVE, 2010).</p> <p>An association of 'independent, locally-run, non-profit organisations committed to</p>	<p>LVE 'supports the overall development of the individual and a culture of positive values in each society and throughout the world, believing that education is a purposeful activity designed to help humanity flourish ... Education must therefore concern itself with the intellectual, emotional, spiritual and physical well-being of the individual.' (ALIVE, 2010) Twelve 'widely shared human values' are promoted:</p> <p>Peace, Respect, Love, Tolerance, Honesty, Humility, Co-operation, Happiness, Responsibility, Simplicity, Freedom and Unity.</p> <p>Acknowledging the cognitive</p>	<p>The Living Values Activities curriculum offers 'age-appropriate activities that promote self-esteem, critical thinking, emotional intelligence, and creative expression—the necessary wellspring of skills that will enable children to respond positively to an ever-changing and diverse society (ALIVE, 2010). Three books, the <i>Living Values Activities For Children 3–7</i>; <i>Living Values Activities For Children 8-14</i>, and <i>Living Values Activities For Young Adults</i> 'contain practical values activities and a range of methods for use by educators, facilitators, parents and caregivers to help children and young adults to explore and develop 12 widely shared human values' (2010).</p> <p>The Auckland based New Zealand Association of LVE offer professional development workshops for educators at pre-school, primary, secondary and tertiary levels, designed to</p>	<p>While one school has fully adopted the Living Values programme, Carol Seymour, co-ordinator of LVE is unable to give a number of schools using the LV programme in part (Carol Seymour, 25 January 2012, personal communication).</p> <p>There has been more interest from primary schools than secondary schools, with Early Childhood Centres appearing particularly interested, although no whole centre have not implemented has occurred (Carol Seymour, 25 January 2012, personal communication).</p>

	<p>promoting values in education', ALIVE variously reports current associates in 30 to 65 countries, and the production of materials and resources in over 30 languages (ALIVE, 2010).</p> <p>Within New Zealand, livingvalues.org.nz is an operational associate of ALIVE.</p>	<p>thinking skills and social and emotional skills that students are exposed to during the processes such as conflict resolution, the focus of LVE is on creating caring, respectful environments where students feel safe and want to learn, thus improving student behaviour and the school climate, and assisting students to grow towards their potential, protect them from violence, and help them engage in the community with respect, confidence and purpose (ALIVE, 2010).</p>	<p>facilitate the creation a values-based environment. Designed to resource 'educators and other adults working with children who are concerned about an increasingly violent world and a lack of respect for others', LVE emphasises the affective, particularly the behavioural aspects of values education, promoting values 'primarily through the example of action and being a role model' (ALIVE, 2010). These workshops facilitated by the national co-ordinator of Living Values Education Carol Seymour, are run on demand, with the aim of two per year.</p>	
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Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
The CEPNZ	<p>New Zealand (2000) Beginning in 2000 as the Holistic Educational Leadership Programme (HELP), the Auckland-based CEPNZ changed its name in 2001 (Keown et al., 2005).</p>	<p>CEPNZ claim to be ‘the largest private provider and developer of character education, truancy, anti-bullying, life skills, values clarification/goal setting and learning style resources for schools and the community in New Zealand’</p> <p>Via the purchasable resources, CEPNZ states that it will ‘show you how to build the core virtues of responsibility, respect, integrity, honesty into your school and achieve greater academic successes by improving your teaching and learning environment’ (CEPNZ, 2011).</p>	<p>CEPNZ provides ‘affordable, quality educational resources for schools, teachers, students and the home’ (CEPNZ).</p> <p>Featuring prominently is the Character Education Starter Pack available on CD-ROM, which ‘gives you all the resources you will need to get started and supplies access to additional online resources and ongoing support for all the teachers in your school’ (CEPNZ, 2011). The Starter Pack includes an introduction to how the development of good character is reflected in citizenship, democracy and public service.</p> <p>In addition to the starter pack, the CEPNZ offer resource packs on truancy, and values and the key competencies in the NZC, plus promoting the growing of vegetables via the School and Community Farming Cooperative.</p>	<p>The CEPNZ website claims that ‘over 73% of schools throughout NZ (and many in Australia, US, Europe, SE Asia, the EU and the UK) are now using one or more of the CEPNZs educational resources’. (CEPNZ, 2011).</p>

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
<p>CEC and Christian Religious Education (CRE)</p>	<p>New Zealand Christian churches have provided biblically based education in schools for well over a century (Keown et al., 2005; CEC, 2010). Currently acting on behalf of 16 Christian denominations, the CEC provides CRE, previously known as Bible in Schools, within New Zealand state schools via volunteers. While the 16 member denominations are underpinned by different ethical theories and represent a spectrum of traditions, the agreed statement of belief for member churches is the Apostles Creed.</p>	<p>The CEC aims to equip students to make informed choices about Christian beliefs and values and to provide authentic Christian role models (CEC, 2008). The values of truth, honesty, respect, caring, forgiveness, sharing, generosity and love for one's neighbour are emphasised in the short video about CRE available on the CEC website. Two models of CRE are currently offered within New Zealand schools: the weekly 30 minute classroom lesson, based on the <i>Christian Religious Education</i> curriculum published in Melbourne or the <i>Connect</i> curriculum published in Sydney. The second model is the weekly, 30-minute large group where volunteers team teach using the New Zealand written <i>Life Choices</i> curriculum.</p>	<p>As the CEC programme is run independently of the school, no resources or training are provided to classroom teachers. Volunteers must be trained and accredited as CRE teachers, work to the Commission's Code of Expectations and teach from the Commission's approved curricula.</p>	<p>The CEC provides approximately 3,500 volunteer CRE teachers and 200 voluntary Chaplains to 50% of the primary and 20% of the secondary schools in New Zealand (CEC, 2010b). The decision to offer CRE is made by an individual school's Board of Trustees in consultation with parents (CEC, 2010c). If a school includes CRE within its curriculum, parents may opt their children out of the programme.</p>

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
<p>The Virtues Project (VP)</p>	<p>Canada (1991) Co-founded by Linda Kavelin Popov (a psychotherapist and community developer), her husband Dan Popov (PhD; a clinical paediatric psychologist and scholar of the world's sacred texts) and brother John Kavelin (a Director with Walt Disney Imagineering), the Virtues Project initiative was inspired by the desire to do something to counteract the rising violence within and around families, particularly the violence of children towards others and themselves. Recognising Education as the key to transformation.</p> <p>New Zealand Virtues Project New Zealand is a registered non-profit charitable trust that endeavours to promote the Virtues Project and to support the efforts of those who wish to use the Virtues Project in their professions and/or in their personal lives (Virtues New Zealand, 2012).</p>	<p>The project is 'grounded in the simple wisdom of many world religions, all of which describe the human virtues as the highest aspiration for humanity', it does not 'promote the practices or the beliefs of any particular religion' (Virtues New Zealand, 2012).</p> <p>Assertiveness Caring Cleanliness Commitment Compassion Confidence Consideration Co-operation Courage Courtesy Creativity Detachment Determination Diligence Enthusiasm Excellence Flexibility Forgiveness Friendliness Generosity Gentleness Helpfulness Honesty Honour Humility Idealism Integrity Joyfulness Justice Kindness Love Loyalty Moderation Modesty Orderliness Patience Peacefulness Perseverance Purposefulness Reliability Respect Responsibility Self-discipline Service Tact Thankfulness Tolerance Trust Trustworthiness Truthfulness Understanding Unity</p>	<p>Three key books outline the principles, practices, strategies and the 52 virtues promoted by the Virtues Project. These are <i>The Family Virtues Guide</i>; <i>The Virtues Project Educators Guide: Simple ways to create a culture of character</i>; and <i>Sacred moments: Daily meditations on the virtues</i>. Virtues Project New Zealand facilitates regular mentoring and training summits. In addition to the books named above, an array of resources including CDs, story books and activity books are available via VP NZ and the Virtues Shop at Virtues Project International.</p>	<p>It is unclear to what degree the Virtues Project has penetrated into New Zealand schools.</p> <p>The Wellington regional co-ordinator and VP NZ Trust member reports that a decade ago they had a list of 40 to 50 schools, but that this is not current and they themselves do not have a fix on the degree of usage (Lynne Klap, personal communication).</p> <p>A computer search leads quickly to the websites of a small number of New Zealand schools (notably all primary) who are utilising Virtues strategies.</p>

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
<p>Dialogue Australasia Network (DAN)</p>	<p>Australia/New Zealand (2001)</p> <p>DAN was founded in 2001 at a meeting of eight educators representing each state of Australia, and myself as the representative from New Zealand. This two-day meeting was convened by Dr Peter Vardy (then Vice Principal of Heythrop College, University of London) and hosted at Saint Ignatius' College, Riverview, New South Wales. DAN was then officially launched in 2002 in Canberra, venue for its first conference entitled <i>Ethics and Spirituality</i>, attended by 250 international delegates.</p>	<p>DAN is an network of schools whose Values, Philosophy and/or Religious Studies Programme aligns with the Five Strands Approach to RaVE. Stating its purpose as 'to help young people become more fully human by nurturing and promoting the development of a broad-based academic approach to the teaching of Values, Philosophy & Religious Studies', DAN is committed to developing Values, Philosophy & Religious Studies with intellectual rigour and contemporary relevance, through a non-partisan approach</p>	<p>To date DAN has facilitated eight international conferences: 2003, Melbourne; 2004, Adelaide; 2005 Sydney; 2006 Auckland; 2007 Brisbane; 2009 Canberra and 2011, Sydney, Offering keynote addresses from international speakers renowned in their field, each three day conference has also emphasised practical workshop and resourcing sessions for the several hundred educators attending.</p> <p>In addition to the now bi annual conferences, DAN provides members (who pay an annual subscription) with access to pre-school to Year 13 curricula, units of work and resources, including video and internet resources, via its comprehensive website. Non-members have access to significant areas of the website, including the ability to subscribe to the regular electronic newsletter.</p> <p>Each electronic newsletter contains information on new resources and links with respect to each of the five strands, including for example, presentations on bioethical issues such as euthanasia and abortion. The newsletter also provides information regarding professional development opportunities for teachers at all levels, pre-school through to Year 13. While many of these professional development opportunities are provided by DAN (for example, the recent day-long values education workshop facilitated across Australia and in Christchurch, Wellington and Auckland) the newsletters also provide information</p>	<p>31 of the 331 member schools are based in New Zealand, and represent both the primary and secondary sectors. Across the network, member schools are predominantly from the independent and Catholic sectors.</p> <p>The regular, free electronic newsletter is distributed to over 2000 subscribers</p>

			<p>and links to all professional development opportunities for educators and seminars for students known to the Executive Officer that fit with the principles and strands of the network, and more recently, which support the Key Competencies of the NZC (refer to Chapter Two) and the Capabilities of the new Australian National Curriculum (particularly Critical and creative thinking, Ethical behaviour, Intercultural understanding).</p> <p>Half and full day student seminars presented throughout Australasia predominantly to students in Years 11, 12 and 13, have include topics such as genetic engineering of plants and animals; Euthanasia; Globalisation and Business Ethics; Just War; Human Reproductive Technologies; and the theoretical bases of the ethics that underpin a variety of world religions, including the ethical theories that underpin the varying Christian views. In addition to the explicit teaching of theoretical ethics and philosophy, the alignment of the critical academic approach promoted by DAN with the aims of the International Baccalaureate and the Theory of Knowledge, has attracted interest and attendance from teachers and students at state schools. On average, 30% of delegates to the professional development seminars for teachers and ethics seminars for senior students in New Zealand during 2009 to 2011 came from the state sector.</p> <p>The <i>Dialogue Australasia Journal</i>, free to members, but that may be subscribed to alone, and that includes academic articles and teaching resources supporting the five strands, is printed twice yearly.*</p>	
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* I chaired the *Dialogue Australasia Journal Editorial Group* from June 2004 until May 2008. I remain a consulting editor to the journal at the time of writing this thesis.

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
Philosophy for Children (P4C)	<p>USA (1970) While teaching at Columbia University, creator of the Philosophy for Children (P4C) programme, philosopher Matthew Lipman (1991), apprehended that many of his students were deficient in the basic critical thinking skills required to complete academic assignments, let alone to cope with social and political problems (Cebas & Moriyon, 2003).</p> <p>Initially intended for children between 11 and 12 years of age, P4C first implemented in the US in 1970, has broadened and developed. Aiming to foster affective and social skills in addition to skills of philosophical discussion and critical thinking in students from Year 1 to Year 13, P4C is now a global programme with resources translated into over 16 languages.¹</p> <p>Philosophy for Children New</p>	<p>Philosophy for Children is a socio-constructivist teaching approach that aims to teach and stimulate skills of higher order thinking, based on the Socratic method of discussion of philosophical questions (Daniel, Laforune, Pallascio, Splitter, Slade & de la Garza, 2005).</p> <p>At the heart of the P4C pedagogy is the 'community of inquiry'. Presented with a stimulus resource, students are encouraged to 'invest themselves in understanding the meanings' of the resource material and to question the concepts or the situations described. Regarding questioning as 'the core of critical reflection, in that it incites the pupil to enter into a research process' (Daniel et al., 2005, p. 334) the ultimate goal of Philosophy for Children is to stimulate students to question. A student-centred approach, the pupils develop the direction for the lesson determining, through dialogue, the questions to be explored and thereby setting the agenda for the community of inquiry to follow.</p> <p>There is an inherent social dimension, where participants are required to listen attentively to one another and to respond respectfully to the ideas shared. The community of inquiry involves questioning and intelligent agreement and disagreement among students (Millett & Tapper, 2011). This demonstrates the first of two ways that values education is integrated into philosophy for children. The 'democratic' values required and developed within the community of inquiry where a plurality of values exists include 'tolerance, respect for others, taking all ideas seriously, caring for the</p>	<p>Educators who have undertaken P4C training have access to a range of resource materials, including discussion plans, exercises and stories, which have been contributed by P4CNZ members and trainers. Included in the topics covered in the resources are friends, fairness, bravery, sport (and the Olympics), change, music, language, work, and freedom. Resource material is regularly updated (P4CNZ, 2012b). The P4CNZ website also offers links to related resources on other</p>	<p>Kovach (2012, personal communication) reports that between 20 and 100 teachers per year have attended training workshops over the last five years. This variance in numbers is due to the fact that some years only one workshop is offered, which in other years, four or five are facilitated.⁴</p> <p>Approximately 85% of teachers attending are from the primary</p>

¹ In addition to the New Zealand references given in this section, information on philosophy for children may also be found at the College for Education and Human Service's Institute for the advancement of philosophy for children, Montclair State University (New Jersey, US) site <http://cehs.montclair.edu/academic/iapc/whatis.shtml>

	<p>Zealand (P4CNZ) is an associate of the Federation of Australasian Philosophy in Schools Associations. P4CNZ describes itself as ‘a not-for-profit grassroots organisation run by teachers and philosophers who have a commitment to making the benefits of the philosophical community of inquiry available to everyone’ (P4CNZ, 2012b). P4CNZ is headed by Auckland based philosopher Dr Vanya Kovach.</p>	<p>procedures that govern collaborative inquiry, and willingness to listen to alternative viewpoints’ (P4CNZ, 2012b).^{2 3} Significantly, the second way values, or ethics, education is integrated into P4C is that ethical questions are frequently the subject of the inquiry. These ethical questions are ethical in a philosophical rather than a bioethical sense, including the exploration of concepts such as good, bad, fairness, rules, rights, duty, friendship, and empathy (P4CNZ, 2012b).</p> <p>Notable is Philosophy for Children New Zealand’s (2012a) acknowledgement of the two contrasting concerns raised by values or ethics education—those of authoritarianism and relativism—and the assertion that P4C avoids both of them.</p>	<p>websites and an extensive bibliography books.</p>	<p>sector.</p>
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⁴ At the time of her communication, Kovach reported that there were around 75 teachers enrolled for training over January and March 2012.

² Schools using the P4C programme report transference of values learnt within the community of inquiry. For example, this from the Buranda State School Project (2003): ‘The respect for others and the increase in individual self esteem generated in the community of inquiry have permeated all aspects of school life ... Students are less impatient with each other, they are more willing to accept their own mistakes as a normal part of learning and they discuss problems as they occur ... Bullying behaviour is rare at Buranda, with there being no reported incidence of bullying this year to date. The respect for others generated in the community of inquiry has permeated all aspects of school life.’ In a recent study, Leon Benade (2011) of the New Zealand Tertiary College, conducted action research to consider whether P4C can contribute to the development of the ‘thinking’ key competency of the newly mandatory NZC, within the setting of a high-decile Catholic primary school in Auckland. Tracking several data sources including lesson plans, researcher and teacher journals, a written student survey and a one-hour focus group interview, Benade (2011, p. 141) concluded that ‘P4C does indeed encourage critical thinking and deep questioning—but not for all students and not to the same extent for all’, and that ‘the mixed success of the trial suggests good grounds for further exploration of the practice of P4C in schools’.

³ While P4CNZ does not align values required and developed through the community of inquiry directly to the values clusters of the NZC, in a website section entitled *P4C and the New Zealand Curriculum*, teachers Eberhardt and Rea (2012) detail how the programme aligns with the five key competencies.

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
Art Costa's Habit of the Mind	<p>USA Founded by Arthur L. Costa, Emeritus Professor of Education at California State University and Dr Bena a private educational consultant.</p> <p>The 16 habits of the mind are dispositions displayed by resourceful people when they are confronted with problems that have no immediately apparent solution, thus 'Habits of the Mind is knowing how to behave intelligently when you don't know the answer'.</p> <p>Rather than thinking tools the habits are 'a composite of many skills, attitudes and proclivities'. (The Art Costa Centre for Learning website: http://www.artcostacentre.com/index.htm Last accessed 10 Feb 2012)</p>	<ul style="list-style-type: none"> • Persisting • Thinking and communicating with clarity and precision • Managing impulsivity • Gathering data through all senses • Listening with understanding and empathy • Creating, imagining, innovating • Thinking flexibly • Responding with wonderment and awe • Thinking about thinking (metacognition) • Taking responsible risks • Striving for accuracy • Finding humour • Questioning and posing problems • Thinking interdependently • Applying past knowledge to new situations • Remaining open to continuous learning 	<p>Based in Singapore, The Art Costa Centre for Learning website provides lesson plans and purchasable resources.</p> <p>The Centre also provides seminars and workshops teachers, students, parents and business organisations.</p>	<p>Two primary schools and one secondary school included in Thomson's (2006) <i>Values in NZ Schools</i> report used Habits of the Mind in their values education programmes.</p>

Programme	Country of origin, philosophical base	Aspiration: the values they seek to engender and the mode of operation	Resources and training	Penetration within schools
<p>The Values Exchange (VX)</p>	<p>New Zealand (2000s) Owned by VIDE Ltd., a for profit e-democracy company based in New Zealand, the Values Exchange has evolved from the work of Professor David Seedhouse. Originally designed for use in health care, to allow teams of various professionals to better understand their values when making decisions about patient care, the Values Exchange is now a social media based site, which allows registered participants to share their responses to a wide variety of ethical cases.</p> <p>The purpose of the VX is to provide a vehicle for participants to engage in deliberative democracy, which the VX site defines as a process in which participants review evidence, learn more about the issues, learn from each other, debate with each other and eventually create new questions for debate. It is a continuing process of communication, learning, insight and growth' (VX, 2011).</p>	<p>Describing values as 'simply a preference for some thing or some process: 'I like this', 'This makes me feel sick', 'I am afraid of this', 'I find this beautiful'. Values (positive or negative) are expressed through behaviours and words' (Values exchange, 2011), the VX invites participants to share their views to 'cases' posted on the website. Cases are often, but not necessarily, cast as dilemmas.</p> <p>The VX does not teach or instruct. Rather, a participant navigates their way around interactive screens containing a small number of question frameworks designed to help prompt participants to consider their values, responses and beliefs. Participants may record their own views in written sentences, construct a survey to pose questions, respond to existing polls and participate in chat sessions via a forum.</p> <p>As soon as participants submit their ideas they have access to a wide range of reports and feedback from other participants (VX, 2011).</p>	<p>The VX operates as: a closed network of licence-owning institutions, and through the Values Exchange All Schools Project as a free website (launched at Knox Grammar School. Sydney in October 2011) designed to involve schools worldwide in structured debate about issues relevant to young people.</p> <p>Staff at schools purchasing a Values Exchange licence receive training in how to write their own cases and generally how to use the VX as an interactive activity-based resource.</p>	<p>Sixteen schools in New Zealand, Australia, and the UK held licences for the Values Exchange at the end of 2011.</p>

Commissioned by the New Zealand Principals' Federation, Gail Thomson released the *Values Education in New Zealand Schools* in 2006. Fourteen primary and two secondary schools from Whangarei to South Dunedin and representing the state, integrated and independent sectors, were nominated or self-nominated to participate in a review of schools that had values programmes operating that were making a difference to the teaching and learning and to the culture of the school, with a view to these schools becoming models for others. No set values programme was specified other than that the system in place must be referred to within the school as a values, character or virtues programme. All schools had begun with an established values programme: five specifying the Virtues Project; three the Cornerstone Values (all under the guidance over time of one principal who was active in the Cornerstone Values Project since its inception); three the LVTP; three Art Costa's Habits of the Mind; three underpinned by their Catholic or Anglican tradition and curriculum; one DAN; and one the CEPNZ that they adapted over time to suit their individual school needs. Thomson's report notes the crucial nature of terminology or a shared values language within successful values programmes.

APPENDIX EIGHT: ACHIEVEMENT AIMS OF SNZC (1993)

New Zealand's first national science curriculum was established in the 1950s and was revised approximately every decade thereafter. The 1993 update, the SNZC, specified general aims for science education including advancing learning in science by:

- portraying science as both a process and a set of ideas that have been constructed by people to explain everyday and unfamiliar phenomena
- encouraging students to consider the ways in which people have used scientific knowledge and methods to meet particular needs
- developing students' understanding of the evolving nature of science and technology
- assisting students to use scientific knowledge and skills to make decisions about the usefulness and worth of ideas
- helping students to explore issues and to make responsible and considered decisions about the use of science and technology in the environment
- developing students' understanding of the different ways people influence, and are influenced by, science and technology.

Spanning eight levels of achievement from Year 1 to Year 13, the SNZC was divided into six learning strands. These were identified as:

The *Integrating Strands*:

- making sense of the nature of science and its relationship to technology
- developing scientific skills and attitudes

and the *Contextual Strands*:

- making sense of the living world
- making sense of the physical world
- making sense of the material world
- making sense of planet Earth and beyond.

The achievement aims of the two integrating strands formed the foundation for the introduction of teaching and learning beyond purely scientific facts, within the New Zealand science classroom.

The achievement aims of the making sense of the nature of science and its relationship to technology strand specified that:

In their study of the nature of science and its relationship to technology, students will use their developing scientific knowledge, skills, and attitudes to:

1. critically evaluate ideas and processes related to science and become aware that scientific understanding is developed by people, whose ideas change over time
2. explore the relationships between science and technology by investigating the application of science to technology and the impact of technology on science
3. gain an understanding of personal, community, and global implications of the application of science and technology.

Students should appreciate that social and cultural frameworks influence the way scientists work and that understanding in science changes.

From the second integrating strand, skills and attitudes to be developed and encouraged included:

Those which arise out of reflection about the past, present, and future involvement of science in social and political affairs ... These include a positive and responsible regard for both the living and non-living components of the Earth's environment, and a desire for critical evaluation of the consequences of the applications of scientific discoveries. (Ministry of Education, 1993, p. 43)

While it termed them 'attitudes', the SNZC (1993) document also specified values to be encouraged and developed:

As students learn in science, they should be encouraged to develop the attitudes on which scientific investigation depends. These attitudes include curiosity, honesty in the recording and validation of data, flexibility, persistence, critical-mindedness, open-mindedness, willingness to suspend judgment, willingness to tolerate uncertainty, and an acceptance of the provisional nature of scientific explanation. (Ministry of Education, 1993, p. 43)

The 1993 Science in the NZ Curriculum document also made specific mention of the fostering of girls and Maori within science.

APPENDIX NINE: INTERNATIONAL AND NEW ZEALAND SITES AVAILABLE IN 2012 THAT MAY RESOURCE SECONDARY SCHOOL TEACHERS IN THE TEACHING OF BIOETHICS

British-based Bioethics resource organisations include:

- BioethicsBytes, a site offering multimedia resources for the teaching of bioethics, available at <http://bioethicsbytes.wordpress.com>.
- GENIE, available at <http://www.le.ac.uk/ge/genie/> NB: Both BioethicsBytes and GENIE have been developed by the University of Leicester.
- Nuffield Council on Bioethics (<http://www.nuffieldbioethics.org>), which in addition to providing some specific resources for teachers (for example, with respect to the ethics of animal testing, suitable for use in Science, Religious Studies and/or Citizenship classes) this site also reports on the previous and current work of the Council. These reports contain the questions considered by the Council and also provide inspiration for teachers.
- The Wellcome Trust charity (<http://www.wellcome.ac.uk>) the UK's largest non-governmental source of funds for biomedical research aimed to improve human and animal health provides 'education and teaching resources to help promote contemporary science in the curriculum and to enable young people to engage with biomedical science' (2009). These resources are provided in a number of genre including book and online. In addition to the provision of resources the Wellcome Trust facilitate professional development courses, workshops and conferences for scientists, historians, ethicists, social

scientists, teachers, health care professionals and policymakers. These are held in the UK and internationally.

- BEEP <http://www.beep.ac.uk/> aims 'to support the teaching and learning of bioethics'. The site is rich with case studies on a wide variety of scientifically based bioethical issues (including for example, human reproductive technologies, genetic modification of crops, and pollution). Online discussion forums for both teachers and students are also provided through the site.

From the US, sites including

- the University of Iowa Bioethics Outreach Programme (<http://www.bioethics.iastate.edu>) also provide professional development courses (both in house and online) for teachers, and a large section containing case studies and hypotheticals for use in the classroom.

International bioethics resources available within the socio-political setting: UNESCO

Recognising the need for the international community to agree on fundamental principles in response to the rapidly increasing dilemmas and controversies presented to humanity and the environment through developments in science and technology, UNESCO initiated discussion with respect to the need for ethics education programmes, not just within science but in all areas of education, at its 2003 general conference. As a result, the Ethics Education Programme (EEP) was initiated in 2004. The Universal Declaration on Bioethics and Human Rights, which recognises the inter-relationships between ethics and human rights within the specific field of bioethics, followed and was adopted in October 2005.

Useful from a professional development perspective, many of the UNESCO resources developed following adoption of the Universal Declaration on Bioethics and Human Rights and the *Joint Plan of Action for Regional Networking in Bioethics Education: Towards Better Bioethics Education* (UNESCO, 2006), are tertiary orientated and take the form of academic papers. While secondary school bioethics teaching resources may be adapted from a number of these including the *Casebook of Benefit and Harm Series* (UNESCO, 2011), more specific resources are available including *A Cross-cultural Introduction to Bioethics* (Macer, 2006) a publication of the Eubios Ethics Institute and UNESCO's *Moral Games for Teaching Bioethics* (Macer, 2008b). Using narrative and class and groups activities, these resources incorporate the student-centred pedagogy germane to the teaching and learning of bioethics.

An assortment of multilingual resources for educators, may be found at <http://www.unescobkk.org/rushsap/resources/shs-resources/ethics-resources/multilingual-material/>

UNESCO's Global Ethics Observatory lists in excess of 340 ethics resources including journals, websites, case materials, curricula, and publications.

UNESCO has also published a Bioethics Core Curriculum. Available in many different languages, an English version may be downloaded from <http://unesdoc.unesco.org/images/0016/001636/163613e.pdf>

Case books, for example, on Benefit and Harm, and on Human Dignity and Human Rights, have been prepared to supplement the core curriculum.

A series of books produced by UNESCO including the *Asia-Pacific perspectives on ethics of Science and Technology* (2007); *Perspectives on bioethics education* (2008); and *Perspectives on biotechnology* (2008) present papers on the teaching and learning of bioethics. While the majority

of these pertain to the tertiary sector, they provide a useful professional development for teachers, in addition to some of the examples being adaptable to the secondary classroom situation. These books may be downloaded through <http://www.unescobkk.org/rushsap/resources/shs-resources/ethics-resources/>. This site also provides a variety of other ethics resources and links.

New Zealand resources available within the educational setting include:

- The Biotechnology Learning Hub
- http://www.biotechlearn.org.nz/themes/bioethics/frameworks_for_ethical_analysis.

New Zealand resources available within the socio-political setting include Publications by Toi te Taiao the Bioethics Council are still available online (<http://www.bioethics.org.nz>), as are Gammas a series of discussion papers produced by the Royal Society of New Zealand on a wide range of bioethical topics (including, for example, cloning and xenotransplantation). (http://www.royalsociety.org.nz/Site/TeachersStudents/Resources_for_schools/gamma/). These resources describe the science clearly and a number offer insights into the associated ethical issues. Although production of the Gamma papers ceased in 2008, the topics remain relevant at the present time.

The New Zealand Interchurch Bioethics Council (ICBC) has resources for teaching and learning on a range of bioethical topics including human reproductive technologies, genetic modification, genetic predisposition, euthanasia and climate change. (www.interchurchbioethics.org.nz). Reports and submissions to government select committees are also available on this site.

Key functions of the Nathaniel Centre: the New Zealand Catholic Bioethics Centre, established in 1999, include to develop educational opportunities in bioethics; to act as a n advisory and resource centre for individuals, and

professional, educational and community groups and carrying out research into bioethical issues, and promoting the study of and practical resolution of ethical, social, cultural and legal challenges arising out of clinical practice and scientific research, and acting to support the church's pastoral response to bioethical issues taking into account the needs of different cultures and groups in society (The Nathaniel Report, 2011). The Nathaniel Centre produces a quarterly journal containing articles on a diverse range of bioethical topics.

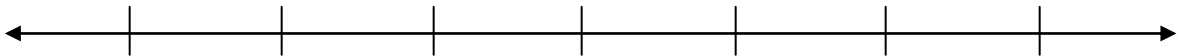
The Nathaniel Centre may be contacted through PO Box 12243, Wellington or administrator@nathaniel.org.nz.

APPENDIX TEN: INITIAL STUDENT SURVEY

Bioethics Course: **Student Survey**

What do you think so far?

How are you finding the bioethics course so far?



A waste of time

OK

Really worthwhile

Is participating in the bioethics course making you think about your personal values?

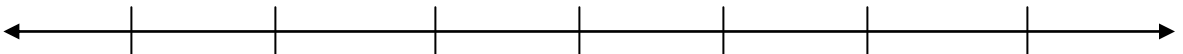


Not at all

Hard to say

Definitely yes

Is participating in the bioethics course making you think about other people's values?

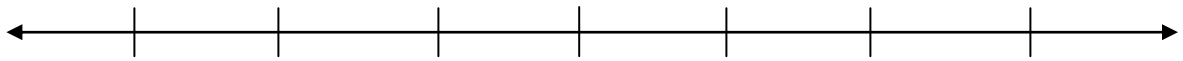


Not at all

Hard to say

Definitely yes

Is participating in the bioethics course causing you to analyse things in a different way?

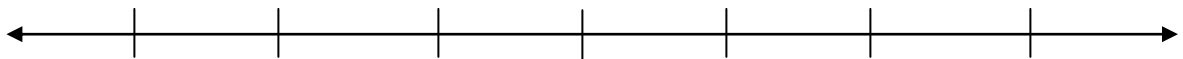


Not at all

Hard to say

Definitely yes

Have you discussed the issues raised in bioethics lessons at home?

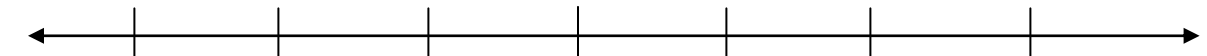


Not once

A few times

Frequently

Have you discussed the issues raised in bioethics lessons in other classes at school?

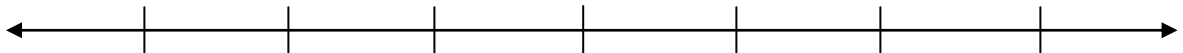


Not once

A few times

Frequently

Is participating in the bioethics course changing the way you think about and respond to other school subjects?



Not at all

Hard to say

Definitely yes

Pacific Islander

Indian

Asian

Other _____

Thank you for completing this survey.

APPENDIX ELEVEN: THE 2010 EOC STUDENT SURVEY

The instructions for completing the EOC survey were given to students using a colourful PowerPoint presentation. These instructions read:

The survey is a pen and paper questionnaire.

It will take about 20 minutes to complete.

The survey will ask you about your opinions and responses to the bioethics lessons you have participated in at school throughout the year.

You will see that throughout most of the survey you are asked to rate your response to given statements, on a seven-point scale represented by hollow circles.

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
"Having been in the Bioethics course I take more time over forming my opinions - I don't just say the first thing "off the top of my head".	○	○	○	○	○	○	○

Please clearly mark one of the circles to indicate your response. For example:



Please do NOT mark the space in between the circles.

You may write a comment or clarify your response alongside any statement, if you wish.

Please think about your answer before you record a response. Think about your experience in the course across the whole of the year.

Please take your time. There is no time limit set for completion of the survey.

You may choose not to answer some of the questions.

If you do not understand what you are being asked in the survey, please feel free to ask your teacher to explain.

You will have access to the results of the survey when they have been analysed, should you wish to see them. Thank you.

THE 2010 END OF BIOETHICS COURSE STUDENT SURVEY

Section A: The following are statements made by some of your bioethics classmates.

Please rate how much you agree or disagree with each statement.

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
'Having been in the bioethics course I take more time over forming my opinions—I don't just say the first thing 'off the top of my head'.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'As a result of being in the bioethics course I think more deeply.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Bioethics makes you think about things from a different point of view.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'With bioethics, you can use your new ways of thinking outside the classroom.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Bioethics is really relevant to my life.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
'Bioethics is completely different to any other class I've been in.'	○	○	○	○	○	○	○
'Bioethics is not just sitting there doing bookwork, you get involved in it.'	○	○	○	○	○	○	○
'I never learn or discuss anything like the problem-solving scenarios we do in bioethics in any of my other classes.'	○	○	○	○	○	○	○
'I feel like in the bioethics class I actually contributing; like making some other people think by arguing the other side.'	○	○	○	○	○	○	○
'I argue better as a result of being in the bioethics class because now I am able to put a reason with what I think.'	○	○	○	○	○	○	○

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
'I argue better as a result of being in the bioethics class because I understand other people's values better now.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I'm still thinking about what we have discussed when I leave the bioethics class—it's still mulling around in my brain.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'The bioethics class makes you question yourself and your values.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'You learn more about who you are in bioethics because it brings out your personal point of view.'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section B: Thinking back over the full year of the bioethics course, please rate the following statements:

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
Bioethics is no more interesting than any other subject at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would not recommend participating in the bioethics course next year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The bioethics class is a good way of avoiding school work. You can just go along and blob out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The bioethics class was interesting to begin with because it was new, but then the novelty wore off	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
I can contribute my ideas freely in bioethics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I listen carefully during my bioethics classes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often discuss things that we have explored in bioethics at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often discuss what I do in my other subjects at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in the bioethics course has caused me to change the way I look at the world	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in the bioethics course has caused me to think about my personal values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in the bioethics course has caused me to think about other people's values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
I argue better as a result of being in the bioethics class because now I am able to put a reason with what I think	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having been in the bioethics course I take more time over forming my opinions—I don't just say the first thing 'off the top of my head	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With bioethics, you can use your new ways of thinking outside the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bioethics is completely different to any other class I've been in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The teaching methods used in bioethics differ from those used in my other school subjects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Below is a list of values. Please indicate whether you put these values into practice during the bioethics course:

	Yes	Don't know	No
curiosity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
understanding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
honesty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
compassion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
courage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
perseverance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
fairness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
integrity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
responsibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
accountability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
respect	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Did I miss any? What other values did you put into practice during the bioethics course?

In what other subjects are you asked to explore your personal values?

In what other subjects do you have the opportunity to discuss ethical issues (such as the topics listed on page 10 of this survey)?

In what other subjects do you have the opportunity to discuss your worldview?

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
The teaching methods used in bioethics differ from those used in my other school subjects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Your teacher used a variety of teaching methods and resources throughout the bioethics course.

Please rank each method below according to how it engaged your attention.

	Very engaging	Engaging	Indifferent	Boring	Very boring
teacher telling stories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whole class discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You Tube and film clips	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hypotheticals (e.g., the train track scenario, or the life boat scenario)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher reading stories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Role plays and dialogues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student reading stories silently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Songs and lyrics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have I forgotten a method you enjoyed? If so, please write it here:

What was it about the methods that you found engaging or highly engaging that works for you?

What suggestions for improvement to the course do you have?

What positive comments do you have about the bioethics course?

What other comments do you have about the bioethics course?

What questions has the bioethics course left you thinking about?

Please tick the topics you particularly enjoyed exploring during the bioethics course. Tick as many as you wish:

- | | |
|---|--|
| <input type="checkbox"/> Organ Donation (Allotransplantation) | <input type="checkbox"/> Consciousness |
| <input type="checkbox"/> What is a Person? | <input type="checkbox"/> Utilitarianism |
| <input type="checkbox"/> Kantianism | <input type="checkbox"/> Argument theory & slippery slopes |

- Xenotransplantation
- Relativism
- When does Life Begin?
- Animal rights
- Ethical Food
- Designer babies

- Crime and Punishment
- Stem Cell Therapy
- Libertarianism
- What is Truth
- Other

Please tick one choice from the list below in answer to the following statement: ***Bioethics should be taught at school ...***

- not at all
- As a unit within another subject (e.g., Science)
- as an optional course for senior students (Years 11, 12 and 13)
- as an optional course for students from Year 9 through to Year 13
- as a compulsory course for senior students (Years 11, 12 and 13)
- as a compulsory course for students from Year 9 through to Year 13

Your age: 15 16 17 18

Your gender: Male Female

Your ethnicity:

- | | |
|--|---|
| <input type="checkbox"/> New Zealand Maori | <input type="checkbox"/> New Zealand European |
| <input type="checkbox"/> Australian | <input type="checkbox"/> Indian |
| <input type="checkbox"/> African | <input type="checkbox"/> South African |
| <input type="checkbox"/> North American | <input type="checkbox"/> South American |
| <input type="checkbox"/> Middle Eastern | <input type="checkbox"/> Canadian |
| <input type="checkbox"/> Pacific Islander | <input type="checkbox"/> Asian <input type="checkbox"/> Chinese |
| <input type="checkbox"/> Cook Islander | <input type="checkbox"/> Japanese |
| <input type="checkbox"/> Fijian | <input type="checkbox"/> Korean |
| <input type="checkbox"/> Samoan | <input type="checkbox"/> Malay |
| <input type="checkbox"/> Tahitian | |

- Other _____
 - Tongan _____
 - Thai _____
 - Other _____
-

If you identify with a religious tradition, please indicate which:

If someone asked you to describe the bioethics course, what three words would you use to complete the sentence?

The bioethics course is _____, _____ and _____.

Thank you for completing this survey.

APPENDIX TWELVE: INTERVIEW TOPICS FOR MID-YEAR AND EOC KSI INTERVIEWS

Designing the student one-on-one interview questions

Understanding others and what they mean when they respond to an interviewer is a complex matter (Whiteley & Whiteley, 2006). Therefore, there are a number of influential and intricate concerns associated with the activity of data collection using face-to-face interviews. Language plays a crucial role in the researcher/respondent interaction (Whiteley & Whiteley, 2006), including what words are used, how they are said (tone of voice and body language) and how chosen words are chunked or phrased together. In drafting the one-to-one survey questions for students, I decided to ignore Fowler's (1998, p. 366) Principle 5a 'Avoid questions that begin with adverbs: how, when, where, why, to what extent. Such questions do not specify the terms of an adequate answer', on the grounds that additional questions or inquiries including 'Can you expand on that?', 'In what way?' and 'What makes you say that?' would provide such terms.

Closed questions were employed from time to time throughout the interview. Closed questions are an effective channel; a way to narrow things down. When a 'Yes' or 'No' answer is given, what it is about that way of thinking that the student agrees with or disagrees with can be explored. Again, this may be accomplished through eliciting questions such as 'Tell me about that' and 'Any reason for that?' Further, 'Yes' or 'No' questions are like a button that when pushed, indicate if a student is willing to proceed down that channel or not.

However, I attempted to avoid asking 'Why' as this may have been challenging and/or confrontational. 'Why' can imply 'justify your position'. Alternatively, 'Why' allows for an 'I don't know' response, which shuts down

communication. What I really want to know is the reason the student is thinking something. Where the use of 'Why' may elicit a response from a justifying, having-to-get-it-right mode, other ways of asking 'why' can elicit responses from a rational mode. The following are examples of useful questions that have students consider and/or describe their own reasoning:

- 'What is it about that that makes you think that way/makes you believe that/can you tell me more about that way of thinking?'
- 'What sort of things struck you about that?'
- 'What sort of things did you think about as you left that lesson?'
- 'Did anything about that case make you think ...'
- 'What was it about that, that had you ...'

Situational identity—the way researchers interact with their respondents—is of prime interest to contemporary ethnography. As Angrosino and Mays de Perez (2000) state, 'People come into interactions by assuming situational identities that enhance their own self-conceptions or serve their own needs, which may be context specific rather than socially or culturally normative' (p. 689). This was a salient reminder to me that with respect to my choice of words and phrasing of questions and/or the making of comments, there is a risk of confirming my own version of reality within the research context. I needed be aware that I did not funnel the interview in a given direction and this included not conveying excitement, or conversely disappointment, with an answer. An answer from the student was simply an answer from the student.

Whiteley and Whiteley (2006) contend that a familiarisation study is essential preparation for the type of interviewing that emphasises rapport with participants and involves exploring 'views and values as well as acts and facts' (p. 70). Therefore, I pre-tested the student interview questions. Three students, who have participated in the bioethics programme at Wellington Diocesan School Two over recent years, were used as pre-test subjects. Such pre-testing allowed me to:

- become familiar with the content of the interview questions and practice correct phrasing
- experience how the questions are interpreted and allow for adjustment
- become familiar with the flow/order of the interview questions and adjust if necessary
- practice drawing information out of the students, particularly ways to encourage interviewee-students to reflect on and then describe their own thinking/reasoning.

MID-YEAR KSI INTERVIEW

This section reflects notes that I wrote prior to conducting the mid-year (first round) of KSI interviews.

Thank each student for participating in the interview at the outset. Explain that I am interested in what they think has been going on in class, and that is what the interview is about. Explain that the interview will be taped and then transcribed. The information from the written surveys and from the interviews that they and other students complete will be gathered together and the results will reflect the experience of the student group as a whole, not the student as an individual.

Set tone of enquiry ...

Explain that there are no right or wrong answers to the questions in the interview.

The interview isn't a test and you will not be marked, in any sense, on your responses. Actually, the interview is more like a survey:

Your responses aren't right or wrong—they are just about how things are for you. I will be asking you general things including your opinions about the course; whether you feel it is relevant to you; interesting; engaging; how you feel about coming to bioethics lessons; that sort of thing.

If I ask you about something and you don't remember it, say so, because that's what I want to know.

If you do remember something, I want to know what it is that you remember.

If something confused you—or you didn't quite 'get it'—say so, as that's what I want to know.

If you like something or you don't like something, then that's what I want to know—there is no right or wrong about that—I will just find out what you thought, and this is information that I can use later when writing up this study.

If I ask you a question and you are not sure what it is that I am asking, please ask me to re-phrase the question.

During the interview, you have the right to pass on a question if you do not wish to answer it.

Semi-structured questions student one-to-one interview

Overview and settling in questions:

- Why did you decide to take the bioethics course?
- Tell me how you have found the course so far?
- So what have you got out of this course so far?
- How would you describe your bioethics class?
- So what does bioethics mean to you? (Personalise to reinforce no right or wrong answers.)

Using a scenario explored during class (for example, Baby Theresa or Jacqueline Sarborido), ask a series of questions designed to gauge desired learning outcomes including **content knowledge** (recall their understanding of the ethical situation; ethical theory/ies learnt through the case study; philosophical and science concepts learnt) and **complexity of thinking** (to

have students explore their intuitive response to the scenario and report on their perceived shifts in thinking, understanding)

Begin with the student's personal response, then lead into the specifics of the scenario (these relate to the student's thinking), and from there into ethical theories (that is, relate to the philosophical responses) noting that this will be subject to the way the interview flows.

Use the student's wording as prompts to ask the next question/s, while ensuring that the student recalls various aspects of the case important to the curriculum.

- When I was observing I heard your class discussing Baby Theresa ... so what was that about? ...
- What did Theresa's parents think about the baby?
- What did other people think?
- What happened next? (Probe about the intervening physician, the judge's decision, and why ...)
- How did you feel about that?
- Which ethical theories applied to Teresa's case? (Or tell me about the language that Bioethicists would use in this case.)

Ensure that the following questions are covered if they have not been so in conversation thus far:

- What do you think you would have done if you were in Baby Theresa's parent's shoes?
- How did you arrive at your choice?
- Have you come across stories like Theresa before?
- Have you ever had to make decisions about those sorts of things before?
- Has discussing things like Baby Theresa changed the way you think about things?

- Was there anything that was still on your mind sometime later after that lesson?

Questions to gauge **attitudinal change**

- Do you think you think differently about things as a result of being part of the bioethics course?
- Tell me more about that?/Why do you say that?/Any reason for that?/What do you think was going on that caused that?
- Do you think you act differently as a result of being in the bioethics course? Do you think you respond differently to people in your life – family, friends, classmates?
- In what way? What was it about the course (was there something that happened on the course) that you think resulted in this change?
- Have you made any decisions differently since being part of the bioethics course? Tell me more about that. What was it about the course that you think resulted in this change?
- Has the way you disagree with other people changed since beginning the bioethics classes? Can you tell me more about that?
- Tell me about your participation in the bioethics class?
- What is it about bioethics that causes that for you?
- What do you enjoy most about a bioethics lesson?
- What don't you enjoy?
- What has interested you? What hasn't interested you?
- How do you feel at the end of a bioethics lesson?
- Do you feel differently about school (education) because of doing the course? That sounds interesting ... What do you think is going on that has caused that?
- Is there anything more you would like to say about the bioethics course?

General prompts:

- Tell me more about that
- Why do you say that?
- That sounds interesting ...
- Any reason for that?
- What do you think was going on that caused that?

EOC INTERVIEW

Introduction

The majority of students participated in the interview process in June. Therefore the second round of interviews was personalised by referring back to the responses the KSI had given in the June interview. The notes prepared for this round of interviews are presented below.

Begin by thanking the student for participating in this EOC interview. Remind student that, just as with the June interview, the interview will be taped and then transcribed. The information from the written surveys and from the interviews that they complete will be gathered together and the results will reflect the experience of the student group as a whole, not them as an individual.

Reiterate that I am interested in how the bioethics course has occurred for them personally and there are no right or wrong answers to the questions in the interview.

During the interview, they have the right to ask for clarification if they do not understand what I am asking; they have the right to pass on a question if they do not wish to answer it; and they have the right to request that the tape is turned off.

The interview is the primary medium through which to gain information on the academic learning that has occurred, this being a difficult area to assess using Likert scale or written survey.

Sample questions EOC one-to-one, semi-structured interview

A. General questions to settle into interview and personalise the interview for the student

Looking back over the whole year, what are your thoughts and feelings about having participated in the course?

During the first one-to-one interviews about the bioethics course, practically everyone interviewed said that they had taken it because it sounded 'interesting' or 'because it sounded like material that I would not hear elsewhere'. Looking back over the year, in what ways did the course meet that expectation/those expectations for you?

B. Cognition: Academic Learning

As with the June interview I intended to ask a series of questions designed to gauge desired learning outcomes including **content knowledge** (recall their understanding of the science behind an technology; the ethical issues raised by the situation; ethical theory/ies applicable to the issue etc.) and **complexity of thinking** (to have students explore their intuitive response to the issue and report on their perceived shifts in thinking, understanding)

For this round of interviews, I used the discussion around stem cells. The intended framework was that I began with the student's scientific understanding, and then led into the ethical issues. I planned to use a scenario new to the students to explore their thinking, their ability to support an argument and their personal viewpoint on the issue, relating these to the

range of philosophical responses explored in class and to the responses they give to the general stem cell questions given earlier in the interview. This was subject to the way the interview flows.

Use the student's wording as prompts to ask the next question/s, while ensuring that the student recalls various aspects of the issue important to the curriculum.

For example:

- When I was observing I heard your class discussing stem cells.
- What is your understanding of a stem cell? (Exploring scientific understanding)
- Stem cells present ethical issues. What are these? (Moving into philosophical problems)
- How would you define a person?
- There were various scientific, philosophical, historical and spiritual views on when a human becomes a person explored during class. What are some of the various viewpoints that you can recall?
- How do you feel about these?
- Having explored various scientific, philosophical, historical and spiritual views of when life begins, what is your thinking around this?
- How did you arrive at your decision?

C. Cognition: Critical Thinking

What I am hoping to explore with each student through the questioning above, in addition to their academic recall, is evidence of critical thinking and reasoning skills.

D. Affective aspects and attitudinal change

- Has participating in the bioethics class had any impact on the way you *think*? Why do you think that is?
- What does the term ‘personal values’ mean to you?
- What do personal values include?
- Can you give me an example?
- You have explored a wide variety of topics throughout the bioethics course—the concept of consciousness; what it is to be a person; when life might begin; crime and punishment; organ transfer; face transplants; personal identity; xenotransplantation ... Has exploring these topics caused you to think about your personal values?
- Can you tell me more about that?
- Looking back over the year, and your life both inside of school and outside of school, have you made any decisions differently since being part of the bioethics course?
- Can you tell me more about that?
- What was it about the course that you think resulted in this change?
- Do you think you respond differently to people in your life—family, friends, classmates as a result of being in the bioethics course?
- In what way? Or
- Has the way you disagree with other people changed since beginning the bioethics classes?
- Can you tell me more about that?
- What was it about the course (was there something that happened on the course) that you think resulted in this change?
- One of your bioethics classmates said ‘It’s no good just having an opinion, you have to have a reason’—how do you respond to that?

E. Process Aspects and Pedagogy:

- The school calendar shows that on 25 November there is going to be a *Celebration of Learning* evening here at College. If there was a bioethics stand at that evening, and you were on that stand, what

would you say if someone came up to you and asked what the term 'bioethics' means?

- What if they asked 'what do you learn in bioethics?'
- And if someone asked you about the teaching methods, how would you describe the teaching that occurs in a bioethics class?
- What if they asked you about not writing much down? How would you respond?
- Is the way you respond in bioethics different from the way you respond in other classes? Tell me more about that? What is it about bioethics that causes that for you?
- We have named bioethics as a stand-alone subject, but it can be taught as a unit within Science, Technology, Health, PE, English—a number of different subjects. What are your thoughts about bioethics being taught that way—as part of another subject, rather than as a subject on its own?
- What are the things that you have enjoyed most about a bioethics lesson?
- What haven't you enjoyed?
- What has interested you? What hasn't interested you?
- Is there anything more you would like to say about the bioethics course?

General prompts:

- Tell me more about that
- Why do you say that? or Tell me why you don't think so
- Any reason for that?
- What do you think was going on that caused that?
- That sounds interesting ...

APPENDIX THIRTEEN: BEGINNING OF COURSE AND EOC INTERVIEW TOPICS PREPARED FOR COLLABORATING TEACHERS

Beginning of research project collaborating teacher one-on-one, semi-structured interview guide questions

- What motivated you to be part of the bioethics project?
- What are you hoping to get out of it professionally?
- And personally, for you as a person as opposed to the teacher, what would you like to get out of the project?
- Is there anything you are apprehensive about?
- What would you like the participants in your class to gain from participating in the bioethics programme?
- What are you anticipating will be the markers that will show that they are achieving those gains?

End of research project collaborating teacher one-on-one, semi-structured interview guide questions

- You stated at the beginning of this research project that you had been motivated to teach bioethics because of/through ...
- Was this motivation sustained during the project?/Were your expectations met? (*Refer to the teacher's wording from their initial interview.*)
- At the outset of the research project you envisaged that your teaching practice would (*benefit by/develop because—refer to their phrasing from initial interview*). To what degree was this expectation fulfilled?
- In what other ways has your teaching practice developed as a result of your participation?

- When we started you expected the opportunity for personal growth (*via/in the areas of—refer back to their phrasing from initial interview*). To what degree do you feel this personal development has been achieved?
- In what other ways do you feel you have developed personally through participation in this research project?
- When we started, you expected students to (*refer back to their phrasing from initial interview*). In what ways were these expectations met?
- What effects on the development of participating students' personal values and worldview have you witnessed through teaching bioethics as a stand-alone subject?
- How does this compare with development of a student's values and worldview in other academic subjects that you teach?
- What effects on the development of participating students' critical thinking skills have you witness through teaching bioethics as a stand-alone subject?
- In what ways does teaching bioethics as a stand-alone subject enhance a student's critical thinking skills that other academic subjects you teach do not? Or, How does this compare with the development of a student's critical thinking skills in other academic subjects that you teach?
- How do you think the teaching of bioethics as a stand-alone subject has enhanced a participating student's social and emotional learning?
- How do you think the teaching of bioethics as a stand-alone subject has altered a participating student's attitude towards academic learning?
- How do you think the teaching of bioethics as a stand-alone subject has altered a participating student's engagement in risk-taking behaviour?
- Which teaching methods and activities you used during the bioethics course did you find the most successful? Why was this?

- In what ways has participating in the research project changed your perception of the curriculum?
- How important do you think it is to teach Bioethics as a stand-alone subject in the curriculum? (Or, in what ways do you think the teaching of bioethics as a stand-alone subject would enhance the curriculum for secondary school students in New Zealand?)
- Do you think these benefits would exist for students and teachers in other countries?
- What do you see as the ramifications for introducing the teaching and learning of bioethics as a stand-alone subject into the curriculum?
- What opportunities does teaching bioethics as a stand-alone subject present for a school?
- What questions has the bioethics course left you pondering on a professional level?
- What questions has the bioethics course left you pondering on a personal level?
- What specific results did you gain as a result of participating as a collaborating teacher?
- What specific results did you get as a result of participating in the teaching bioethics research on a personal level?
- How important do you think it is to teach bioethics as a stand-alone subject in the curriculum?
- What do you see as the ramifications for introducing the teaching and learning of bioethics as a stand-alone subject into the curriculum?

APPENDIX FOURTEEN: SEMI-STRUCTURED TOPICS FOR THE BEGINNING OF RESEARCH AND EOC INTERVIEW WITH PRINCIPAL

Guide questions for beginning of research project one-on-one, semi-structured interview with the principal

- I am interested to know why you were interested in participating in the research in the first place.
- What sort of outcomes are you anticipating for the school as a whole?
- Are there some professional development outcomes that you anticipate for the teaching staff?
- Have you got any apprehensions about having the bioethics course in the school throughout the year?

End of research project principal, one-on-one, semi-structured interview guide questions

- At the beginning of the year you said that the bioethics education research project was ...
- Has the course achieved what you hoped it would at the outset?
- Did it achieve something else?
- What do you think participating students have gained through the course?
- What is it about the bioethics course that caused that?
- At the start of the year, you mentioned the possibility that students may transfer the skills they gain in the bioethics class, particularly the thinking skills, to both their other subjects, but also their lives outside of school. Do you have any evidence of students generalising their

learning and applying it to classes or situations outside of the bioethics lessons?

- Did anything surprise you about the students' reaction to the course?
- Can you tell me more about that?
- What was it about the course that caused that, do you think?
- What is your assessment of the effects on the development of participating students' personal values and worldview?
- Can you give me examples?/Is there a specific example for that?
- How much of this would you put down to the bioethics course and how much to the maturing of the students over the course of a year?
- Do you have any sense that participating in the bioethics course may have altered a student's attitude towards school?
- What about their personal behaviour? Do you have any insight to whether participating in the bioethics course has altered a participating student's engagement in risk-taking behaviour outside of school?
- What was it about the course that might have caused that?
- And what about a student's sense of school connectedness?
- Has the bioethics course had an effect on a participating student's social and emotional learning? In what way?
- What is it about the course that does that do you think?
- Has there been any unexpected learning that occurred?
- What professional development have you seen in Helen and Nick through participating in the project?
- Every educator who takes on the teaching of a course they have not taught before faces that extra amount of preparation and your primary apprehension about having the research project in the school was for the workload of the teachers. How do you feel
- From your point of view, what has worked about teaching bioethics as a course in the school?
- What didn't work?
- How have the staff in general responded to the introduction of bioethics?

- What has been the response of the school Board?
- I understand that the course will continue into 2011?
- There was no traditional testing to check for academic learning in the course, is this a development you would like to see occur?
- Is there a place for traditional testing in this course?
- How might having more internal NCEA credits affect the course, do you think?
- What are your thoughts about how the bioethics course fits with the new curriculum?
- How important do you think it is to teach bioethics in the school curriculum?
- How would you prefer to see it taught?
- In what ways do you think the teaching of bioethics would enhance the curriculum for secondary school students in New Zealand?
- What do you see as the ramifications for introducing the teaching and learning of bioethics into the curriculum?
- As a sort of summary, what specific results has Koru College seen as a consequence of teaching the bioethics course?

APPENDIX FIFTEEN: CHART OF LESSONS DELIVERED TO EACH CLASS THROUGHOUT THE 2010 SECONDARY SCHOOL YEAR

Lesson number	Year 11	Year 12/13 AM class	Year 12/13 PM class
1	24 February Term 1 Introduction What is Death? Baby Theresa case	11 February Term 1 Introduction and recap of bioethical issues & importance of Decision making via exploration of Charlotte Cleverly-Bissman case, Post-menopausal mothers and voluntary euthanasia. What is a person? Baby Theresa case	11 February NB: Year 13 biology class attended this first lesson. What does living a good life entail? Making Decisions: exploration of Charlotte Cleverly-Bissman case, Post-menopausal mothers, voluntary euthanasia. Conjoined twins. Baby Theresa case Organ donation general discussion.
2	3 March Structuring a good 'argument' Slippery Slopes Premise, premise conclusion Valid and sound	18 February Utilitarianism Kantian ethics Conjoined twins example	18 February Utilitarianism Kantian ethics More fully explores conjoined twins
3	10 March Ethical Dilemmas: George and Jim	25 February Structuring a good 'argument' Slippery Slopes Introduces and defines concepts of Premise, premise, conclusion Valid and sound	25 February Structuring a good 'argument' Slippery Slopes Premise, premise conclusion Valid and sound
4	17 March Utilitarianism Kantian ethics (hypothetical and categorical imperatives; universalisability) Baby Theresa revisited	4 March Structuring a good 'argument cont. Reinforces concepts of premise, conclusion, valid and sound. Importance of defining terms. Euthanasia, Assisted suicide & Embryo experimentation as examples	4 March Structuring a good 'argument cont. Reinforces concepts of premise, conclusion, valid and sound. Importance of defining terms. Euthanasia, Assisted suicide & Embryo experimentation as examples
5	31 March (PPTA meeting 24 March) The Survival Lottery Hedonistic Calculus Ethical Theories continued	11 March Utilitarianism Two Train scenario Harris' Survival Lottery	11 March Utilitarianism Two Train scenario Harris' Survival Lottery

Lesson number	Year 11	Year 12/13 AM class	Year 12/13 PM class
6	21 April Term 2 What is it to be Human? The concept of Personhood	18 March Utilitarianism Three Hedonistic Calculus	18 March Utilitarianism Three Hedonistic Calculus
7	12 May (students complete initial written evaluation) Personhood and What is it to be Human continued Philosophical, cultural, scientific perspectives	25 March Kantian ethics Hypothetical and Categorical Imperatives Universalisability	25 March Kantian ethics Hypothetical and Categorical Imperatives Universalisability
8	19 May Consciousness Identity	1 April Consequentialism George and Jim Boat scenario	1 April Consequentialism George and Jim Boat scenario
9	2 June Crime and Punishment Theory	22 April Term 2 What is it to be Human? The concept of Personhood Philosophical, cultural, scientific perspectives Haisl the chimp	22 April Term 2 What is it to be Human? The concept of Personhood Philosophical, cultural, scientific perspectives Haisl the chimp
10	23 June What is Truth? Types of Truth: Scientific, Historical, moral Objective, Subjective, Absolutes	6 May (students complete initial written evaluation) What is it to be YOU? Hand transplant Face transplant (Connie Culp) Jacqueline Sarboredo case	6 May (students complete initial written evaluation) What is it to be YOU? Hand transplant Face transplant (Connie Culp) Jacqueline Sarboredo case
11	30 June Truth continued Consequentialist and Deontological approaches Helen & Geoffrey scenario Situation ethics Proportionalism	11 May (NB: Tues; lesson rescheduled as D on PD on Thurs) Recap of Identity Hypothetical brain transplant Alter ego Enhancement Identify theft	12 May (NB: Wed; lesson rescheduled as D on PD on Thurs) Recap of Identity Hypothetical brain transplant Alter ego Enhancement Identify theft

Lesson number	Year 11	Year 12/13 AM class	Year 12/13 PM class
12	21 July Term 3 Belief Cultural Relativism Moral truth continued	20 May David Reimer case (NZ Link) Responsibility	20 May David Reimer case (NZ link)
13	28 July Cultural Relativism continued Apartheid, Female circumcision Are there any absolutes?	25 May (NB: Tues; lesson rescheduled as D with CD rescue team on Thurs) Crime & Punishment Theory Utilitarian Retributive Rehabilitative	26 May (NB: Wed; lesson rescheduled as D with CD rescue team on Thurs) Crime & Punishment Theory Utilitarian Retributive Rehabilitative
14	4 August Legal/Illegal/Moral/Immoral Matrix	6 June Crime & Punishment cont Death penalty Stanley Tookie Williams case (application of all theories of C&P)	6 June Crime & Punishment cont Death penalty Stanley Tookie Williams case (application of all theories of C&P)
15	11 August When Does Life Begin? 1 Cultural, Historical, Scientific, Religious answers	17 June Crime & Punishment cont Restorative Justice	17 June Crime & Punishment cont Restorative Justice
16	18 August When does life begin cont 2	24 June What is Truth Scientific/Historical/moral Consequentialist/Deontological Virtue ethics	24 June What is Truth Scientific/Historical/moral Consequentialist/Deontological Virtue ethics
17	25 August Stem Cell Research	1 July Helen & Geoffrey scenario Kohlberg & moral reasoning Heinz case Situation ethics and proportionalism	1 July Helen & Geoffrey scenario Kohlberg & moral reasoning Heinz case Situation ethics and proportionalism
18	1 September Stem Cells continued Status of the Embryo Monism and Dualism	22 July Term 3 Cultural Relativism 1	22 July Term 3 Cultural Relativism 1

Lesson number	Year 11	Year 12/13 AM class	Year 12/13 PM class
19	22 September Xenotransplantation (NB: 8 Sept exam leave; 15 th Sept PPTA stop-work)	29 July Cultural Relativism 2 Legal/Illegal/Moral/Immoral Matrix	29 July Cultural Relativism 2 Legal/Illegal/Moral/Immoral Matrix
20	13 October Term 4 Ethical treatment of animals	5 August When Does Life Begin? 1 Cultural/Historical/Scientific/Religious views	5 August When Does Life Begin? 1 Cultural/Historical/Scientific/Religious views
21	20 October Libertarianism Link to autonomy and informed consent	12 August When Does Life Begin? 2 Monsim/Dualism Relevance for abortion/IVF/Stem cell/Embryo experimentation debates	12 August When Does Life Begin? 2 Monsim/Dualism Relevance for abortion/IVF/Stem cell/Embryo experimentation debates
22	27 October Wrap up lesson of ethical dilemmas via scenarios for group discussion	19 August Stem Cells	19 August Stem Cells
23		26 August Embryo Experimentation	26 August (Year 13 Bio class attend) Embryo Experimentation
24		2 September Xenotransplantation	2 September Xenotransplantation
25		9 September Designer Babies	9 September Designer Babies

Lesson number	Year 11	Year 12/13 AM class	Year 12/13 PM class
26		23 September (no classes last week due to senior exams) Libertarianism Free will vs determinism Autonomy and Informed consent	23 September (no classes last week due to senior exams) Libertarianism Free will vs determinism Autonomy and Informed consent
27		14 October Term 4 Animal Rights	14 October Term 4 Animal Rights
28		21 October Ethical Food	21 October Ethical Food
29		28 October Where has the bioethics journey taken us? A recap of theoretical and applied ethics covered during the year	28 October Where has the bioethics journey taken us? A recap of theoretical and applied ethics covered during the year
30		4 November Wrap up lesson of ethical dilemmas via scenarios for group discussion	4 November Wrap up lesson of ethical dilemmas via scenarios for group discussion

APPENDIX SIXTEEN: AN ILLUSTRATIVE EXAMPLE OF TEACHING STYLE IN THE YEAR 12/13 BIOETHICS CASE STUDY

Helen presented the case of Baby Theresa as an oral narrative, supplemented at the appropriate juncture with three PowerPoint slides to illustrate the condition of anencephaly. After relating the authentic scenario, Helen asked students what the disagreement within the situation was. She also seeded the concepts of argument theory, the topic for exploration the following week, including the need to sustain an opinion with supportable reasons:

It's quite important that you understand who is on what side and what their arguments were, because what this is all about is trying to say 'Okay, these people made this decision and this was their reasoning. Those people made a different decision about that situation and that was their reasoning. This is not just about having an opinion but having some reasons to back the opinion up. Clearly, in Baby Theresa's case both sides had what they considered to be really good reasons for what they wanted to happen. (Helen, classroom MP3, 100218-01)

Continuing her subtle and intentional seeding of terms and concepts ahead of teaching them, Helen named the concept of slippery-slope arguments and modelled the concept of premise, premise, conclusion scheduled for teaching and learning the following week:

Helen: If we decide that Baby Theresa didn't have the two essential hemispheres of her brain, let's go ahead and use her body for donating organs, we will say that she hasn't got many prospects, she's 'pretty much dead', what might be the issue for deciding that?

Kate: There might be other exceptions.

Helen: Very good. So what might happen is, Baby Theresa is on the serious end of 'not normal' processing, therefore it is okay to use her organs. The next step from that is?

Kate: Other disabled children?

Helen: Thank you. We may well say 'well this child is not quite normal either. A bit more normal than Theresa was, but still not "normal", so we should apply the situation to them'. The problem with that argument is what?

Carrie: It might well go further.

Helen: It might well go further and that is called a slippery-slope argument and we will study that. Once you start down a path of making exceptions then you may have another exception that is close, but not exactly the same, and then another one. (Classroom MP3, 100218–02)

Helen then reveals the laminated cards randomly velcroed across the whiteboard behind the screen. She explains that they are not in any semblance of order at all.

What I want you to tell me is how to order these arguments so that we get a clear picture of both sides. Which ideas belong to which side of the argument? Baby Theresa will be in the middle as it is all about her. Tell me where to shift them.

The class was attentive but non-responsive for over a minute. Helen filled this time in with encouraging comments, until Hayley responded:

Hayley: Let's put 'parents' on this side.

Pat: The 'judge' should go on the other side.

Hayley: 'Saving others' should be on the parent's side.

Helen: Yes, they wanted Theresa's life to mean something and the way that they saw this to happen was that she could save others.

Matt: 'Was going to die anyway' on parent's side.

Hemi: 'Human being with her own rights' on the opposite side.

It was predominantly Pat, Hemi and Hayley who sorted the cards with Helen while the rest of the class observe attentively but silently:

Hemi: Would 'greater good' be on the parent's side?

Helen: Very good. Why?

Hemi: Because she would be dying for the greater good of other children.

Helen: Exactly. Perfect ... So what are we going to do with these? There are three cards here that we haven't placed. Where are they going to go?

The activity continues. Some minutes later, Helen reinforces the concepts behind the two ethical theories, utilitarianism and Kantianism, under investigation to the students:

If you are looking at what these two theories are called, the utilitarian philosophers believe that if you make a decision and it benefits a large number in the end—so the greater good, the greater number is going to benefit—that is the right thing to do. And the people who believe that you cannot use one person to further the interests of another person—they can't be a means to the end for that person, so you can't take Theresa's organs just because there are five other children that need them—they are Kantian philosophers. Baby Theresa's case perfectly illustrates these two arms of philosophy. Neither one is necessarily right or wrong in a particular situation. (Helen, classroom MP3, 100218)

The activity takes slightly over 13 minutes to this point, at which time a male student reclining on a beanbag at the front of the room asks Helen how the media found out about Baby Theresa. Helen allows the conversation to digress into the area of the role of the media in both reporting and/or creating ethical situations, and swaying opinions. Such digressions were common throughout Year 12/13 lessons. When a tangent of appropriate relevance was introduced by a student, Helen would recognise the 'teaching moment' and go with it. Helen also had a propensity to digress off on tangents herself. The majority of these were instances sought to make a situation more concrete for the participating students, that is, to relate it to something they had immediate experience of, or involved following up a related item that may appear coincidentally in the news media.

After several minutes on this, including the publication of decorated New Zealand army officer Willie Apiata's image following a raid in Afghanistan, topical in the media on that day, Helen directs the students back to Baby Theresa. Helen asks the students to place themselves at three pre-designated points across the room; being 'Agree' with the judge's ruling; 'Disagree' with the judge's ruling; and 'Don't know'. A significant majority of the students position themselves beneath the 'Disagree' sign prompting Helen to comment:

What we have here is a very utilitarian class where the greater good is what needs to be considered. It will be interesting to see when we come to look at some other issues, whether you remain utilitarian. Whether for some things, you see the 'greater good' and for some things you do not. (Helen, classroom MP3, 100218–01)

Also of note is Helen's repetition/reinforcement of the term 'greater good' in association with utilitarianism.

APPENDIX SEVENTEEN: AN EXAMPLE OF YEAR 11 CASE STUDY STUDENTS GENERATING THEIR OWN KNOWLEDGE: THE CASE OF BABY THERESA

An example of Year 11 case study students 'generating' knowledge for themselves occurred early in Term 1. Nick had described the real-life case of Baby Theresa, an anencephalic baby whose parents were not permitted to donate her organs. Central participants within this case disagree, their opposing views clearly articulating respective utilitarian and Kantian philosophies. Having described only the case, its participants and their opposing views, and without mentioning either philosophical school of thought by name, or discussing any of their underlying principles, Nick provided the class with a series of laminated cards including terms such as 'judge', 'parents', 'means to an end', 'greater good', 'going to die anyway' and more. Showing the students the cards labelled 'utilitarian' and 'Kantian' but holding on to them, Nick then instructed the class to use the cards to make two columns on the floor to:

Work out what these terms might mean, and what the foundational beliefs behind each of these moral ways of thinking is. The activity will be made more interesting as you will complete it in silence. If you think the placement of a card is wrong, move it. Look through them and see if you think they follow the same argument. (Nick, classroom MP3, 100317)

Nick then stepped back as the students began to sort the cards with intensity, humour, stealth and at times almost 'charade-like' non-verbal communication.

As the cards were progressively sorted with 'Baby Theresa' being left in the middle by silent agreement, Nick asked if all students were 'happy with the arrangement?' Agreement was nodded.

Nick was then able to build on this learning and begin teaching the academic concepts and terms associated with each of the ethical theories. However, this was not before he had the student's themselves identify more through asking them 'What would someone who is a utilitarian think about moral issues?'

Max responded and as he spoke he gestured 'weighing both sides' with his arms although he did not use these words.

Nick asked him 'to say that again without speaking. Just use the gestures you were making. What do we think this is?'

Miriama responded 'weighing up which is right and wrong. Taking into account the good that will come and the bad that will come.'

The activity took just over 15 minutes and included a detailed exploration and definition of Kantian and utilitarian philosophies, including an introduction to the Kantian concept of universal rules and categorical imperatives. In comparison to the Year 12/13 classes, the exploration into the theories of utilitarianism and Kantian ethics went well beyond the 'greater good' and 'means to an end' differentiation in this initial lesson.

APPENDIX EIGHTEEN: YEAR 12/13 CASE STUDY

STUDENTS INITIAL SURVEY RESULTS

Survey conducted after nine lessons of a 30 lesson course (n=45).

Table A18.1: Raw score; percentage (to nearest whole number); and (mode)

Survey Item	1	2	3	4	5	6	7
How are you finding the bioethics course so far? (Waste of time, OK, to Really worthwhile.)	0 (0%)	0 (0%)	0 (0%)	10 (22%)	12 (27%)	13 (29%)	10 (22%)
Is participating in the bioethics course making you think about your personal values?	0 (0%)	0 (0%)	1 (2%)	12 (27%)	15 (33%)	10 (22%)	7 (16%)
Is participating in the bioethics course making you think about other people's values?	1 (2%)	0 (0%)	3 (7%)	11 (24%)	15 (33%)	9 (20%)	6 (13%)
Is participating in the bioethics course causing you to analyse things in a different way? (Not At All, too Hard to Say, to Definitely Yes)	0 (0%)	0 (0%)	0 (0%)	7 (16%)	11 (24%)	15 (33%)	11 (24%)
Have you discussed the issues raised in Bioethics lessons at home? (Not once, to A few times, to Frequently)	6 (13%)	6 (13%)	3 (7%)	17 (38%)	7 (16%)	2 (4%)	4 (9%)
Have you discussed the issues raised in Bioethics lessons in other classes at school? (Not once, to A few times, to Frequently)	7 (16%)	4 (9%)	11 (24%)	15 (33%)	4 (9%)	2 (4%)	2 (4%)

Is participating in the bioethics course changing the way you think about and respond in other school subjects? (Not At All, too Hard to Say, to Definitely Yes)	1 (2%)	6 (13%)	4 (9%)	22 (49%)	5 (11%)	5 (11%)	2 (4%)
How much do you participate and contribute during Bioethics lessons compared to your other subjects? (Way Less, to the Same, to Much More)	0 (0%)	1 (2%)	8 (18%)	19 (42%)	6 (13%)	9 (20%)	2 (4%)
How is the mix of teacher talk versus practical work for you? Too much teacher talk, to Just right, to Too much practical	0 (0%)	0 (0%)	2 (4%)	37 (82%)	5 (11%)	1 (2%)	0 (0%)

Table A18.2: Year 12/13 responses to initial survey written question
What positive comments do you have about the bioethics course?

26 students responded to this question	
Response	Frequency
Makes you think Interesting	8
Enjoyable/Fun	7
Good and/or worthwhile	6
Learning different perspectives	5
New ideas	7
Different topics to other classes	4
Understanding people's problems more	2
Helpful with problem solving	4
Changing the way I see things	4
Useful information	2
Learning a lot in this class	2
Encourages people to share their thoughts	2

APPENDIX NINETEEN: YEAR 12/13 EOC LIKERT SCALE ITEM RESULTS

Table A19.1: Results for Yr 12/13 EOC survey items according to category. Raw score; percentage (to nearest whole number); and mode.

Personal values

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
Participating in the bioethics course has caused me to think about my personal values (Graphed)	0% 0/43	0% 0/43	5% 2/43	21% 9/43	35% 15/43	21% 9/43	19% 8/43
You learn more about who you are in bioethics because it brings out your personal point of view	0% 0/43	0% 0/43	0% 0/43	16% 7/43	51% 22/43	21% 9/43	12% 5/43
The Bioethics class makes you question yourself and your values	2% 1/43	0% 0/43	0% 0/43	14% 6/43	37% 16/43	37% 16/43	9% 4/43
Participating in the bioethics course has caused me to change the way I look at the world	0% 0/43	0% 0/43	7% 3/43	14% 6/43	35% 15/43	30% 13/43	14% 6/43

Worldview

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
Participating in the bioethics course has caused me to change the way I look at the world	0% 0/43	0% 0/43	7% 3/43	14% 6/43	35% 15/43	30% 13/43	14% 6/43
'Bioethics makes you think about things from a different point of view'	0% 0/43	0% 0/43	0% 0/43	7% 3/43	23% 10/43	42% 18/43	28% 12/43

Critical thinking

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
Having been in the bioethics course, I take more time over forming my opinions—I don't just say the first thing 'off the top of my head'	0% 0/43	0% 0/43	0% 0/43	26% 11/43	37% 16/43	21% 9/43	16% 7/43
As a result of being in the bioethics course, I think more deeply	0% 0/43	0% 0/43	5% 2/43	16% 7/43	30% 13/43	23% 10/43	26% 11/43

Argumentation

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
'I argue better as a result of being in the bioethics class because now I am able to put a reason with what I think'	0% 0/43	0% 0/43	7% 3/43	14% 6/43	35% 15/43	26% 11/43	19% 8/43
'I argue better as a result of being in the bioethics class because I understand other people's values better now'	0% 0/43	0% 0/43	5% 2/43	16% 7/43	30% 13/43	40% 17/43	9% 4/43

Transference of reasoning skills

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
'With bioethics, you can use your new ways of thinking outside the classroom'	0% 0/43	0% 0/43	2% 1/43	16% 7/43	30% 13/43	19% 8/43	33% 14/43

Participating and contributing

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
I can contribute my ideas freely in bioethics	0% 0/43	0% 0/43	0% 0/43	12% 5/43	42% 8/43	16% 7/43	30% 13/43
I listen carefully during my bioethics classes	0% 0/43	0% 0/43	0% 0/43	12% 5/43	53% 23/43	14% 6/43	21% 9/43
'I feel like, in the bioethics class I'm actually contributing; like making some other people think by arguing the other side'	0% 0/43	0% 0/43	9% 4/43	23% 10/43	30% 13/43	21% 9/43	16% 7/43

Engagement and pedagogy

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
'Bioethics is completely different to any other class I've been in'	0% 0/43	0% 0/43	2% 1/43	5% 2/43	23% 10/43	12% 5/43	58% 25/43
'Bioethics is not just sitting there doing bookwork, you get involved in it'	0% 0/43	0% 0/43	0% 0/43	2% 1/43	37% 16/43	12% 5/43	49% 21/43
'I never learn or discuss anything like the problem-solving scenarios we do in bioethics in any of my other classes'	0% 0/43	5% 2/43	9% 4/43	16% 7/43	28% 12/43	19% 8/43	23% 10/43
'I'm still thinking about what we have discussed when I leave the bioethics class—it's still mulling around in my brain'	0% 0/43	0% 0/43	2% 1/43	16% 7/43	26% 11/43	26% 11/43	30% 13/43
Bioethics is no more interesting than any other subject	33% 14/43	28% 12/43	19% 8/43	21% 9/43	0% 0/43	0% 0/43	0% 0/43
I would not recommend participating in the bioethics course next year	47% 20/43	26% 11/43	23% 10/43	2% 1/43	0% 0/43	0% 0/43	2% 1/43
The Bioethics class is a good way of avoiding school work. You can just go along and blob out	19% 8/43	26% 11/43	35% 15/43	5% 2/43	12% 5/43	0% 0/43	5% 2/43
The Bioethics class was interesting to begin with because it was new, but then the novelty wore off	33% 14/43	14% 6/43	33% 14/43	9% 4/43	7% 3/43	5% 2/43	0% 0/43
The teaching methods used in bioethics differ from those used in my other school subjects	0% 0/43	0% 0/43	2% 1/43	19% 8/43	30% 13/43	12% 5/43	37% 16/43

**APPENDIX TWENTY: YEAR 12/13 RESPONSES EOC
WRITTEN QUESTIONS: SUBJECTS IN WHICH
PERSONAL VALUES AND WORLDVIEW ARE
EXPLORED**

Table A20.1: Year 12/13 responses to the EOC question *'In what other subjects are you asked to explore your personal values?'*

Note: Frequency represents the number of times particular subjects were cited. Students could list as many subjects as they wished.

Response	Frequency
None (No other subjects, or similar response)	22
Community, Sports and Leadership	9
English	6
Transition	5
Media Studies	3
Drama	2
Physical Education	2
Health (undertaken in Years 9 and 10)	2

Table A20.2: Year 12/13 responses to the EOC question *In what other subjects do you have the opportunity to discuss ethical issues (such as the topics listed on page 10 of this survey)?*

Response	Frequency
None (No other subjects, or similar response)	22
Community, Sports and Leadership	10
English	3
Transition	3
Media Studies	1
Science	1
Food Technology	1
History	1
Physical Education	1
Health (undertaken in Years 9 and 10)	1

Table A20.3: Year 12/13 responses to the EOC question *In what other subjects do you have the opportunity to discuss your worldview?*

Response	Frequency
None (No other subjects, or similar response)	33
Transition	3
English	3
Media Studies	2
Drama	1
Community, Sports and Leadership	1
Maori	1
Junior Social Studies (Years 9 and 10)	1

APPENDIX TWENTY-ONE: YEAR 11 CASE STUDY

STUDENTS INITIAL SURVEY RESULTS

Survey conducted after six lessons of a 22-lesson course (n=21).

Table A21.1: Raw score; percentage (to nearest whole number); and (mode)

Survey Item	1	2	3	4	5	6	7
How are you finding the bioethics course so far? (Waste of time, OK, to really worthwhile.)	0/21 (0%)	0/21 (0%)	0/21 (0%)	6/21 (29%)	1/21 (5%)	2/21 (10%)	12/21 (57%)
Is participating in the bioethics course making you think about your personal values? (Not At All, too Hard to Say, to Definitely Yes)	0/21 (0%)	0/21 (0%)	0/21 (0%)	2/21 (10%)	5/21 (24%)	7/21 (33%)	7/21 (33%)
Is participating in the bioethics course making you think about other people's values? (Not At All, too Hard to Say, to Definitely Yes)	0/21 (0%)	0/21 (0%)	0/21 (0%)	3/21 (14%)	5/21 (24%)	6/21 (29%)	7/21 (33%)
Is participating in the bioethics course causing you to analyse things in a different way? (Not At All, too Hard to Say, to Definitely Yes)	1 (5%)	0 (0%)	0 (0%)	3 (14%)	6 (29%)	6 (29%)	5 (24%)
Have you discussed the issues raised in bioethics lessons at home? (Not once, to A few times, to Frequently)	4 (19%)	1 (5%)	0 (%)	5 (24%)	0 (0%)	4 (19%)	7 (33%)
Have you discussed the issues raised in Bioethics lessons in other classes at school? (Not once, to A few times, to Frequently)	6 (29%)	1 (5%)	5 (24%)	3 (14%)	1 (5%)	5 (24%)	0 (0%)

Is participating in the bioethics course changing the way you think about and respond in other school subjects? (Not At All, too Hard to Say, to Definitely Yes)	4 (19%)	3 (14%)	1 (5%)	6 (29%)	3 (14%)	1 (5%)	3 (14%)
How much do you participate and contribute during Bioethics lessons compared to your other subjects? (Way Less, to the Same, to Much More)	0 (0%)	0 (0%)	2 (10%)	3 (14%)	2 (10%)	8 (38%)	6 (29%)
How is the mix of teacher talk versus practical work for you? Too much teacher talk, to Just right, to Too much practical	0 (0%)	0 (0%)	1 (5%)	19 (90%)	1 (5%)	0 (0%)	0 (0%)

Table 21.2: Year 11 responses to initial survey written question *What suggestions for improvement to the course do you have?*

12 students responded to this question	
Response	Frequency
Incorporate field trips (to research laboratories etc. related to the topics)	6
No improvement required	5
More lessons per week	4

Table 21.3: Year 11 responses to initial survey written question *What positive comments do you have about the bioethics course?*

17 students responded to this question	
Response	Frequency
Fun	7
Interesting	6
Makes me think (general)	5
New way of viewing things	4
Thinking about personal values	2
Learning lots of different things	1
PowerPoints etc. very good	1
Emphasis isn't on writing stuff down. It's about participating	1

APPENDIX TWENTY-TWO: YEAR 11 EOC LIKERT SCALE AND WRITTEN ANSWER RESULTS

Note: Bold indicates the mode.

Table A22.1: Personal values

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
You learn more about who you are in bioethics because it brings out your personal point of view	0 0/22	0% 0/22	0% 0/22	5% 1/22	14% 3/22	50% 11/22	32% 7/22
The Bioethics class makes you question yourself and your values	1% 0/22	5% 1/22	5% 1/22	5% 1/22	18% 4/22	36% 8/22	32% 7/22
Participating in the bioethics course has caused me to change the way I look at the world	0% 0/22	0% 0/22	9% 2/22	14% 3/22	23% 5/22	23% 5/22	32% 7/22

Table A22.2: Year 11 responses to the EOC question *In what other subjects are you asked to explore your personal values?*

Note: Frequency represents the number of times particular subjects were cited. Students could list as many subjects as they wished.

Response	Frequency
None (No other subjects, or similar response)	12
PCH (PE, Careers and Health)	4
English	3
Health (undertaken in Years 9 and 10)	3
Geography	1
History (Annotation: ' <i>Specifically WWII. But we are not encouraged as much as I think about them by myself because of the subject we are learning about.</i> ')	1

Table A22.3: Worldview

	Strongly Disagree	Moderately Disagree	Disagree	Neither Disagree or Agree	Agree	Moderately Agree	Strongly Agree
Participating in the bioethics course has caused me to change the way I look at the world	0% 0/22	0% 0/22	9% 2/22	14% 3/22	23% 5/22	23% 5/22	32% 7/22
'Bioethics makes you think about things from a different point of view'	0% 0/22	0% 0/22	9% 2/22	0% 0/22	14% 3/22	14% 3/22	64% 14/22

Table A22.4: Year 11 responses to the EOC question *In what other subjects do you have the opportunity to discuss your worldview?*

Note: Frequency represents the number of times particular subjects were cited.

Response	Frequency
None (No other subjects, or similar response)	7
English	3
History (Annotation: <i>Black civil rights</i> x2)	3
Geography (Annotation: <i>Population covers some ethical issues</i>)	3
Social Studies (undertaken in Years 9 and 10)	3
Science	1
French (Annotation: <i>What we think about what they do</i>)	1
Japanese	1
PCH	1
Health (undertaken in Years 9 and 10)	1

Table A22.5: Year 11 responses to the EOC question *In what other subjects do you have the opportunity to discuss ethical issues (such as the topics listed on page 10 of this survey)?*

Note: Frequency represents the number of times particular subjects were cited.

Response	Frequency
None (No other subjects, or similar response)	11
History (Annotations: specifically WWII x 3)	5
Science (Annotations: <i>A little</i> x2)	2
Human biology	2
English (Annotation: <i>in personal writings</i>)	1
Geography (Annotation: <i>animal rights with respect to dairy farming</i>)	1
PCH	1
Health (undertaken in Years 9 and 10)	1
Social Studies (undertaken in Years 9 and 10)	1

Table A22.6: Critical thinking

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
Having been in the bioethics course, I take more time over forming my opinions—I don't just say the first thing 'off the top of my head'	0% 0/22	0% 0/22	5% 1/22	0% 0/22	32% 7/22	41% 9/22	23% 5/22
As a result of being in the bioethics course, I think more deeply	0% 0/22	0% 0/22	0% 0/22	5% 1/22	32% 7/22	41% 9/22	23% 5/22

Table A22.7: Argumentation

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
'I argue better as a result of being in the bioethics class because now I am able to put a reason with what I think'	0% 0/22	0% 0/22	5% 1/22	5% 1/22	27% 6/22	27% 6/22	36% 8/22
'I argue better as a result of being in the bioethics class because I understand other people's values better now'	0% 0/22	0% 0/22	5% 1/22	9% 2/22	32% 7/22	23% 5/22	32% 7/22

Table A22.8: Transference of reasoning skills

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
'With bioethics, you can use your new ways of thinking outside the classroom'	5% 1/22	0% 0/22	0% 0/22	18% 4/22	18% 4/22	41% 9/22	18% 4/22

Table A22.9: Participating and contributing

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
I can contribute my ideas freely in bioethics	5% 1/22	0% 0/22	5% 1/22	5% 1/22	14% 3/22	45% 10/22	27% 6/22
I listen carefully during my bioethics classes	0% 0/22	0% 0/22	5% 1/22	23% 5/22	14% 3/22	27% 6/22	32% 7/22
'I feel like, in the bioethics class I'm actually contributing; like making some other people think by arguing the other side'	0% 0/22	0% 0/22	0% 0/22	5% 1/22	14% 3/22	36% 8/22	45% 10/22

APPENDIX TWENTY-THREE: DISTRIBUTION OF YEAR 11 AND YEAR 12/13 RESPONSES TO EOC LIKERT SCALE ITEMS

SCALE ITEMS

AFFECTIVE OUTCOMES

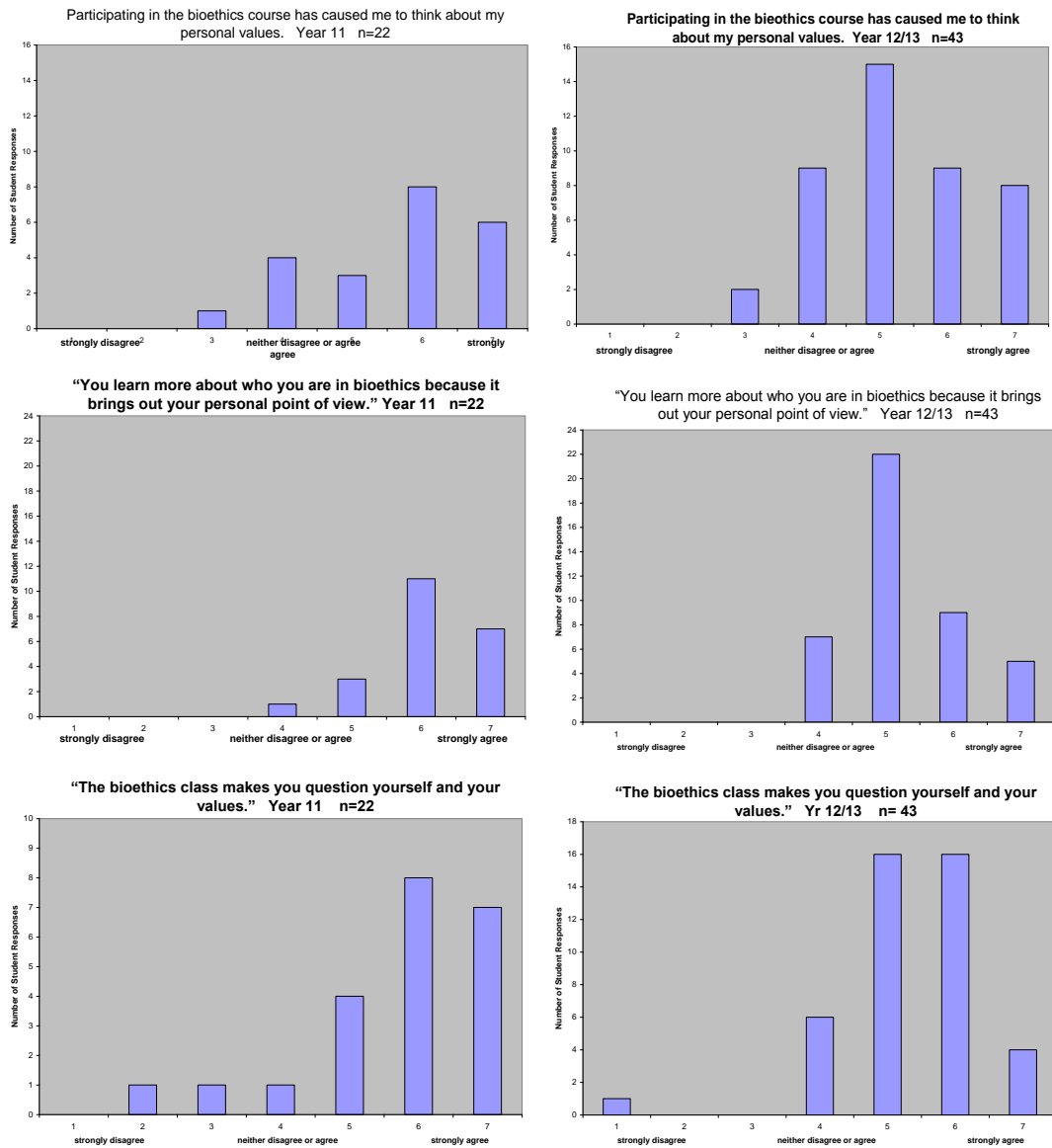


Figure A23.1: Personal values

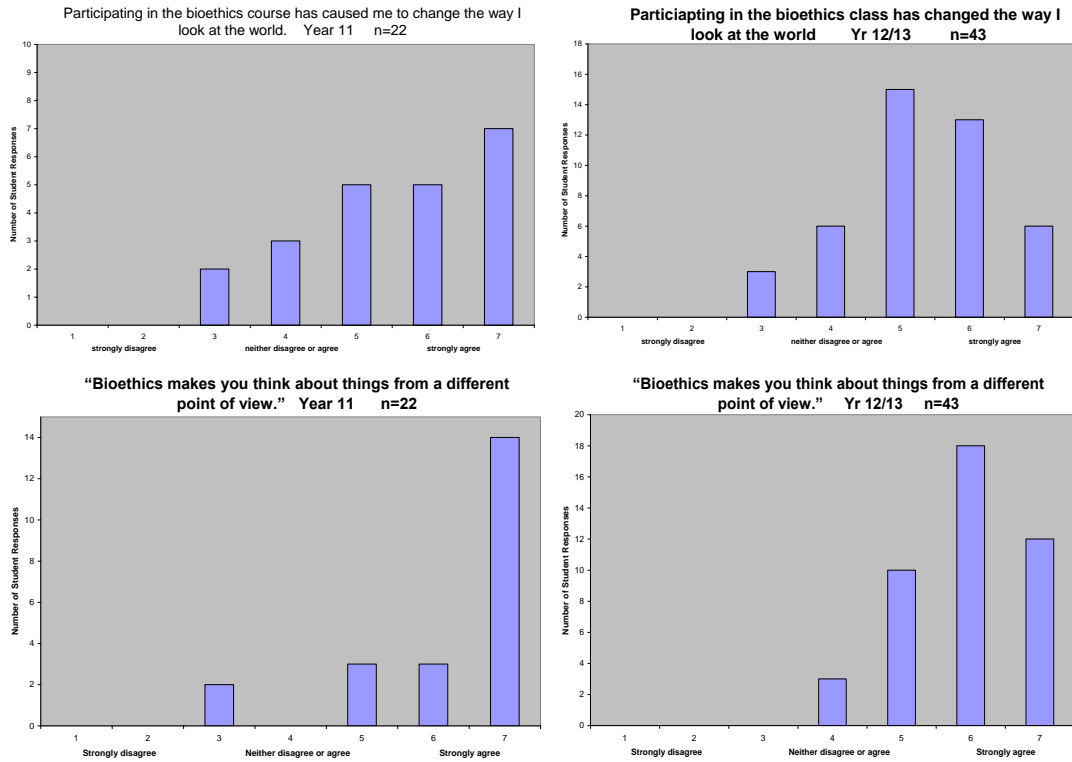


Figure A23.2: Worldview

COGNITIVE OUTCOMES

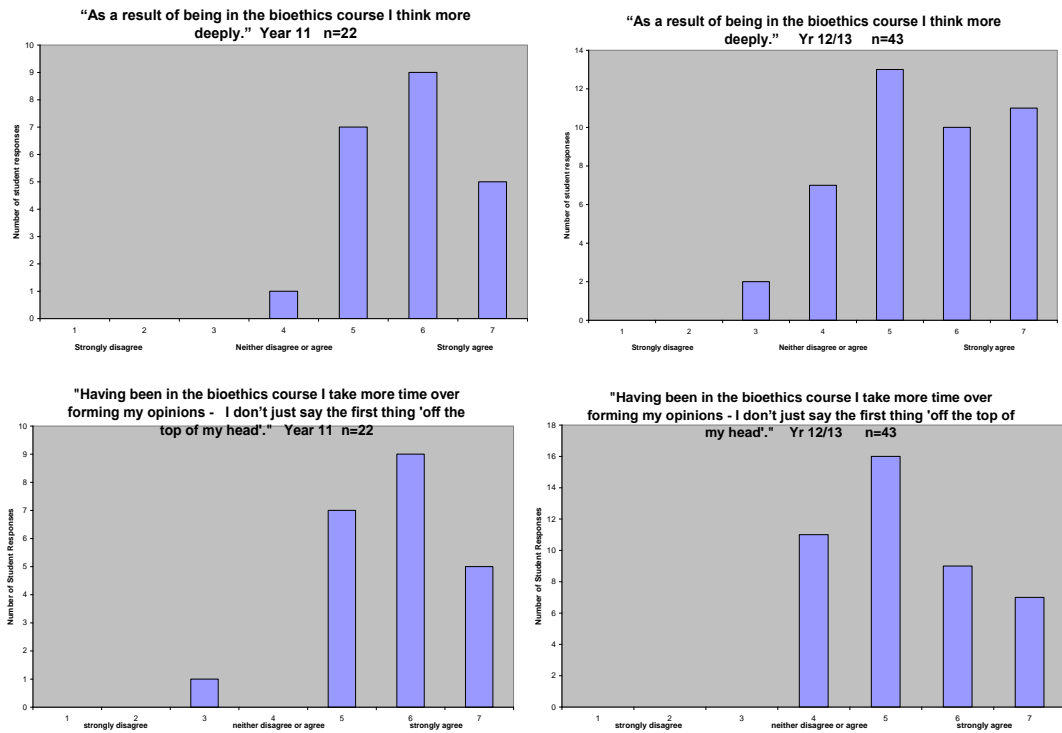


Figure A23.3: Critical thinking

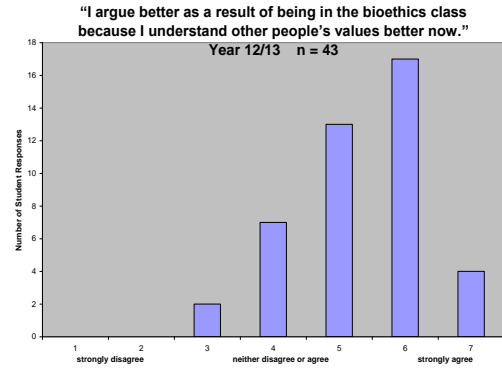
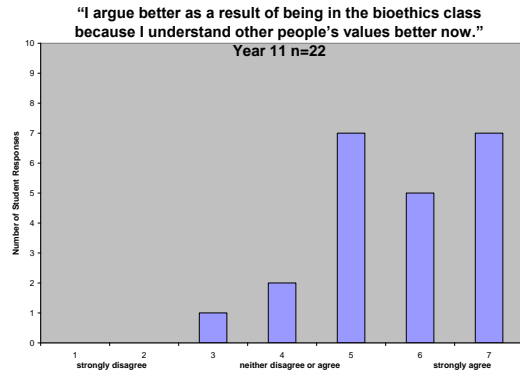
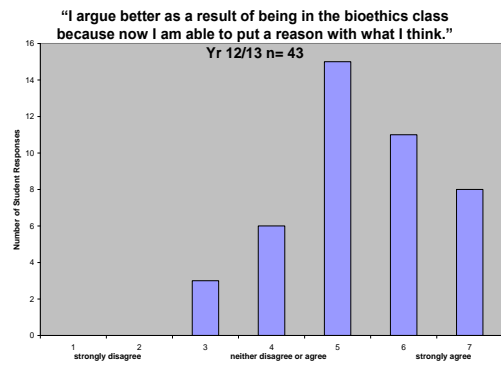
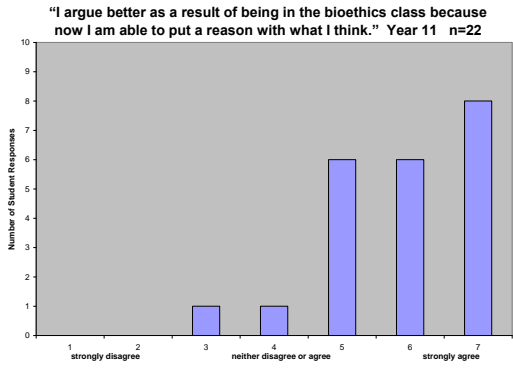


Figure A23.4: Argumentation

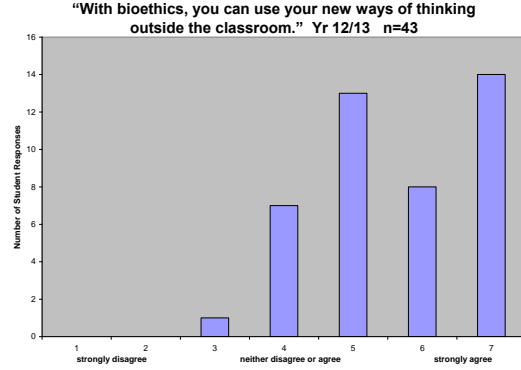
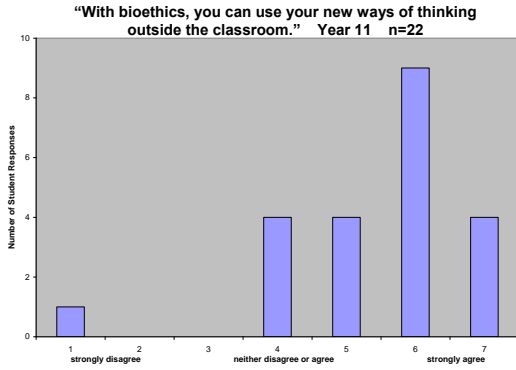


Figure A23.5: Transference of thinking and reasoning skills

COMPETENCIES

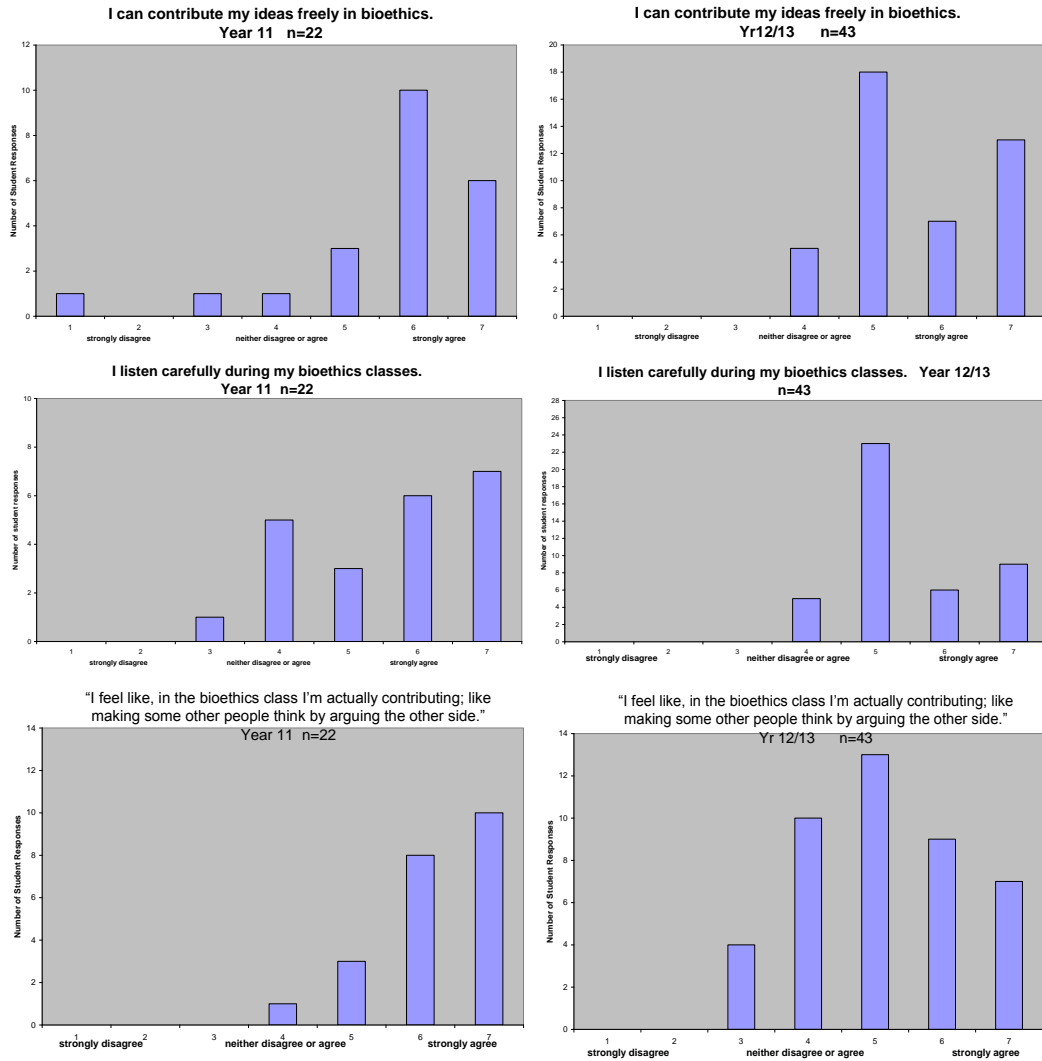


Figure A23.6: Participating and contributing

APPENDIX TWENTY-FOUR: INDEPENDENT T-TEST CALCULATION USING SPSS

Results for questions with different means between the two case study groups:

Table A24.1: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Q7	Equal variances assumed	9.634	.003	-2.337	63	.023	-.567	.242	-1.051	.082
Q8	Equal variances assumed	8.632	.005	-2.241	63	.029	-.746	.333	-1.412	.081
Q9	Equal variances assumed	2.795	.100	-3.882	63	.000	-1.111	.292	-1.695	-.527
Q14	Equal variances assumed	.780	.380	-3.606	63	.001	-.812	.225	-1.262	-.362
Q15	Equal variances assumed	.193	.662	2.179	63	.033	.643	.295	.053	1.232

APPENDIX TWENTY-FIVE: EOC ITEMS THAT DEMONSTRATE DIFFERENT SPREAD RESULTING IN AN APPARENT DIFFERENCE IN THE MEANS OF THE TWO CASE STUDY GROUPS

Figure A25.1 Bioethics is no more interesting than any other subject at school. Year 11 (n=22)

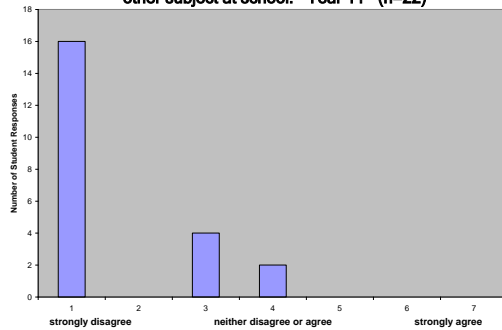


Figure A25.2 Bioethics is no more interesting than any other subject at school. Yr 12/13 (n=43)

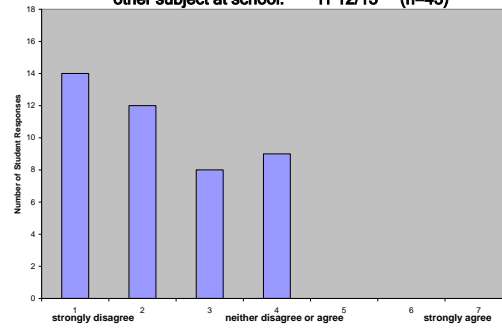


Figure A25.3 "Bioethics is not just sitting there doing bookwork, you get involved in it." Year 11 (n=22)

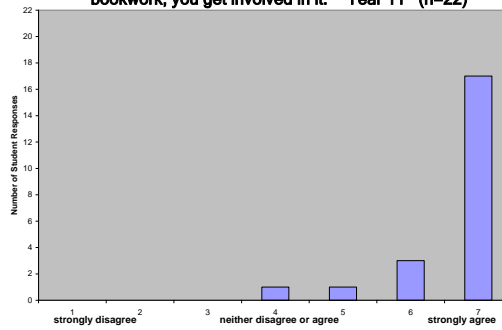


Figure A25.4 "Bioethics is not just sitting there doing bookwork, you get involved in it." Yr 12/13 (n=43)

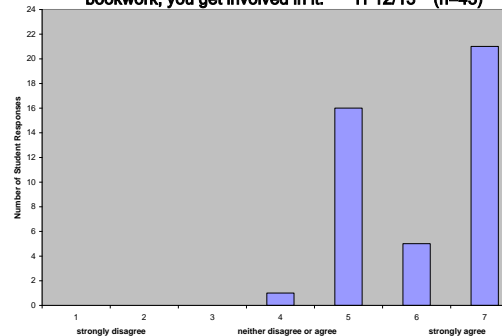


Figure A25.5 "You learn more about who you are in bioethics because it brings out your personal point of view." Year 11 (n=22)

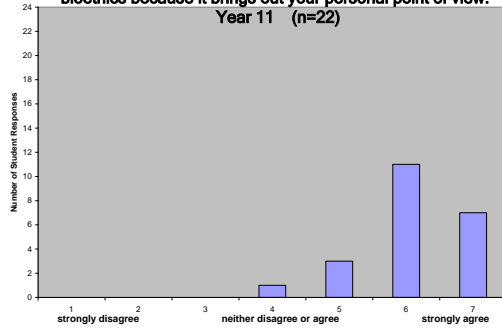
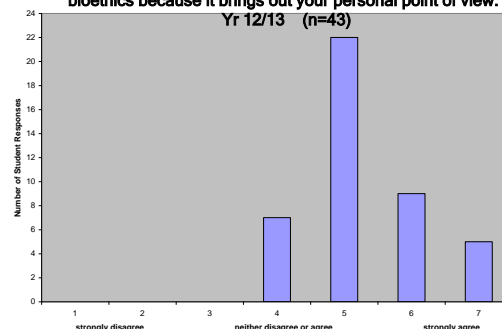


Figure A25.6 "You learn more about who you are in bioethics because it brings out your personal point of view." Yr 12/13 (n=43)



APPENDIX TWENTY-SIX: QUANTITATIVE ANALYSIS ASSOCIATED WITH AFFECTIVE–COGNITIVE RESPONSE TO BIOETHICS CONSTRUCT

The construct: Scale reliability

Hinton (2004) defines reliability as ‘the ability of a measuring instrument to measure the concept in a consistent manner’ (pp. 301–302). A measure is considered reliable when the frequency of errors attributable to that measure are low, permitting the measurement to be accurately repeatable (Nunnally, 1978). An accepted and prevalent measure of ‘internal consistency’ or ‘scale consistency’ is the Cronbach’s alpha (Hinton, 2004). A sophisticated gauge, the Cronbach’s alpha takes into account the number of items used in a scale and the level at which variance between the items is shared. The Cronbach’s alpha value will approach one when there is a large number of items in a scale and these items have a high level of shared variance. While Hinton (2004) contends that it is standard to only consider scales with a Cronbach’s alpha value of above 0.7 as reliable, Kline (1999) argues that when developing a new scale, especially in the field of behavioural science, a Cronbach’s alpha of over 0.6 is within acceptable limits of reliability. Notably, the Cronbach’s alpha value for the scale developed for this research is 0.892, which is above Hinton’s conventional .0.7 level set for reliability. Stating that a Cronbach’s alpha value of between 0.8 and 0.9 is very good, Nunnally (1978) refers to scales with a Cronbach’s alpha value of 0.9 and above as excellent, as they indicate strong reliance on the scales ability to measure the construct. The Cronbach’s alpha value for the final scale used within this research approaches 0.9.

While reliable scale development is important, reliability does not constitute validity. A scale may be highly reliable if it consistently reports accurate

results under repeated circumstances, but that does not mean that the results are a valid measure of the construct that is being tested. While reliability is a necessary condition of validity, it is not a sufficient measure on its own (Nunnally, 1978). For this reason, it was necessary to establish a deeper understanding of the data's validity.

Simply stated, a measurement instrument is considered valid if it performs the measurement it is supposed to (Nunnally, 1978). While the accuracy of a variety of measurement tools may be verified straightforwardly, the accurate assessment of less mathematically calculable evaluations necessitates an examination of validity. Nunnally (1978) details two pertinent types of measurement validity; content validity and construct validity. Often referred to as 'face validity', content validity functions to establish whether the measurement of a single variable accurately reports the actual measure it is intended to report (Bryman & Bell, 2011). The face validity of the research survey was assessed at a number of points throughout the research process. A draft survey was presented and discussed with my supervisors, and following its development the survey was tested on two independent academics and three 'potential' student respondents before being implemented with the participating student group. While content (face) validation is an important step, it is an insufficient measure of validity on its own (Nunnally, 1978) and should be supplemented with an assessment of construct validity; a measure of the ability of the selected measurement method to measure the concept accurately. Construct validity may be assessed through convergent and divergent validity, and factor analysis. However, before undertaking a complete factor analysis, it is advisable to assess the adequacy of the sample.

The Kaiser-Meyer-Olkin (KMO) test gives an indication of the level of common variance that the factors will be able to account for. A KMO value above 0.6 is regarded as indicating that a factor analysis is worth assessing (Hinton, 2004). The Bartlett's test of Sphericity, which checks degree of

relationship between each of the items in a scale to make sure that the items are correlated, may be applied to supplement the KMO test. If the Bartlett's test returns a statistically significant result ($p < 0.01$) then there are correlations worth examining (Hinton, 2004).

Table A26.1: KMO and Bartlett's Test

KMO Measure of Sampling Adequacy		.890
Bartlett's Test of Sphericity	Approx. Chi-Square	523.111
	df	45
	Sig.	.000

The concept behind factor loading is that the 14 items used to construct the survey could have been loading on one, two, three, up to 14 different ideas, although logically, no more than 14. Factor analysis helps determine whether the items in the scale are measuring one construct, or several (Bryman & Bell, 2011).

Scale development: Item assessment

From an initial 14 items, 10 were retained as factor analysis revealed that four of the questions were not good measures of the construct. The process of item elimination began through the assessment of the factor analysis of all 14 items.

The SPSS programme was used for the factor analysis, generating 'eigenvalues' a measure of the importance of that factor within the scale (Field, 2005), for each notable factor. Factors with eigenvalues of over one should be retained for analysis Kaiser (1960). However, simply reading the eigenvalues and discarding those below zero is not necessarily a sufficient way of determining how many factors are meaningful on its own. The use of a scree plot (Figure A26.1) that graphs each eigenvalue against the factor it pertains to is recommended (Field, 2005; Hinton, 2004). According to Hinton

(2004), the point of inflection or 'elbow' can be used as the cut-off point to determine which factors are important, and which are not; factors above the elbow are considered meaningful. For the now 10-item bioethics survey, there were two factors with an eigenvalue of greater than one. Upon consultation of the scree plot, however, it was revealed that only one of these factors indicated a sufficient level of item variance. This was contrary to expectations as I had designed the survey questions to survey intellectual, social, emotional and methodological factors. These results are presented below.

Table A26.2: Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.109	51.091	51.091	5.109	51.091	51.091
2	1.094	10.937	62.029	1.094	10.937	62.029
3	.718	7.182	69.211			
4	.605	6.047	75.258			
5	.560	5.601	80.859			
6	.495	4.954	85.813			
7	.457	4.565	90.378			
8	.390	3.896	94.275			
9	.318	3.181	97.456			
10	.254	2.544	100.000			

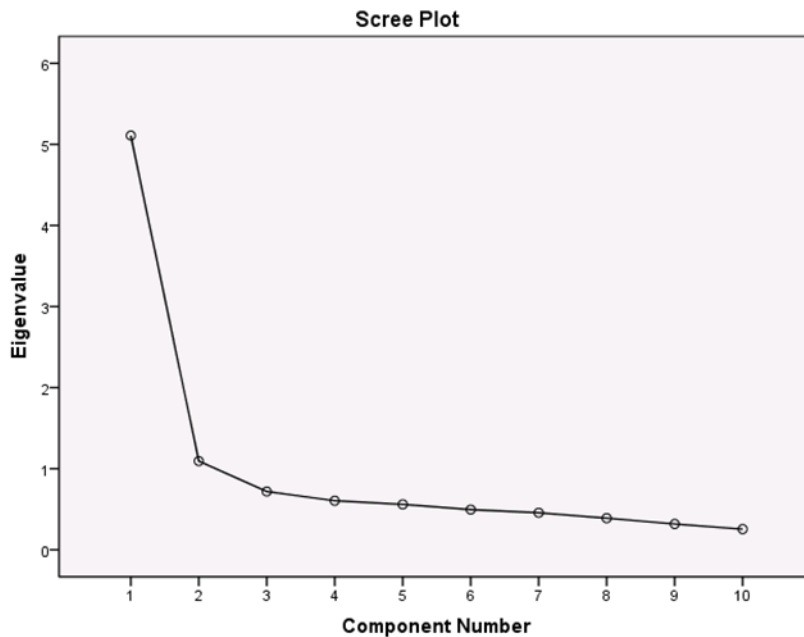


Figure A26.1: Scree plot of eigenvalue against the factor it pertains to

In addition to eigenvalues, factor analysis generates communality values for each item. Communality is a measure of the shared (common) variance across each item. Direct measurement between one item and another is not possible; rather, the communality value measures the shared variance and the aggregate variance within the whole construct. A low communality value for an item means that it does not share a lot of variance with other items. For example, a student puts four as a response to an item, then five for the next, then four, four, then four again—these responses have a shared variance. Another student may respond with a six, six, six, seven, and six. What is apparent is a proportion change in the variance between responses. That is, the response given is relatively high if the student is a high responder and relatively low if the student is a ‘middle of the road’ responder—that is, they are answering consistently in the middle of the Likert scale. The variance within these responses is highly shared. If, for example, a communality value of one is achieved, that would indicate that responses given to that item share exactly the same variance. So whenever somebody increases their response by one for that item, everyone increases their response by one, and they do

that for the other items. Thus, a communality value indicates how much of the variance in each item is shared and how much might be explained by error or random variance, that is, external and/or individual influences (Field, 2005). A communality value above 0.5 indicates that over half of the variance of that item is shared with the other items in the tested scale (Hinton, 2004).

Getting close to one is indicative that the responses given by participants are very similar to responses given for similar items. That indicates suitability for building a construct because the shared variance between items is quite high. This is what a researcher would desire (and expect) if items have been designed to measure the same things—that is, if the researcher has attempted to ask the same question three times in a different way it would be expected that the communality values (and therefore, the variance) would be high. In fact, a researcher would be concerned if it were not. For statistical validity, communality values of 0.5 are required (Field, 2005). Accordingly, this study adopted a communality cut-off of < 0.5 . The communality ratings from the factor analysis of the original 14-item scale are presented on the below. This table reveals that four items have communality values that are too low: 'I take more time forming my opinions', 'Interesting to begin with but novelty wore off', 'Teaching methods in bioethics differ from other subjects', 'bioethics is completely different to any other class'. While these items provide important feedback, statistically speaking, they are not measuring the same construct as the other items. What the construct is that the items are loading on to must be interpreted. Communality and component scores will assist with this.

Table A26.3: Communality ratings from the factor analysis following of the original 14-item scale. (Extraction method: principal component analysis)

	Initial	Extraction
I take more time forming my opinions	1.000	.329
I think more deeply	1.000	.645
Think about things from a different point of view	1.000	.547
Use new ways of thinking outside the classroom	1.000	.554
I argue better due to reason	1.000	.651
Thinking about what was discussed when I leave the class	1.000	.555
Makes you question yourself and your values	1.000	.619
Learn more about who you are	1.000	.698
Interesting to begin with but novelty wore off	1.000	.419
Can contribute my ideas freely	1.000	.507
Caused me to change the way I look at the world	1.000	.589
Caused me to think about my personal values	1.000	.603
Teaching methods in bioethics differ from other subjects	1.000	.292
Completely different to any other class	1.000	.290

The updated communality values of the final scale are shown below.

Table A26.4: Community ratings from the factor analysis following removal of four items with communality values < 0.5. (Extraction method: principal component analysis)

	Initial	Extraction
I think more deeply	1.000	.642
Think about things from a different point of view	1.000	.578
Use new ways of thinking outside the classroom	1.000	.566
I argue better due to reason	1.000	.675
Thinking about what was discussed when I leave the class	1.000	.557
Makes you question yourself and your values	1.000	.688
Learn more about who you are	1.000	.679
Can contribute my ideas freely	1.000	.563
Caused me to change the way I look at the world	1.000	.630
Caused me to think about my personal values	1.000	.625

The factor scores are presented below.

Table A26.5: Scores for 10 construct items

	Factor scores
I think more deeply	.720
Think about things from a different point of view	.680
Use new ways of thinking outside the classroom	.747
I argue better due to reason	.811
Thinking about what was discussed when I leave the class	.746
Makes you question yourself and your values	.624
Learn more about who you are	.722
Can contribute my ideas freely	.540
Caused me to change the way I look at the world	.780
Caused me to think about my personal values	.737

All factor scores were satisfactory and therefore no items required elimination at this step of the factor analysis.

From 7.4.2 Proposition testing

The correlation test results are presented below.

Table A26.6: Correlation test results for Year 11 and Year 12/13 students

		Correlations ^a			
		Year group	Age	Gender	REGR factor score 1 for analysis 1
Year group	Pearson Correlation	1	.671**	.350**	-.213
	Sig. (2-tailed)		.000	.005	.089
	N	65	64	64	65
Age	Pearson Correlation	.671**	1	.234	.012
	Sig. (2-tailed)	.000		.063	.925
	N	64	64	64	64
Gender	Pearson Correlation	.350**	.234	1	-.173
	Sig. (2-tailed)	.005	.063		.172
	N	64	64	64	64
REGR factor score 1 for analysis 1	Pearson Correlation	-.213	.012	-.173	1
	Sig. (2-tailed)	.089	.925	.172	
	N	65	64	64	65

** . Correlation is significant at the 0.01 level (2-tailed)

a. Is it 2011 = 2010

The Pearson Correlation Coefficient test undertaken was intended as a preliminary test to see if my theoretical proposition/hypothesis that all students have an intellectual response to bioethics might be justifiable. That is, the correlation test sought to determine if being a Year 11 or Year 12/13 was correlated with factor score.

Once a scale had been developed that passed validity and reliability testing, an independent samples t-test was used to determine whether the groups reported different levels of response to the bioethics education course. The t-test showed that the two case study groups are not significantly different; supporting the proposition that participating in a bioethics course enhances a

student's critical thinking skills regardless of a student's academic history. That is, the critical thinking skills of students from the learning support and transition classes were developed, as were the critical thinking skills of the students from the accelerate class.

The t-test is shown below, and indicates no significant difference within the mean and distribution of the construct between the two classes.

Table A26.7: T-test

Group Statistics ^a					
Year group		N	Mean	Std. Deviation	Std. Error Mean
REGR factor score 1 for analysis 1	Year 11	22	.2715882	.93804104	.19999102
	Year 12 and 13	43	-.1258693	.84596110	.12900786

Table A26.8: T-test

Independent Samples Test ^a										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
REG R factor score 1 for analysis 1	Equal variances assumed	.212	.647	1.728	63	.089	.39745750	.23007597	.06231263	.85722763
	Equal variances not assumed			1.670	38.757	.103	.39745750	.23799041	.08401987	.87893488

**APPENDIX TWENTY-SEVEN: COMBINED YEAR 11
YEAR 12/13 RESPONSES TO THE EOC QUESTION
'THE BIOETHICS COURSE IS ..., ... AND ...'**

Descriptor	Frequency
Interesting	41
Fun	22
Different	12
Awesome	9
Enjoyable	8
Engaging	5
Thought provoking	5
Exciting	5
Useful	4
Understanding	4
Cool	4
Challenging	4
Educational	3
Informative	3
New	3
Great	3
Worthwhile	2
Truthful	2
Inspiring	2
Fantastic	2
Learning	2
Unusual	2
Mind blowing, Mind thinking, Fulfilling, Involving, Well taught, Involving, Interactive, Confusing, Intriguing, Enlightening, Compelling Contemplative, Fascinating, Engrossing, Motivating, Amazing Helpful, Important, Mysterious, Unusual, Compassionate Philosophical, were all mentioned once	1
3 students adapted the sentence, inserting 'a different learning experience'; 'makes you think differently'; and 'learning new perspectives', respectively	

APPENDIX TWENTY-EIGHT: ENGAGEMENT AND PEDAGOGY: COMBINED YEAR 11 YEAR 12/13 RESULTS FOR EOC LIKERT SCALE ITEMS

Table A28.1: Combined Year 11 Year 12/13 responses to EOC Likert scale items with respect to engagement and the student-centred pedagogical framework

Note: Bold indicates mode. Figures to 2 sf.

Likert scale item	Strongly disagree	Moderately disagree	Disagree	Neither disagree or agree	Agree	Moderately agree	Strongly agree
'Bioethics is completely different to any other class I've been in'	0% 0/65	0% 0/65	2% 1/65	3% 2/65	22% 14/65	12% 8/65	62% 40/65
'Bioethics is not just sitting there doing bookwork, you get involved in it'	0% 0/65	0% 0/65	0% 0/65	3% 2/65	26% 17/65	12% 8/65	58% 38/65
The teaching methods used in bioethics differ from those used in my other school subjects	0% 0/65	0% 0/65	2% 1/65	15% 10/65	25% 16/65	18% 12/65	40% 26/65
'I never learn or discuss anything like the problem-solving scenarios we do in bioethics in any of my other classes'	0% 0/65	3% 2/65	6% 4/65	12% 8/65	26% 17/65	29% 19/65	23% 15/65
The Bioethics class is a good way of avoiding schoolwork. You can just go along and blob out	23% 15/65	28% 18/65	25% 16/65	8% 5/65	9% 6/65	2% 1/65	6% 4/65
'I'm still thinking about what we have discussed when I leave the bioethics class; it's still mulling around in my brain'	0% 0/65	0% 0/65	3% 2/65	12% 8/65	22% 14/65	28% 18/65	35% 23/65
Bioethics is no more interesting than any other subject	46% 30/65	18% 12/65	18% 12/65	17% 11/65	0% 0/65	0% 0/65	0% 0/65
I would not recommend participating in the bioethics course next year	47% 20/65	26% 11/65	23% 10/65	2% 1/65	0% 0/65	0% 0/65	2% 1/65

**Table A28.2: Annotations recorded beneath the EOC Likert scale item
*The bioethics class is a good way of avoiding schoolwork. You can just
go along and blob out***

Annotation	Rating for item	Case study group	Gender
Bioethics should be a class. People actually talk about it and really think hard about the things we learn because its 1. REAL and 2. something people should know and learn about	Strongly disagree	12/13	F
It makes you think but you can blob out at the same time	Strongly disagree	12/13	M
Sort of but I am also learning	Agree	12/13	M
You still learn a lot and you do work, just in another type of way	Strongly disagree	11	F
TOO MUCH THINKING! If you can blob out you're not thinking hard enough!	Strongly disagree	11	M
In the bioethics course there is always something to do and its always really compelling and interesting	Strongly disagree	11	F
It is true that we do not do any bookwork, but we think more in this class than in any other class	Strongly disagree	11	F
It gets you thinking more. Would be a great start of the day class	Moderately disagree	11	F
It's up to you. You do whatever you feel like; contribute or don't contribute	Neutral	11	M
I think bioethics is a course which strongly rewards keen participation. The more you put in, the more you get out	Neutral	11	M

APPENDIX TWENTY-NINE: COMBINED YEAR 11 YEAR 12/13 RESPONSES TO TEACHING METHODS

Table A29.1: Combined Year 11 and Year 12/13 responses to EOC survey question *Your teacher used a variety of teaching methods and resources throughout the bioethics course. Please rank each method according to how it engaged your attention*

Teaching method	Very engaging	Engaging	Indifferent	Boring	Very boring
You Tube and film clips	54% 34/63	37% 23/63	6% 4/63	3% 2/63	0% 0/63
Whole class discussions	44% 28/63	44% 28/63	8% 5/63	3% 2/63	0% 0/63
Teacher telling stories	25% 16/63	62% 39/63	13% 8/63	0% 0/63	0% 0/63
Hypotheticals	38% 24/63	40% 25/63	19% 12/63	2% 1/63	2% 1/63
Group discussions	27% 17/63	46% 29/63	21% 13/63	2% 1/63	5% 3/63
Teacher reading stories	16% 10/63	49% 31/63	30% 19/63	5% 3/63	0% 0/63
Role plays and dialogues	24% 15/63	37% 23/63	30% 19/63	6% 4/63	3% 2/63
Songs an lyrics	13% 8/63	29% 18/63	46% 29/63	10% 6/63	3% 2/63
Student reading stories silently	2% 1/63	13% 8/63	30% 19/63	40% 25/63	16% 10/63

Note: 63 of the 65 students who completed the written survey answered this question.

WRITTEN RESPONSES TO THE QUESTION THAT ACCOMPANIED THE RANKING OF LISTED TEACHING METHODS

Year 11 written responses to the question What was it about the methods that you found engaging or highly engaging that work for you?

'I like to hear other people's views on different subjects and how they vary to my views. Role plays give a different perspective—especially if we play someone who believes the opposite to our personal views. I believe that I found most of this engaging because I really enjoy the subject. If I didn't, I know my answers would be different.'

'They were engaging because I always found myself wanting to learn more and I would go home and research about it.'

'They made it more interesting and easy to understand.'

'I found that speaking with the whole class, you really got a variety of points of view and it made you think more deeply of your values and opinions. And doing physical things, like role playing etc. made the scenarios a lot more realistic and helped you understand more and to develop an opinion.'

'The ones that got you up were better because you could get into it.'

'They made me feel; like we were in the situation, I guess.'

'Most of the methods that I found engaging were because it involved me as a student and I had to think to participate.'

'They were fun!!' (x2)

'I like finding out about new things and listening to stories about people and the issue that they were involved in.'

'They were visual or I was able to get involved.'

'There aren't people who don't listen because they are all listening.'

'They are so different to learning methods from other classes and they are entertaining and thought provoking.'

'I preferred thinking about information as the teacher was talking about it instead of having to quickly copy stuff off the board without having time to process information.'

'Because it made it more interesting with real-life things in front of you etc., e.g. video clips of scarification etc.'

'Discussion helps me think and also other activities that require other students' opinions.'

'I could listen to other people's opinions while stating my own.'

'They weren't boring and they were interesting especially listening to each other's points and ideas. Having two sides for and against.'

'Most of them allowed different opinions to be expressed or new situations to be learnt about from different views.'

Year 12/13 written responses to the question What was it about the methods that you found engaging or highly engaging that work for you?

'Different and interesting stories/topics.'

'They were interesting.'

'More visual was engaging. Stories were interesting and when true were more interesting.'

'Pictures. Visual learning', 'Visual stimulation', 'Visual stuff'.

'I think if you can see and hear it, it is much more interesting.'

'They were good, easy to understand; and it wasn't boring.'

'Stories and such make you think. You Tube videos are always good too.'

'The stories told and the hypotheticals are interesting and make you think about your personal values.'

'Because you can hear what your peers say and what your teacher knows.'

'Teacher stories are very engaging and interesting because someone that you know has been involved first hand in the topics that you are discussing.'

'You Tube and film clips because I can understand more and some of them are very cool.'

'You Tube clips and stories that are read because they are interesting and things I haven't seen/heard before.'

'You Tube clips, hypotheticals, stories, role plays and dialogues connect with the way I learn.'

'The whole class discussion because I found it interesting to hear people's point of view.'

'I found the whole class discussions most engaging because you don't just get the biased (slightly) view of the one teacher.'

'The different points of view.'

'It was opinion based and everyone could get involved.'

'You are hearing what your teacher says and you're learning more about ethics.'

'The fact that you didn't have to say anything or get pressured into saying something.'

APPENDIX THIRTY: WHETHER AND HOW PARTICIPANTS WOULD LIKE TO SEE BIOETHICS TAUGHT IN SCHOOLS

Table A30.1: Distribution of responses to the statement: *Bioethics should be taught at school ...*

not at all	0
as a unit within another subject (e.g., Science)	3 as well as
as an optional course for senior students (Years 11, 12 and 13)	27
as an optional course for students from Year 9 through to Year 13	17
as a compulsory course for senior students (Years 11, 12 and 13)	7
as a compulsory course for students from Year 9 through to Year 13	9

Note: Three non-responses

Other: 'As a compulsory course for students in Year 9 and 10 and then as an optional course from Years 11–13.' x2

Annotations: 'I believe Year 9s and 10s wouldn't be mature enough' (Year 11 respondent who ticked 'optional course for senior students').

Similarly, 'Because I think Year 9 and 10 may not have the maturity levels to fully understand the course.' (Year 11 respondent who ticked 'optional course for senior students'.)

'People are just so narrow minded these days. It really needs to change. We should have multiple points of view thrown at us so we can form our own decisions about everything.' (Year 12/13 respondent who ticked 'compulsory course for students from Year 9 through to Year 13').

APPENDIX THIRTY-ONE: THE NCEA UNIT STANDARD WRITTEN FOR STUDENTS IN THE 2010 BIOETHICS TRIAL

Attractively presented in an illustrated booklet, the content of the **Level 3, 4-Credit Unit Standard 14243: Explore contemporary ethical dilemmas that influence health and wellbeing**, read:

Element 1: Demonstrate an understanding of ethical dilemmas which impact on health and well-being.

PC 1.1 Explanation provides a meaning of the term ethical dilemma.

Task 1: Define the term 'Ethical Dilemma'

PC 1.2 Current ethical dilemmas are identified which impact on health and well-being.

Range, minimum of three examples which may include—cloning, euthanasia, surrogacy, life support issues, plastic surgery, medical priorities, organ transplants, adoption, abortion, use of pesticides.

Task 2: Complete the following table:

Ethical dilemma which impacts on health and well-being of an individual	Brief explanation of the nature of the dilemma
1.	
2.	
3.	

Element 2: Explore one ethical dilemma which impacts on health and well-being.

PC 2.1 Exploration identifies and describes issues involved in the ethical dilemma.

PC 2.2 Exploration involves collection of data of factual detail to support the perspectives of the ethical dilemma.

PC 2.3 Contemporary developments and/or recent events relating to the ethical dilemma are explored.

PC 2.4 A case to support a particular point of view for the ethical dilemma is prepared and presented.

Range: written and/or oral.

Task 3: Choose **ONE** of the ethical dilemmas we have covered in the Bioethics Programme and complete the following tasks:

- Explain the issues/points of view involved in this dilemma.
- Collect data/factual information to support the different points of view you present. Summarise your findings in your presentation. Copies of this data/information must be attached to the back of your assessment sheet.
- Research recent developments or events which have a connection to your dilemma of focus. What new information, thinking or research has been presented about this issue?
- Take one of the points of view relating to your dilemma.

APPENDIX THIRTY-TWO: COLLABORATING TEACHERS' PERCEPTIONS OF FORMAL STANDARDISED ASSESSMENT IN RELATION TO THE TRIALLED BIOETHICS CURRICULUM

While Helen wrote and made available a four-credit, Level Three NCEA Unit Standard for students to complete if they wished (see Appendix Thirty-one), there was no compulsory formal written assessment of learning undertaken in the case studies. While not a specific question during the semi-structured KSI interviews, the issue of credits towards the state NCEA qualification featured during conversation with a number of students (including Pat as described in section 7.5.3.1). The mention of NCEA credits by students was often in conjunction with discussion of the narrative- and activity-based teaching and learning within bioethics, as the following excerpt from Dougal illustrates:

The teaching and the context are different in [bioethics]. Like it's got limited worth credits wise, but compared to my other teachers who sometimes just give out a maths book and say read pages 360 to 370, it's a lot different. From the teaching side it is really good. Like the way Miss describes scenarios for us and content and engagement are a lot better than in other subjects. Yeah, there is a lot more content in the one day a week in the bioethics course, than there is in most of my other courses and I do them four times a week.
(Dougal, Year 12/13, 100623–03)

However, I did specifically discuss the issue of formal assessment of learning with both collaborating teachers. Both teachers expressed their opinion that compulsory written assessment may be detrimental to the outcomes of the course. Helen observed the freedom she perceived the absence of ongoing formal assessment within the bioethics trial gave her as a teacher:

What it does for a teacher, is it gives you permission to let the students go—and the freedom without having to say ‘Right we have got to get this done by 2:20, and you have got to have two pages of notes on it’. (Helen, 101118)

Like Helen, Nick observed that the absence of formal assessment altered the pace of the class, and facilitated greater freedom to fully explore the concepts covered.

I think it is partially because there is no formal assessment that bioethics is so unique. There was no focus on ‘this is the task you need to complete; this is how you do it; do it’. It was all about the learning and I wasn’t driven by any sense of pace because this assessment had to be done, so it was about actually, ‘do students understand this point?’, ‘this topic?’, ‘what else can we look at?’, ‘how can we make this wider, have a more ‘global’ look at it?’ (Nick, 101118)

As previously described (in section 7.5.3.4), students’ perception of ‘openness’ in the bioethics class was partially due to acknowledging the absence of formal assessment. Nick went on to explain:

Students talked to me about it outside of the class, and they’d do a thing where they said, ‘Oh, I wish there was credits attached to it’, but then they would say ‘Oh, but then I suppose it wouldn’t be like it is’. So they understood that because there weren’t those assessment pressures it was more about learning and solely about learning, and they valued that. They valued their time there and knew the value of coming across each of the topics and the value of having this information. (Nick, 101118)

Helen enunciated her perception that the mere existence of assessment would deter a number of the transition students from participating in the class, due to their perceived student identities with respect to evaluation.

I think if you did formal testing, it wouldn't be fun and they would stop coming, some of them. I know they would. Just because they are the sort of people that they are and they have bad experiences of tests and assessments, and the minute you introduce those kinds of words to them, they turn the switch off; they're gone. [At the moment, it is] 'I am actually okay in this class, because it's not got tests, and it's alright'. (Helen, 101118)

Given the potentially threatening aspect of assessment for some students and the observed positive affective and cognitive outcomes for participating students, Helen actually wondered if independent assessment of bioethics was even necessary.

I guess it depends whether you want to see it as a curriculum area that needs to be assessed, or whether you see it as an area that will add to all the other curriculum areas and which doesn't need to be independently assessed because it will be assessed out there when they use those skills. (Helen, 101118)

Nick expressed concern that formal assessment would alter the content and focus of the bioethics lessons.

It's not the sort of thing that you would necessarily want to nail down in assessment form, I don't think. You could get students to write an essay about any topic we have done, but I'd be worried about that. A lot of time would be directed at 'Right, this is how I want you to set up your essay. In your introduction I want you to structure your paragraphs like this; and in your conclusion I want you to put this', rather than 'what are you thinking?' 'How do you feel about this?' 'How should we approach this?' So it is a catch-22 when you say 'well how do you know that they learn? Really you should do an exam', and by doing an exam suddenly they have learnt how to do the exam rather than learnt these wonderful thought processes; these different methods of thinking. (Nick, 101118)

Both case study teachers acknowledged the tension between the need to show that students were learning and the effects that assessment may have on student engagement, lesson focus and, therefore, student learning.

APPENDIX THIRTY-THREE: COLLABORATING TEACHERS' PERCEPTIONS OF THEIR PERSONAL AND PROFESSIONAL LEARNING

Both collaborating teachers reported a personal and professional response to participation in the stand-alone bioethics trial. For example, it was not only the students who were prompted to explore their values through the bioethics course. When I enquired of Nick whether anything he had taught in the trial had challenged him personally he responded:

It has, annoyingly it has, actually. Especially in terms of the treatment of animals. So I think in terms of animals, should I really eat meat? No—I don't think I should; I don't think anyone should really eat meat. You-now, the idea of suffering, so I am weaning myself off meat. Yeah so that's one thing that has challenged me. And organ donorship—see it's a different challenge. [Bioethics] challenged me to put some goalposts in the ground about some of these issues, like how do I feel about organ donation from an anencephalic child and it set me off reading different things, like Peter Singer. (Nick, 101118)

At the end of the year-long project, Helen described how she had personally gained new knowledge through the course both through books and interaction with staff from other departments at Koru College:

Personally, I found things like the stem cell stuff where I had to do a lot of biology stuff really interesting—Where I had to look and find out what it was all about, and I spent hours reading things; and I went to the biology teacher and she gave me some stuff, and that was pretty interesting.

For professional and personal reasons, both Nick (see section 7.6.1) and Helen were motivated to read new material through their participation in the stand-alone bioethics trial.

I've read more books this year than I have read for years—I've a stack of philosophy books at home now. And the thing is with bioethics it's not a static thing—there is new stuff all the time; there's different things and case studies, and stuff changes, so it's not static topic material, so there will be a challenge there always. (Helen, 101118–02)

How to quantify what specific results she had gained both professionally and personally from participating in the stand-alone trial was difficult for Helen:

If I looked at the matter of where I was when I started to where I am now, I don't know how you would assess that, but I know that lots of stuff has happened and I know that I know a lot more things. And I know that some of my views on things have changed. And that's got to be the same for some of the students. (Helen, 101118–02)

When I asked Nick what specific results he had attained as a consequence of participating in the stand-alone bioethics trial, he described gaining knowledge in both a personal and professional capacity. Included in his response was the enjoyment and satisfaction he experienced from observing the students engagement and learning:

As a teacher, I got a lot of satisfaction out of it—satisfaction out of the enjoyment and the engagement and the fun that was happening, and the learning that took place and seeing the students so impassioned by it ... And let the students talk—I think that is the main thing I have learnt; just let the students talk. Don't cut off, 'Alright, we're moving on. No. We're moving on'. Let them have their say, because that is where a lot of the offshoots, those beautiful little stems, came from; that just letting students talk. (Nick, 101118)

Professionally, Nick reported that participation in the bioethics course altered his teaching practice as an English teacher:

You know some students would say—like Jay Hudson would say ‘I’ve thought more today [in bioethics] than I have all week combined’ and that was a common thread that ran through it often. ‘In other classes, we just sit there and we do our work, and here we actually think.’ And as an English teacher that made me really think about what I was doing. I think I started using bioethics as a hook perhaps, for a more and more bioethical approach in terms of how I taught in other subjects. Like ‘Imagine you are ...’; and use that ‘What is morally wrong here?’ Like with the Truman Show and teaching about the idea of freedom and rights; and you know is he in a form of prison? What is he? And bringing in these bioethical things that really bolster up an English course and make it more relevant.

So may I just check with you, are you suggesting that you made changes both to the content of perhaps an English course, but also to the way you delivered it—so both method and content—as a result of things that you tried in the bioethics class?

Yeah, definitely, definitely. Seeing how much more engaged students were with moral issues, and being taught about moral issues, I transferred that into English. (Nick, 101118)

Helen also described a transfer of bioethics content to other subject areas. Acknowledging that student-focused, individual programme teaching methods used in transition aligned more closely with the teaching method used in the trailed bioethics curriculum, this transfer pertained more to subject matter and student confidence in learning, than to pedagogy. During her final interview, Helen observed:

I actually think there has been a symbiotic relationship really, in some ways. It certainly has added to the confidence levels of people

like David, for sure. I think bioethics and transition have neatly gone hand-in-hand with each other actually. Like we would be able to talk about utilitarianism when we were talking about other topics with a student and it was just like it was an everyday word. The student wasn't sitting there saying 'what the heck is she talking about?!' (Helen, 101118)

For Helen, the cross-curricular nature of the bioethics course was a feature and facilitated professional development for, and relationships with, Koru College staff:

And I guess that is one of the other things I have liked about bioethics as well, is that other people can come in and that's just fine. And we have lots of visitors in and out of the bioethics class ... The biology teacher certainly knows what it's all about—she has brought her class up twice. JR from Sports Performance has been up with her class and they did the bioethics standard [I wrote]. (Helen, 101118)

In addition to classes and teachers visiting and participating in the bioethics class, Helen described how she had used content from the bioethics course with her Year 10 enterprise and senior economics classes, and when taking relief lessons for other staff.

It's been very useful—it has given me a mountain of resource stuff! It's been really, really handy when I have had to do relief around the place. I had to go into somebody's maths class, and the relief work had gone missing—and so I said to them 'Put your pens away and we will do something different'. (Helen, 101118)

At which point, Helen adapted a lesson on utilitarianism and Hedonistic calculus. Helen continued:

And when the maths teacher came back the students said to her 'Oh, can we have her again? We liked that!'

And also I took PS's Social Studies class. He had to go somewhere and he asked me if I would do something from bioethics with his class and he said he would take the class back over half way through the period. Well, when he came back into the room, he sat down at the back and they didn't even know he was there. And we just carried on. Later he said to me 'Can you put that PowerPoint that you had on the staff drive for me? They keep talking to me about it, and I want to see the first part that I missed.' The students were Year 10s. So they had spoken to him about it. They didn't call it bioethics—they called it 'that thinking stuff'. (Helen, 101118)

Reflecting outcomes for participating students, collaborating teachers reported engagement with their personal values and academic (professional) learning as a result of their participation in the stand-alone bioethics trial. The content developed in the bioethics class was transferred to collaborating teachers' other subject areas and was shared with other staff at Koru College. When discussing the outcomes for the college at the end of the trial year, the principal observed with respect to the collaborating staff:

I know that I have one very experienced teacher who has by her own acknowledgement been reinvigorated and I think that is really important. So we keep her on the staff. She has found a new way to harness her passion and her enthusiasm and her teaching skills, as opposed to what she was doing before. And that's really, really important too, you know, what staff do.

And for Nick, it was a way for him to work with someone he wouldn't normally have, and to gain the skills of working together. So that kind of interaction you can't measure, because it doesn't happen that often between departments. So for the school and for them working with other classes, for me seeing them talk about it and work together—and to see the difference in Helen—has been really great. (Principal, 101123)