Improving Business and ICT Ethics Education – the Potential of Positive Psychology and Appreciative Inquiry

Candace Truly Grant

Centre for Computing and Social Responsibility
Faculty of Technology
De Montfort University
Leicester, United Kingdom

Submitted in partial fulfilment of the requirements for the
De Montfort University
Degree of Doctor of Philosophy
September 2016

Abstract

Unethical behaviour is affecting societal behaviour and impacting business success. Information and Communication Technology (ICT) is increasingly adopted across businesses and for personal use and insufficient attention is paid to the impact of unethical practices in the use of ICT on various stakeholders involved. ICT professionals are well positioned to provide guidance to ICT users and decision makers but they need help. While they have the knowledge and skills in ICT, they also need a sense of professional responsibility towards their stakeholders and a moral attitude to help them understand how unethical practices in ICT can affect others and the ability to make good decisions in the use of ICT. Ethics education has been shown to be effective for other professions and this research project builds and tests a model based on current good practices found to be effective in ethics education. More specifically, it adopts a Positive Psychology perspective, not previously used in ICT ethics education, looking at what is working well and examines the use of a Positive Psychology approach, namely Appreciative Inquiry (AI) which has been found elsewhere to be an effective method to motivate change.

This research project tests the impact that an Appreciative Inquiry included in a computer ethics class has on the development of moral attitude. The project had a quasi-experiment design with a large sample of over 400 participants (undergraduate Information Technology Management students) using both a control and treatment group to determine the effect of AI on the changes in moral sensitivity and moral judgment of the participants.

One well validated survey tool and one developed specifically for ICT, the Defining Issues Test 2 and the IMIS Survey, respectively, were used to test changes from the beginning to the end of each course. The study findings demonstrate that a well-developed ethics course, adopting good practices, produced significant changes in the moral attitudes of the participants. The adoption of AI in the treatment group produced significant changes in elements of the student's moral judgment validated by both the pre-and post-analysis and instructor observations. Thus taking a Positive Psychology approach to ICT ethics is a useful innovation to ethics education. The project has also demonstrated that AI may have significant potential for ethical education across professions and business at large.

Acknowledgements

I came to academe after decades working in industry, facilitating the use of Information and Communication Technology (ICT) in solving business problems. I had the pleasure of working with many firms who were highly respectful of the power of ICT and the rigours of following methods and processes to provide ICT solutions fit for purpose. I am appreciative of the ethical underpinnings they expected in our work.

My thanks to Ryerson University for the opportunity to share these learnings and dialogue with future ICT professionals to develop ideas on how to include ethical discussions on the use of ICT as part of the decision making process. I would also like to acknowledge the Doctors-2-Be community at Ryerson for a collegial environment that supported those of us late to doctoral research under the leadership of Dr. Norman Shaw.

My appreciation to the Centre for Computing and Social Responsibility (CCSR) and my supervisors Prof. Bernd Stahl, Dr. Catherine Flick and Prof. Simon Rogerson and Dr. Catherine Middleton at Ryerson University, for their patience and guidance in my transition from a business to a research focus, and the understanding that one develops new knowledge in the context of those who have gone before. CCSR provided a diverse and inquiring community of international students and a global community of supportive researchers at the ETHICOMP Conferences, for which I am grateful.

My thanks to the city of Leicester who provided, in an insightful community of diversity, many an enjoyable summer to explore the Midlands and English culture and my thanks to the many friends and family in the UK, Canada and the U.S.A. who never tired of their interest in this research project.

But above all, my gratitude to my lifetime partner, adventurer and collaborator, my husband Ken, who would always drop everything to help me see the forest for the trees.

Table of Contents

ABSTRACT .... **II**

ACKNOWLEDGEMENTS .... **III**

TABLE OF CONTENTS .... **IV**

TABLE OF TABLES .... **X**

TABLE OF FIGURES .... **XIII**

RELATED RESEARCH PAPERS .... **XIV**

CHAPTER 1 INTRODUCTION AND RESEARCH AIMS **1**

1.1 INTRODUCTION **1**

1.1.1 Importance of Business and Effect of Unethical Practices *1*

1.1.2 The Effect of Unethical Practices on Business Success *2*

1.1.3 Need to Increase Awareness *3*

1.1.4 The Influence of Education on Moral Attitude *4*

1.2 RESEARCH AIMS AND ASSOCIATED QUESTIONS **5**

1.2.1 The Purpose of the Research Project *5*

1.2.2 Answering the Research Question *6*

1.3 THE VALUE OF THE RESEARCH PROJECT **9**

1.4 SUMMARY **9**

CHAPTER 2 BUSINESS, INFORMATION AND COMMUNICATION TECHNOLOGY AND ETHICS **10**

2.1 INTRODUCTION **10**

2.2 BUSINESS, INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND ETHICS **11**

2.2.1 Business, its Importance to Society and the Need for Business Ethics *11*

2.2.2 ICT, its Importance to Business and the Need for ICT Ethics *16*

2.2.3 The Challenge *23*

2.3 RESPONSIBILITY FOR APPROPRIATE USE OF ICT **24**

2.3.1 ICT Decision Makers *24*

2.3.2 ICT Users *25*

2.3.3 ICT Professionals *26*

2.4 DEVELOPING A MORAL ATTITUDE **28**

2.4.1 Definition of Moral Attitude *33*

2.5 MORAL DEVELOPMENT AND THE PROFESSIONS **34**

2.6 SUMMARY **35**

CHAPTER 3 EDUCATION AND ETHICS **37**

3.1 INTRODUCTION **37**
3.2 PROFESSIONAL AND BUSINESS ETHICS EDUCATION **39**
3.2.1 Accreditation Bodies Views on Professional and Business Ethics *39*
3.2.2 Professional Ethics Education *43*
3.2.3 Practices in Teaching Business and ICT Ethics *46*
3.2.4 Summary of Key Points *50*
3.3 INFLUENCERS ON MORAL BEHAVIOUR **51**
3.3.1 Introduction *51*
3.3.2 Sensitivity, Judgment, Motivation, Character *52*
3.3.3 Empathy, Moral Affiliations and Principles *53*
3.3.4 Consequences, Ego Strength and Perceived Importance *55*
3.3.5 Approaches to Making Moral Judgments *57*
3.3.6 A Positive Perspective *60*
3.3.7 An Appreciative Inquiry *65*
3.3.8 Summary of Key Points *71*
3.4 INFLUENCERS ON MORAL THINKING **72**
3.4.1 Morals and Moral Decision Making *73*
3.4.2 Moral Reasoning and the Emotions *75*
3.4.3 Moral Reasoning and Cognition *77*
3.4.4 Computer Ethics *82*
3.4.5 Summary of Key Points *88*
3.5 INFLUENCERS ON MORAL LEARNING **89**
3.5.1 Discuss ICT Ethics in an ICT Context *90*
3.5.2 Focus on Virtue Rather Than Indoctrination *91*
3.5.3 Include an Affective and a Social Approach *91*
3.5.4 Focus on the Process rather than the Outcome *93*
3.5.5 Consider the Moral Starting Point *94*
3.5.6 Engage students with the material *94*
3.6 CHAPTER SUMMARY **96**
3.6.1 A Suggested Approach to ICT Ethics Education *98*
3.6.2 Justification of the Research Question *100*
CHAPTER 4 RESEARCH METHODOLOGY **102**
4.1 INTRODUCTION **102**

4.2 RESEARCH PHILOSOPHY **103**

4.3 RESEARCH STRATEGIES **106**

4.3.1 The Context - Educational Research *107*

4.3.2 The Research Project Environment *107*

4.3.3 Strategies Considered *109*

4.3.4 Choosing Research Methods and Tools *112*

4.4 RESEARCH DESIGN **121**

4.4.1 Introduction *121*

4.4.2 Research Questions and Construct *121*

4.4.3 Research Hypotheses *122*

4.4.4 Research Process *123*

4.4.5 Computer Ethics Course Design *128*

4.4.6 The Appreciative Inquiry *133*

4.4.7 Research Ethics *136*

4.5 RESEARCH IMPLEMENTATION **138**

4.5.1 The Sample *138*

4.5.2 Research Project Time Line *140*

4.5.3 Computer Ethics Course *141*

4.5.4 The Appreciative Inquiry Intervention *144*

4.5.5 Data Collection *146*

4.5.6 Data Analysis *149*

4.5.7 The Pilot – Evaluation of Approach and Measurement Methods *149*

4.5.8 The Impact of Appreciative Inquiry *159*

4.6 SUMMARY **166**

CHAPTER 5 FINDINGS **168**

5.1 INTRODUCTION **168**

5.2 COMPARING AI AND CONTROL GROUPS AT THE START OF THE COURSE **169**

5.2.1 Comparing the Demographics of the AI group to the Control group *169*

5.2.2 Comparing Previous Experience in Ethics *170*

5.2.3 Comparing Starting Moral Judgment for AI and Control *171*

5.2.4 Comparing Starting Moral Sensitivity for AI and Control *173*

5.3 COMPARING AI TO CONTROL GROUPS AT THE END OF THE COURSE **174**

5.3.1 Comparing Ending Moral Judgment for AI and Control *175*

5.3.2 *Comparing Ending Moral Sensitivity for AI and Control* ... 176

5.4 COMPARING DIFFERENCES IN CHANGES IN MORAL ATTITUDE IN AI TO CHANGES IN CONTROL ... **179**

5.4.1 *Change in Moral Attitude During Control Group* ... 179

5.4.2 *Change in Moral Attitude in AI Group* ... 181

5.4.3 *Comparing Difference in Changes in Moral Attitude Between the Control and AI Groups* 183

5.5 SIGNIFICANCE OF FINDINGS ... **191**

5.5.1 *Development of Moral Judgment* ... 191

5.5.2 *Development of Moral Sensitivity* ... 192

5.5.3 *Summary and Next Steps* ... 197

CHAPTER 6 DISCUSSION AND CONCLUSIONS ... **198**

6.1 INTRODUCTION ... **198**

6.2 CONSIDERING POSSIBLE INFLUENCES ON THE OUTCOMES ... **199**

6.2.1 *Difference in Starting Positions of the Two Groups* ... 199

6.2.2 *The Three Year Gap in Time Between the Two Groups* ... 200

6.2.3 *Possible Instructor/Researcher Influence on the Experimental Environment* ... 200

6.2.4 *Change in a Twelve-Week Ethics Course* ... 201

6.2.5 *Moving ICT Professionals to a PC Approach* ... 202

6.2.6 *Larger Percentage of Transitioning Participants in the AI Group* ... 204

6.2.7 *Suitability of the Measurement Tools* ... 205

6.2.8 *Participant Drop-off Rate* ... 205

6.3 QUALITATIVE OBSERVATIONS AND REFLECTIONS ... **206**

6.3.1 *Increased Participation Despite Larger Classes* ... 206

6.3.2 *Increased Awareness of Ethical Issues in the Use of Technology* ... 207

6.3.3 *Other Metrics* ... 207

6.3.4 *Student Engagement* ... 208

6.4 CONCLUSIONS ... **210**

6.4.1 *Impact of AI Intervention* ... 210

6.4.2 *Limitations of the Quantitative Tools Used* ... 211

6.4.3 *AI and Positive Psychology are Worthy of Further Investigation* ... 213

6.4.4 *The Potential Benefits of a Well-Structured Applied Ethics Course* ... 215

CHAPTER 7 RECOMMENDATIONS. CONTRIBUTIONS AND LIMITATIONS ... **217**

7.1 INTRODUCTION **217**

7.2 ANSWERING THE RESEARCH QUESTION **217**

7.2.1 The Ethical Issues That Arise in the Use of ICT 218

7.2.2 Approaches Used in the Teaching of Ethics 219

7.2.3 Educating Future ICT Professionals 219

7.2.4 The Impact of Appreciative Inquiry on Moral Attitude and Its Measurement 220

7.2.5 The Outcomes of Measures 220

7.2.6 Answering the Overall Research Question 221

7.3 RECOMMENDATIONS **222**

7.3.1 Approaches in Educating Future ICT Professionals 222

7.3.2 Using a Revised Course Design Model in Professional Ethics Education Generally 223

7.3.3 A Revised Course Design Model 223

7.4 THE CONTRIBUTIONS OF THIS RESEARCH **226**

7.5 LIMITATIONS AND FUTURE RESEARCH **226**

7.6 FINAL REFLECTIONS **228**

CHAPTER 8 REFERENCES **231**

APPENDICES **259**

APPENDIX A – COURSE SYLLABUS COMPUTER ETHICS COURSE **260**

APPENDIX B - ASSESSING LEARNING OUTCOMES **265**

APPENDIX C – GROUP PROJECT DESCRIPTION - CONTROL GROUP **266**

APPENDIX D- DEFINING ISSUES TEST 2 MEASUREMENT TOOL **267**

APPENDIX E – IMIS SURVEY ON COMPUTER ETHICS OPINIONS MEASUREMENT TOOL **276**

APPENDIX F – PILOT TEST OF MEASUREMENT TOOLS **281**

1. Pilot Group – Change in opinions on the use of computing resources N=16 282

2. Pilot Group - Change in opinions ICT work experience versus no ICT work experience – N=16 283

3. Pilot Group - Change in approaches to making moral judgment 285

APPENDIX G - FACTOR ANALYSIS MEASURING CHANGES IN MORAL SENSITIVITY- **286**

1. Factor Analysis: Rotated Component Matrix Moral Sensitivity 286

2. Factor Analysis: Total Variance Explained 288

3. Factor Analysis: Component Score Coefficient Matrix 289

4. Factor Analysis: KMO and Bartlett's Test 290

5. Factor Analysis: Scree Plot 291

APPENDIX H – COMPARING DIFFERENCES AT START BETWEEN AI AND CONTROL 292

1. *Comparing Difference in Demographics Between AI and Control....................................... 292*
2. *Comparing Moral Judgment for Start – AI and Control... 293*
3. *Comparing Moral Sensitivity for Start – AI and Control 294*

APPENDIX I – COMPARE DIFFERENCES AT END BETWEEN AI AND CONTROL 296

1. *Independent t-test: Comparing Moral Judgment for End for AI and Control 296*
2. *Independent t-test: Comparing Moral Sensitivity for End for AI and Control........................ 297*

APPENDIX J–MEASURING CHANGE IN MORAL ATTITUDE FOR CONTROL GROUP 299

1. *Paired t-test: Comparing Moral Judgment Start to End for Control Group........................... 299*
2. *Paired t-test: Compare Moral Sensitivity for Start and End for Control............................... 301*
3. *Wilcoxon Test For Changes in Type.. 303*
4. *Discussions in the Online Forum - Representative Responses 304*
5. *Descriptive Analysis of Survey Questions – Control Group 312*

APPENDIX K – MEASURING CHANGE IN MORAL ATTITUDE - APPRECIATIVE INQUIRY 316

1. *Paired t-test: Compare Moral Judgment for Start/End for AI.. 316*
2. *Paired t-test: Comparing Moral Sensitivity for Start and End for AI 318*
3. *Wilcoxon Results for changes in Type... 320*
4. *Descriptive Analysis of Survey Questions – AI Group 321*

APPENDIX L – COMPARING DIFFERENCE IN CHANGES IN MORAL ATTITUDE BETWEEN AI AND CONTROL 325

1. *Comparing Difference in Change in Moral Judgment Between AI and Control 325*
2. *Comparing Difference in Change in Moral Sensitivity Between AI and Control................... 326*
3. *Comparing Difference in Pathways for Change in Type 327*

APPENDIX M – DEMOGRAPHIC COMPARISON BETWEEN CONTROL AND AI..........................328

1. *Demographic Comparison of Start and End Demographics for Control and AI Groups....... 328*

APPENDIX N – DATA DICTIONARY...331

APPENDIX O – ETHICAL DECISION MAKING PROCESS..338

APPENDIX P – INFORMED CONSENT..340

APPENDIX Q – JOURNAL PUBLICATIONS IN BUSINESS AND ICT ETHICS 342

APPENDIX R – LEONARD ET AL. INFLUENCERS OF MORAL DEVELOPMENT 343

APPENDIX S – ETHICS APPROVAL 344

Table of Tables

Table 1 Examples of Unethical Business Practices and Their Consequences.. 15

Table 2 Increasing Interest in Ethical Issues in Business.. 16

Table 3 Examples of Benefits of ICT to Business 19

Table 4 Ethical Issues and Policy Vacuums in the Use of Smart Phones in Business 21

Table 5 What is a Professional? 31

Table 6 Some ICT Related Professional Associations... 32

Table 7 Ethics Criteria for Programs Accredited by CIPS 42

Table 8 Approaches to Ethics Education Used in Business and ICT Ethics Courses 46

Table 9 Approaches to Teaching Ethics to Novices versus Competents 50

Table 10 Rest's Four Component Model 53

Table 11 Example of Positive Psychology as Applied to ICT 63

Table 12 Positive versus Negative Ethics (Handelsman et al., 2002)... 64

Table 13 Ethical Decision Making Based on the Work of (Bynum, 2006a, p. 60; Olson, 2011, p. 16; Reynolds, 2012, p. 60; Tavani, 2011, p. 74)... 78

Table 14 Common Moral Philosophies – Advantages/Disadvantages (Tavani, 2011, p. 67)................... 80

Table 15 Suggested Structure for a Computer Ethics Class based on Findings 98

Table 16 Purpose, Characteristics and Disadvantages of Research Strategies (Cohen et al., 2011).... 110

Table 17 Methods of Data Collection 114

Table 18 Hypotheses: AI has Impact on Moral Attitude 123

Table 19 Design Structure of Computer Ethics Course.. 132

Table 20 Computer Ethics Course – Course Design Model 134

Table 21 Summary of Stages and Timeline for Research Study 142

Table 22 Demographics of Stage 2 Sample at Start N=36.. 152

Table 23 Demographics of Sample in Stage 2 that Completed All Start and End Measures N=14........ 153

Table 24 Percentage of Students Who Have Previously Taken an Ethics Module................................ 153

Table 25 Changes in Moral Sensitivity in the Pilot Ethics Course 155
Table 26 Summary of Changes in Moral Judgment for the Pilot Group 156
Table 27 Change in Type 157
Table 28 Hypotheses 160
Table 29 Coding Conventions for Moral Judgment Analysis 163
Table 30 KMO Analysis to Support Principal Component Analysis 164
Table 31 Summary of Ten Key Themes in Opinions on the Use of Computing Resources 165
Table 32 Coding Conventions for Moral Sensitivity Analysis 166
Table 33 Demographics of Control to AI at the Start of Each Course 169
Table 34 Percentage of Students Who Have Previously Taken an Ethics Module 170
Table 35 Comparison of Transitioning versus Consolidated for Control to AI at Start 172
Table 36 Comparing DIT2 Start AI and Control to Other Second Year University Students 173
Table 37 Comparing Theme 4 at the Start for Control and AI Groups 173
Table 38 Comparing Theme 7 at the Start for Control and AI Groups 174
Table 39 Comparing Transitioning versus Consolidated for Control to AI at End 175
Table 40 Comparing End DIT2 AI and Control to Other Second Year University Students 176
Table 41 Comparing Theme 7 at the End for Control and AI Groups 177
Table 42 Comparing Theme 4 at the End for Control and AI Groups 177
Table 43 Comparing Theme 6 at the End for Control and AI Groups 177
Table 44 Comparing Theme 7 at the End for Control and AI Groups 178
Table 45 Comparing Theme 9 at the End for Control and AI Groups 178
Table 46 Comparing Theme 3 Start to End for Control Group 180
Table 47 Comparing Theme 6 Start to End for Control Group 180
Table 48 Comparing N2 at the Start and End for the Control Group 180
Table 49 Comparing Theme 3 Start to End for AI Group 182
Table 50 Comparing Theme 6 Start to End for Control Group 182

Table 51 Changes in N2, PI, MN 182

Table 52 Comparing Change in Theme 2 for AI to Control Groups 185

Table 53 Comparing Change in Theme 3 for AI to Control Groups 185

Table 54 Comparing Change in Theme 3 for AI to Control Groups 186

Table 55 Comparing Change in DIT2 Variables for Control to AI 186

Table 56 Comparing Transitioning versus Consolidated – Control to AI.. 187

Table 57 Change in Type 188

Table 58 Comparing Pathways Control to AI Group 189

Table 59 Correlation of Consolidated/Transitioning to N2 204

Table 60 Professional Ethics Course – Course Design Model 225

Table of Figures

Figure 1 Professionalism – a Continuum 30

Figure 2 Ethical Behaviour of Information Systems Personnel (Leonard et al., 2004) 56

Figure 3 Description of DIT2 Types 58

Figure 4 Vickers' Appreciative Cycle (Vickers, 1968) 66

Figure 5 Appreciative Inquiry 4-D Cycle (Cooperrider et al., 2008) 68

Figure 6 Components of a Moral System (Tavani, 2011a, p. 39) 74

Figure 7 Two Parallel Processes in Decision Making (Domasio, 2003, p. 149) 76

Figure 8 Bloom's Taxonomy (revised) 95

Figure 9 Research Paradigm (Burrell & Morgan, 1979) 105

Figure 10 Construct Being Studied 122

Figure 11 Operationalizing the Research 124

Figure 12 Quasi-experimental Approach 125

Figure 13 Relationship between ICT Professionals and Their Stakeholders 131

Figure 14 The Appreciative Inquiry Intervention 135

Figure 15 Change in Type distribution from Start to End of Ethics Course 157

Figure 16 Quasi-experimental Approach 161

Figure 17 Scree Plot Showing Results of Factor Analysis 165

Figure 18 GMS200 Course Description 170

Figure 19 Change in Type distribution from Start to End for Control Group 181

Figure 20 Change in Type distribution from Start to End of AI 183

Figure 21 Relationship Between Professionals and Their Stakeholders 224

RELATED RESEARCH PAPERS

The following refereed research papers were produced during the course of this study:

1. Grant, C. (2008). Is it Possible to Engage Undergraduate IT Management Students in a Compulsory Course in Ethical Issues in IT? Conference Proceedings ISECON 2008 Phoeniz, AZ.
2. Grant, C. (2009). Can Positive Psychology Provide Some Direction in Encouraging Ethical Behaviour in the Use of ICT? Conference Proceedings European Conference on Information Management, Gotteburg, Sweden.
3. Grant, C. (2009). Successful Engagement of Undergraduate Information Technology Management Students in a Compulsory Course in Ethical Issues in IT in a Large Class Environment. *Information Systems Education Journal*, *Summer*.
4. Grant, C. (2010). Impact of Compulsory Ethics Education on the Moral Judgement of Information and Communication Technology Management Students. Conference Proceedings ETHICOMP 2010, Taragona, Spain.
5. Grant, C., & Chadwick, L. (2010). Influencing the Ethical Awareness of Young ICT Professionals. Conference Proceedings ETHICOMP 2010, Taragona, Spain.
6. Grant, K & Grant, C; "Experience in Teaching Ethics to Information and Communication Technology Students", Conference Proceedings InSITE 2010, Italy, June 2010
7. Grant, C., & Grant, K. (2014). Improving Moral Behaviour In Business – The Potential Of Positive Psychology. Conference Proceedings Human Capital International Conference, Chongquing, China.
8. Grant, C., & Grant, K. (2014). Improving The Ethical Awareness And Behaviour Of Business ICT Professionals -- An Educational Intervention. Conference Proceedings 5th World Business Ethics Forum, Macau.
9. Grant, C.T. & Grant, K.A. (2016) "Improving Moral Behaviour in the Business Use of ICT: The Potential of Positive Psychology", International Journal of Cyber Ethics in Education, Volume 4 • Issue 2 • July-December 2016

CHAPTER 1 INTRODUCTION AND RESEARCH AIMS

1.1 INTRODUCTION

1.1.1 Importance of Business and Effect of Unethical Practices

The 21st century has seen a much-increased focus on the importance of ethical behaviour in business. Major scandals such as Enron, WorldCom Global Crossing and Tyco, followed by the banking-driven recession of 2007-2009 and the emergence of corporate social responsibility have brought calls for stricter regulation. Government oversight bodies, such as the U.S. Security and Exchange Commission (SEC), have reacted by putting governance and reporting structures in place along with guidelines to employees on how to report improprieties (Gray, 2005). In parallel, there are calls for the incorporation of moral and ethical elements to business education (Authers, 2014; O'Connor, 2013).

Business success in today's global economy is heavily reliant on the use of Information and Communication and Technology (ICT) (Stahl, 2004). ICT provides quick and easy access to information, quick and easy access to an individual's knowledge and expertise and the ability to reduce costs and improve quality through the automation of business processes. ICT is experiencing a rapidly changing world, with Internet, digital media, and mobile technologies rapidly changing the way in which ICT is used in business. Marketing departments are using the Internet and social media tools such as Facebook to reach their current and prospective customers in new ways (Grant & Johnson, 2013). And in the bond markets in the financial sector, ICT enabled the running of sophisticated financial models, more complicated than an individual could perform, which led to the financial crisis in 2008 (Salmon, 2009) and illustrates the problem with which this research project is concerned.

1.1.2 The Effect of Unethical Practices on Business Success

As ICT provides increasing value, it also creates increased risk that can affect business success. Large amounts of valuable information stored in central data centres make them targets for hackers, both external and internal to the organization as was shown in 2013 when $45 million was stolen in just ten hours from several global banks (BBC News, 2013). The data centres, themselves, affect the natural environment with the high amount of energy they require to keep them cool. Businesses rely heavily on the Internet for B2B (business to business) and B2C (business to consumer) commerce which leaves them vulnerable if the Internet is sabotaged. ICT is used by many more types of users, both inside and outside of the organization. As ICT becomes more pervasive, more ethical and moral issues and dilemmas have emerged (Bynum, 2008; Johnson, 2001; Reynolds, 2007; Tavani, 2011).

Business doesn't often consider the ethical issues in the use of technology but when it does the focus is mainly on privacy, security, intellectual property and cybercrime. However, new areas such as the impact on the environment, change in the length of the workday, the lack of ethics in end user license agreements, increased impact of anonymity and lack of visibility can create as much harm.

As an example, surveillance technology, used to monitor an employee's performance, can not only lead to increased stress levels on the part of the employee but also a reduction in the human supervision capabilities of supervisors and managers (Levin, 2007). And with the automation of business processes, often ICT is used "because it is there" rather than its being the best solution for the problem (Adam, 2001)and it can leave the firm with an inability to do things manually if the ICT fails. When Amtrak's reservation system failed on US Thanksgiving, travellers experienced great delays as agents had no access to fare lists and schedules that would enable them to sell tickets or advise travellers on travel routes (Basse, 2008, p. 413).

The examples noted above, demonstrate that the ethical issues, if not addressed can have a negative effect not only on the organization but society at large. Smartphones, as a further example, have a positive benefit in the workplace by providing continuous connectivity to customers, business systems and information during the workday but can have negative impacts on personal relationships by infringing on personal time if used inappropriately beyond the workday (Middleton, 2007).

These ethical issues arising out of a firm's use of ICT are an aspect of the ethical issues facing businesses today and the two issues cannot be separated as business decisions made by business people drive ICT and ICT is used in all aspects of the business.

1.1.3 **Need to Increase Awareness**

Management education and the professions show concerns with these issues. University accreditation bodies such as the Association to Advance the Collegiate Schools of Business (AACSB), in a key report in 2004, (2004) stressed the importance of addressing these issues in management education in business schools. Even today, business schools continue to find themselves under public scrutiny (Plumlee, Barrett, & Pearson, 2014). Professional bodies, such as the Accounting profession, are providing ethical guidance both in releasing new and updated codes of ethics and requiring ethics training in the curriculum of the educational programs they certify, (IAESP, 2006). ICT professional bodies such as the British Computer Society require ethics training in the curriculum of the educational programs they certify (BCS, 2013; CIPS, 2010; CMC, 2013; PMI, 2007).

At one time the ICT professionals were the major group involved with information and communication technology. However with the proliferation of ICT, more groups use ICT in their work and personal lives and more non-ICT professionals make strategic decisions in the use of ICT in their workplace. It is important to raise awareness in the business community and ICT professionals, already recognized for their ICT knowledge and skills of ICT, should be encouraged and supported in assuming this professional responsibility or moral attitude towards their stakeholders. How can this be done effectively?

1.1.4 The Influence of Education on Moral Attitude

According to Kohlberg (1969), moral development begins in early childhood and continues into adulthood. Education can have an impact on the development of moral behaviour. Penn & Collins (1985) have shown that 37% of students moved to higher moral development as a results of ethics training. Much time and money has been invested in the development and delivery of these programs with varied results and it is important that the educational programs have a positive impact on the development of moral attitude. It is also important to consider the growth in class sizes at colleges and universities and that suggested solutions must scale to classes of 250 and more.

Dark and Winstead (2005) suggest that a cognitive approach in ethics education is not sufficient to foster the sense of empathy and professional responsibility towards stakeholders required by ICT professionals to affect change nor is it sufficient to foster a commitment to social action. Education should include an affective and a social side.

Improving ethics in business and in the use of ICT, involves changing behaviours and psychology, especially the new field of positive psychology, provides some insights. Positive Psychology (Seligman & Csikszentmihalyi, 2000) suggests it is worth identifying what is working well in a given context and then focus on replicating it, as opposed to a focus solely on solving the problem or curing the illness.

Taking a positive psychology approach with ICT professionals would focus on the characteristics of the ideal use of ICT and develop strategies on how to nurture that ideal use so that it continues to provide benefit to stakeholders. This would be particularly effective for those new to the profession by developing a sense of pride of profession and an empathy for the stakeholders to whom they are responsible.

Appreciative Inquiry, is a Positive Psychology intervention, which starts with describing the ideal. What would the ideal use of ICT for a specific stakeholder group look like and then what are the strategies to support achieving that ideal? Appreciative Inquiry has been used as an organizational change intervention to develop an ethical culture (van Vuuren & Crous, 2005). It has been used as an intervention in fostering ethical behaviour in an educational environment (Conklin, 2009; San Martin, 2008) but has not yet been investigated in ICT education.

Business provides value to society. The unethical practices in business, and in ICT which is integral to business success, can have an effect on that value continuing. ICT professionals play a key role in the use of ICT in business and it is important that future ICT professionals develop the necessary skills during their training to recognize and address these issues when confronted with them in the workplace. The purpose of the research project is to investigate the impact of Appreciative Inquiry on ethics development.

1.2 RESEARCH AIMS AND ASSOCIATED QUESTIONS

1.2.1 The Purpose of the Research Project

The purpose of this research project was to determine the impact of a Positive Psychology approach, namely Appreciative Inquiry, on the ethics development of future ICT professionals, by studying the change in their moral attitude. Moral attitude is the ability to determine how one's actions can affect others and the ability to make good decisions in the use of ICT.

The specific research question is:

How does an approach to teaching, namely an Appreciative Inquiry, affect the moral attitude of future Information and Communication Technology (ICT) professionals in the ethical issues that arise from the use of ICT in business?

The subsidiary Research Questions are:

1. What are the ethical issues that arise in the use of ICT in business?
2. What approaches exist that are used in the teaching of ethics?
3. How might these best be employed in educating future ICT professionals?
4. How can an Appreciative Inquiry educational intervention affect students' moral attitudes and how can such a change of attitude be measured?
5. What are the outcomes of the measures on a collective and individual basis?

1.2.2 **Answering the Research Question**

The first three sub questions are answered in a review of the current literature. The last three questions are answered by reporting on the results of a quasi-experiment. The thesis is structured in the following way to answer the research questions.

1.2.2.1 Chapter 2 – Business, Information and Communication Technology and Ethics

Question 1 is answered in chapter 2. Following a review of the literature, chapter 2 summarises the ethical issues that arise in the use of ICT that can pose a risk to business success. Following a description of the various groups involved in the use of ICT and why ICT professionals are a key group to be supported in addressing these issues, the chapter describes how other professions, such as dentistry, have used ethics education to develop a moral attitude in their professionals.

1.2.2.2 Chapter 3 – Education and Ethics

Questions 2 and 3 are answered in chapter 3. Chapter 3 describes the current approaches that are used in the teaching of business and professional ethics. It discusses why some should be considered in developing a computer ethics course; for example, techniques such as developing sensitivity to the consequences that one's decision or action can have on stakeholders and acknowledging the importance of emotions and empathy in developing moral motivation. It also identifies some approaches that are problematic such as focusing on a solely cognitive approach to the exclusion of an affective and social perspective.

Chapter 3 also considers the major influencers on moral behaviour, moral thinking and moral learning that could have an impact on developing moral attitude and are worthy of consideration in an ethics course. The relevance of Rest's Four Component model and his Schema Theory are discussed along with the importance of an ethical decision making process, understanding ethical frameworks and using good argumentation to defend one's position rather than necessarily looking for the right answer. Individuals have different approaches to making moral judgments i.e. pre-conventional, conventional and post-conventional, and it is important that an educational program addresses these different approaches. Chapter 3 provides a recommendation on the key elements to include in a computer ethics class.

The positive psychology literature suggests that a focus on wellness or benefits is an effective approach to changing behaviour and that a positive approach is often more effective in initiating change. The chapter describes the principles of Appreciative Inquiry and how this is worth considering as an educational intervention in a computer ethics class.

A computer ethics class was developed and delivered; an Appreciative Inquiry was added, measurement tools were selected and a quasi-experiment was conducted to answer questions 4 and 5. The next sections describe how this was done.

1.2.2.3 Chapter 4 – Research Methodology

Chapter 4 describes the research methodology. It presents the research strategy, design and implementation for the research project. It discusses the various research paradigms and strategies that were considered, and justifies the decision to take a positivist, quasi-experimental approach comparing the AI group to a Control group. The Control group received the computer ethics course; the AI group was taught the same computer ethics course that included an Appreciative Inquiry.

The chapter describes the various research designs considered, and justifies the decision to use the Institute of Management of Information Systems (IMIS) Survey to measure changes in moral sensitivity and the Defining Issues Test 2 (DIT2) to measure changes in moral judgment, the two components in moral attitude identified in chapter 3.

Chapter 4 also describes the design and delivery of the computer ethics course and the recognition that measurement tools were needed to demonstrate whether a change in moral attitude had taken place. It also describes the design of the Appreciative Inquiry delivered to each of the Control and the AI groups and the Appreciative Inquiry intervention that was developed based on the findings in chapter 3.

The research implementation describes how the two assessment tools were piloted in Fall 2009 to assess their effectiveness and identify refinements to the process before administration to a larger group. Both measurement tools were administered at the beginning and end of each computer ethics course to gather data on the changes in moral attitude. Factor analysis and paired t-tests were used to assess the differences in change in moral attitude between the Control group and the AI group. The results of the pilot are reported here.

1.2.2.4 Chapter 5 – Findings

This chapter reports the findings of the quasi-experiment by first reporting on the differences in the starting positions of the AI group compared to the Control group and then comparing the differences in their ending positions. The difference in demographics, opinions on the use of computing resources (moral sensitivity) and approaches to making moral judgements are reported in the start-of-course comparisons and the moral sensitivity and moral judgements measures are reported in the end-of-course comparisons.

The AI group at the end were more supportive of a number of key themes such as authorization, surveillance, ethics programs, use of another's computing resources and the importance of testing. Although both groups showed an increase in their overall approach to making moral judgments, the Post Conventional approach increased more in the Control group and the Personal Interest decreased more in the AI group. The chapter concludes with a discussion of the significance of the Findings.

1.2.2.5 Chapter 6 – Discussion

It was anticipated that each group would not only see a significant increase in their overall approach to making moral judgments (N2) but also a significant increase in their Post Conventional approach and a significant decrease in their Personal Interest approach. It was also anticipated that there would be a significant change in the opinions of most of the themes. The qualitative observations made during the experiment appeared to demonstrate a greater change in behaviour than were demonstrated by the measurement tools. This chapter reports some qualitative observations and reflections and considers several areas that may have had an impact on the quantitative findings.

1.2.2.6 Chapter 7 – Conclusion and Summary

This chapter demonstrates that the research questions have been answered and the research aims achieved. It includes the recommendations arising out the research project, the contributions the research has made, the limitations of the research and suggestions on future research that could be conducted. It concludes with the researcher's personal reflections on the research project.

1.3 THE VALUE OF THE RESEARCH PROJECT

The research project demonstrated that a Positive Psychology approach, namely Appreciative Inquiry, had a significant impact on both the moral attitude as well as the engagement of the participants. The Appreciative Inquiry intervention and the Course Design Model developed should be of use to those developing other professional and business education.

1.4 SUMMARY

Chapter 1 emphasizes how important business is to society, the value it provides and how this is at risk with increased unethical practices. Business is increasingly dependent on ICT and this research project is concerned with the increasing risk arising from the unethical use of ICT. Educational programs can help ICT professionals to identify and address the ethical issues but they need to be effective. A positive psychology approach can help to develop a sense of empathy and professional responsibility towards the stakeholder impacted by unethical practices and Appreciative Inquiry can be an effective intervention. The next chapter investigates the ethical issues that arise in the use of ICT in business and how Moral Philosophy, namely Computer Ethics, can help.

CHAPTER 2 BUSINESS, INFORMATION AND COMMUNICATION TECHNOLOGY AND ETHICS

2.1 INTRODUCTION

The purpose of the research project is to determine how an approach to teaching has an impact on the moral attitude of future information and communication technology (ICT) professionals in the use of ICT in business. This chapter justifies the importance of the research question and answers the first research sub-question: *"what are the ethical issues that arise in the use of ICT in business"*?

The chapter begins, in section 2.2.1, with a description of the term "business" in the context of this research project followed by a brief reminder of those benefits that business provides to society. Without a focus on what is going well or the overall purpose, there is the risk of "fixing what isn't broken" (Giacalone, Jurkiewica, & Dunn, 2005). The section then discusses the impact of unethical business practices on the various stakeholders involved and the need for business ethics education to raise awareness on these issues.

ICT is critical to business success and section 2.2.2 defines ICT in the context of the research project and then gives a brief reminder of those benefits that ICT provides to the various stakeholders in business. A discussion follows on the unethical practices in the use of ICT that can further erode the value that business provides to society and raises concerns on how these issues can be addressed.

As discussed in section 2.3, the numbers of people responsible for the appropriate use of ICT is increasing, that is those developing, using and making decisions on the use of ICT in the business environment as well as the numbers of products and services that include an ICT component. Coupled with the speed and reach of the Internet, this increases the harm and damage that unethical practices can cause and the urgency to address. The ICT professional is key to addressing the problem but they need the motivation to develop a moral attitude to assist other ICT stakeholders such as users and decision makers in the use of ICT. Section 2.4 defines moral attitude in the context of the research project and its importance to ICT professionals. Section 2.5 provides information on how other professions have used education to develop professional responsibility in their profession. The chapter concludes with some insights from their professional programs.

2.2 BUSINESS, INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND ETHICS

2.2.1 Business, its Importance to Society and the Need for Business Ethics

In this research project, the term "business" covers a broad perspective that includes commercial organizations, both public and private; not-for-profits, charities and government organizations; in essence any organization that takes part in the economic activity of society. It includes various ownership models from owner proprietors to partnerships and corporations (De George, 1982).

It is important to first be clear on the value that business provides to its many stakeholders in society to reinforce why it is important to ensure business success. This research project uses the term "stakeholder" to refer to those who can affect or can be affected by the decisions of an individual, group or business.

For example, the stakeholders of a business are those who can affect or are affected by the operations of the business. This concept, Stakeholder Theory, was first proposed by Freeman and describes how management can satisfy the interests of many stakeholders in business, such as customers, suppliers, employees, competitors and those who live in the community beyond just the interests of shareholders. A focus on stakeholders is an effective way to keep an eye on ethical issues, without necessarily having "the ethics discussion". Animals and special interest groups such as Green Peace, if the business affects the natural environment, are also examples of stakeholders (Freeman, Rusconi, Signori, & Strudler, 2012). Groups, such as the ICT profession, have stakeholders that are affected by the decisions and actions of ICT professionals. The relationship with stakeholders and ICT professionals will be discussed in more detail later in this report.

Business provides value to society. It satisfies the needs for goods and services that can range from providing food to life-saving drugs to transportation and policing services to entertainment. Business provides jobs and compensation for those who work directly for their organizations and those who work across their supply chain. A business pays taxes which support the provision of community services such as schools and hospitals. It contributes to support pension plans and health benefits. It helps to develop a sense of community and a sense of contribution for those working in the organizations (David, 2011). However, not everyone shares this rosy view of business and its contributions to society, as some argue that it is capitalism, and by its very nature contributes to some of the ethical practices in society that marginalize those unable to participate in the system (De George, 1982).

Unethical practices in business can put many stakeholders at risk. Jurisdictions have different laws that govern some behaviour towards stakeholders. For example employees in Ontario are protected by the Employment Standards Act and the Occupational Health and Safety Act and customers by the Consumer Protection Act (Government of Ontario, 2014). The Canadian community and the natural environment are protected from the shipment of unsafe materials by the Railway Safety Act (RSC 1985, c 32 (4th Supp)," 2014). Legal action can be taken against businesses who don't uphold the law and the enforcement of prison sentences and fines, can encourage the appropriate behaviour.

However, there are problems with this approach. Laws are not all encompassing and often behind the current times. Michael Geist, the Canada Research Chair in Internet and E-commerce Law at the University of Ottawa, reports this in his article on enacting legislation to address intellectual property fraud world-wide (Geist, 2010). The legal process can take years as shown in addressing breaches in intellectual property (IP) as a result of the digitization of content such as music. Although IP breaches happened before 1999, Napster's file sharing software brought it to widespread attention (Hartley, 2009) and in 2010 as Geist describes above, IP protection still hadn't been resolved.

A very current example is the risk to privacy and safety of aerial drones. Originally used by the military, they are now being used by commercial organizations for such things as product delivery and surveillance. The USA was quick to enact legislation but Canada on the other hand is slower to react. In the latter case there is the ethical issue of putting people at risk by not acting quickly; on the other hand, acting too quickly may prevent others from receiving the benefits that drones could provide, such as delivery of supplies to disaster areas. How can these issues be addressed?

And even if the law is in place, business frequently looks at paying fines as a "cost of doing business" (Macks, 2013) or makes decisions based on "the law doesn't say that we can't do it" (Rowland, 2013; School of Medicine, University of Missouri, n.d.). In considering how to address this gap, discussions that focus on ethics can help.

"Ethics" is the process of evaluating human behaviour, of determining the right course of action in a given situation (Groarke, 2011, p. 9). It is a branch of moral philosophy that makes use of ethical frameworks, such as virtues, duties, feminist or post-colonial, in a logical and rational way to decide on the right thing to do. "Applied Ethics" focuses on making decisions in a specific context, such as a medical, legal, computing or business environment (Reynolds, 2007). According to Ferrell et al. (2008, p. 6) "business ethics comprises the principles and standards that guide behaviour in the world of business" and are agreed upon by society (Trevino & Nelson, 2011, p. 17). Unethical business practices, then, are those practices that contravene the standard business principles and usually involve causing harm or damage to people or the natural environment. Business ethics discussions raise awareness of the consequences of unethical practices with a view to how they can be avoided.

It is important to maintain a balanced perspective in exploring this issue. Locke (2006) says the discussions on ethics in business leaders either focus on the "selfish business leader as a hedonistic, amoral marauder" or as "a selfless business leader as steward of “society’s resources who sacrifices himself for the good of the community”. The first is the profit-driven leader; the second is the socially responsible one. What Locke identifies is a lack of discussion about the “rationally selfish, moral business leader who makes an honest profit”.

Unethical practices in business appear to be increasing, or perhaps there is a greater focus on unethical practices and more are being reported in the media. They are found across levels in an organization from corporate governance at the top level to procurement practices at the lower level and across departments from finance to manufacturing to human resources. Some examples of unethical business practices and their consequences are shown in Table 1.

Table 1 gives only recent examples of business impropriety. However the sole focus on profitability gave rise to CSR in the middle 1970’s with discussions on the Social Responsibilities of Corporations as well as their responsibility to profits. Carroll said “the social responsibility of business encompasses not only the economic but the legal, ethical and discretionary expectations that society has of organizations” (Carroll, 1999). CSR is voluntary with a multiple stakeholder orientation with a focus on customers, suppliers, employees, the community, the environment, beyond the traditional shareholders (Crane, Matten, & Spence, 2008, p. 7). Many organizations viewed CSR as an initiative they should drive in their own industries before governments were forced to legislate them into action.

It appears that people do not fault inappropriate behaviour as much as how companies respond to it. In 1982, in the case of Tylenol cited above, the company responded by removing and destroying all the Tylenol headache tablets and did not re-enter the market until a tamper proof bottle was developed. They re-established trust with their customers and are still in business today, unlike the cases of Enron and WorldCom cited above who did not account for their misdeeds but waited until the deeds were discovered.

Unethical Business Practice	Example	Description	Impact
Fraud	Enron WorldCom Nortel	Improper financial reporting (Silverstein, 2013) Accounting Fraud (di Stefano, 2005) Questionable financial reporting (MacDonald, 2013)	Enron,ArthurAndersen (Bankrupt) WorldCom (Bankrupt) Taxpayer pays court costs over a long period of time.
Environmental	BP Chernobyl Lac Megantique Bopal	Oil spill in the Gulf of Mexico (Lustgarten, 2012) Nuclear explosion disaster (Xiang & Zhu, 2011) Oil train derailment, oil fire (Rowland, 2013) Chemical explosion (University of Massachusetts, 2009)	Death,wildlife,clean-up,$4.5 B fine Maiming, land uninhabitable Death, town destroyed 2,000 deaths; 300,000 injured
Consumer Safety	Tylenol Firestone Maple Leaf	Tampered headache pills (Josephson, 2012) Unsafe automobile tires (Seglin, 2001) Unsafe food (Witzel, 2013)	Deaths, cyanide poisoning Loss of reputation Ford & Firestone Listeriosis, $20M loss from recall
Human Rights	Nike Primark Apple	Sweatshops, 3rd world (Knight & Greenberg, 2002) Factory collapse (Pagnamemta, 2013) Apple (Gies, 2012)	Child labour, Loss in reputation Death of employees working for Primark supplier Poor working conditions, supplier
Regulatory	WikiLeaks	Reveals spying done by organizations on other organizations and individuals (Hurlburt, 2010)	Breach of trust between nations Fear of being recorded and not being open and transparent.

Table 1 Examples of Unethical Business Practices and Their Consequences

Academic communities, business professions, organizations and business school certification bodies are concerned over the increasing ethical issues that is evidenced by the examples in Table 2.

However, as critical as managing the issues described above is to ensuring business success, an equally important area that cuts across the entire organization and is often not included in business ethics discussions is the use of information and communication technology (ICT). ICT is critical to the success of most businesses and the unethical practices in the use of ICT are causing concern in their impact on business success. The next section defines information and ICT in the context of this research project and the value that each provide to business. It describes the characteristics of ICT that cause concern and can lead to unethical practices that can have an impact on business success.

Example	Evidence
Increased numbers of academic journals relating to business ethics.	50% increase in number of publication in 2000's over previous two decades (see Appendix Q – Journal Publications in Business and ICT Ethics)
Introduction of codes of ethics/ professional conduct, often requiring training and a written exam by professional bodies.	Chartered Accountants (Institute of Chartered Accountants of Ontario, 2012) British Computer Society (BCS, 2013) Certified Management Consultants (CMC, 2013) Project Management Institute (PMI, 2007).
Increased focus on ethical practices with codes of conduct and practice.	FSA (Financial Services Authority, 2012) Consulting firm CGI (CGI, n.d.)
Increased dialogue on Corporate Social Responsibility with concern of focus solely on "Profits" and neglects "People" and the "Planet".	Case for CSR (Mintzberg, 1983) Role of Business is to increase profits (Friedman, 2007) The moral management of shareholders (Carroll, 1999)
The increased requirement to include Business Ethics education in business degree programs by certification bodies.	Association to Advance Collegiate Schools of Business (AACSB International, 2004) British Computer Society (BCS, 2013) Canadian Information Processing Society (CIPS, 2010)

Table 2 Increasing Interest in Ethical Issues in Business

2.2.2 ICT, its Importance to Business and the Need for ICT Ethics

Before discussing the importance of ICT to business and the potential harms its unethical use can cause, it is important first to define both "information" and "information and communication technology" in the context of the research project.

2.2.2.1 Information and Information and Communication Technology

The term "information and communication technology" (ICT), as used in this research project, describes the electronic devices used to manage the storage, processing and communication of information in an information system. ICT automates the ability to gather data, store it for later processing, retrieve it for complex analysis and manipulation, and share the results. Not only does ICT include the hardware and software, the technology (T), to support the storage and processing of information (I) but it also includes the network communication (C) that supports both information dissemination and interactive discourse (Baltzan, Detlor, & Welsh, 2012, p. 6; Laudon & Laudon, 2013, p. 13; Stair & Reynolds, 2008, p. 18).

For example enterprise resource planning (ERP) software automates business processes, such as supply chain management, relying on networks to communicate order requirements to suppliers supporting "just in time inventory". Social media software, such as Facebook and Twitter facilitate both asynchronous and synchronous communication between suppliers and customers (Stair & Reynolds, 2008).

If ICT provides the technology to manage information in an information system, it is necessary to understand what "information" and "system" mean. Davenport and Prusak (1998) describe "information" in a context that provides a good perspective on its value to business, specifically agents within the business environment.

Ackoff's (1989) DIKW model describes information in the context of its relation to data, knowledge, wisdom. Davenport and Prusak (1998) use Ackoff's model in a context that shows the value of information to business. Data, such as that stored in a database, is a "set of discrete, objective facts about events…it provides no judgment or interpretation and no sustainable basis of action". The number 100 and the name Grant Holdings has little meaning without the context to indicate that it is the number of days this customer account is past due. Baltzan et al. (2012, p. 6) clarify that information includes vocal and pictorial as well as textual and numerical data.

Information is data that has been categorized or contextualized. Information is data in context and it is meant to inform. Information then is data that has been categorized or contextualized. Building on the example above, the name, Grant Holdings, appears in a list of customers who are more than 90 days past due on their account. Now that there is a context, the data could inform an agent (Baltzan et al., 2012, p. 412; Laudon & Laudon, 2013, p. 13).

A "system" is a coherent set of independent components which exist for some purpose, has some stability and can be usefully viewed as a whole (Beynon-Davies, 2002). An "information system" is a system that includes a set of components, e.g.

sender, a message (data) and a receiver and some means of processing the message to produce an outcome. It is important to note that it is data that is sent but only the receiver can determine if what they received is information, that is, have they been informed? The information system exists for some purpose such as an order entry and distribution system, drawing on the example above (Laudon & Laudon, 2013, p. 35; Stair & Reynolds, 2008, p. 16).

One part of this information system includes the tracking of a customer's orders and payments. On a monthly basis, a list of delinquent customers is delivered to the accounts receivable clerk. Information becomes valuable in the business context when it is used to make good decisions, take appropriate action or solve problems. In this case the clerk decides to take immediate action to try to settle the claim, perhaps by phoning the customer. The quality, timeliness and the skill set of the agent are critical in enabling the information to provide value to the business.

Davenport and Prusak (1998) define this ability to take information and put it into action as knowledge in the business context. Knowledge not only relies on the skills, capabilities and experiences of the agent or knowledge worker to put the information into action but also on the context, the timing, the accuracy and the currency of the information when it is supplied. For example, providing the list of customers who are past due to a human resource professional rather than an accounts receivable clerk would not provide as much value to the organization.

It is important to note that an ICT system that gathers and stores data that does not inform and provide value to the business could be considered an unethical investment, one that wastes money, time and resources impacting the dividends shared with the owners. But before considering further the ethical issues in the use of ICT, the next section describes how ICT has the potential to enhance the value of information.

2.2.2.2 ICT provides benefits to business

ICT is important to all areas of business. It provides the ability to quickly gather and store large amounts of information; perform complex calculations and detailed analysis; reduce errors and time by automating business processes and rapidly communicate information to a widely distributed audience. However, the value of ICT is dependent on the accuracy of the information and the timely ease of access by those with the appropriate knowledge, skills and experience to make effective use of it. Some specific examples of the benefits that ICT provides to business are shown in Table 3.

Aspect of ICT	Benefit	Example
Databases	Storage of large amounts of information that provide consistent, centralized access across the organization.	Bank's customer accounts information enabling ATMs and tellers access to a common set of information (Zayko, 2013).
Electronic data gathering tools	Gather data at source and update information across the organization reducing data entry errors and time lags.	Supermarket barcode reader gathers sales information as the cashier scans items, updates inventory and targeted marketing information for valued customers (Smith, n.d.)
Software	Automate business processes that reduce lag time as forms are passed to the next person for processing. Provide sophisticated data analysis tool looking for trends beneficial to business.	Online retailer. A customer enters their order, pays, sends order to shipping for distribution, reduces errors, delivery time (Kingstone, 2006). Restaurant analyses trends of seasonal food costs to tailor its menus (Bradbury, 2014)
Communications Networks	Support the immediate distribution of information or facilitate collaboration between individuals either synchronously or asynchronously.	Lack of use of web site by Vodafone and Eurostar to quickly communicate service outages to customers and staff (Grill, 2011). Use of smartphones in take-away restaurant business to post menus, take orders on-line, provide games while-you-wait for your order (Tice, 2012).
Hardware	3D printers that allow customized manufacture of products for customers.	The potential for mass customization instead of mass production in developing customer products (Webb, 2014).

Table 3 Examples of Benefits of ICT to Business

2.2.2.3 Ethical Issues in the use of ICT

As discussed in section 2.2.1, ethics is the process of evaluating human behaviour, of determining the right course of action in a given situation (Groarke, 2011, p9). Computer ethics is a branch of applied ethics that comprises the principles and standards that guide behaviour in the use of ICT and are agreed upon by society (Bynum & Rogerson, 2006; Reynolds, 2012; Tavani, 2011). Behaviour that contravenes the generally accepted principles in the use of ICT would be considered unethical, especially if it involves causing harm or damage to individuals or the natural environment.

Following are six key areas causing concern in the use of ICT in business:

1. Many business processes have been automated that should the ICT fail, there is little knowledge on how to return to manual processes
2. Often ICT is treated as a "black box" and the business rules are so complex that it is difficult to anticipate their possible unethical outcomes
3. New technologies or new uses of existing technologies, such as the wireless and the Internet, arrive so fast that there are often no guidelines on how to use them effectively
4. Digitized content is difficult to protect both from theft and alteration
5. ICT developers are often so far removed from the end product and end user that it is difficult to minimize risks.
6. The lack of discussion on whether ICT is the right solution for the problem.

Firstly, ICT provides considerable benefits across the organization, from generating new revenue streams to reducing costs. However if not managed properly, unethical practices in the use of ICT can cause harm to individuals and the environment as well as the business. For example, often business is so reliant on ICT, that it is unable to return to manual processes if the ICT should fail. A recent example was the failure of baggage handling in Terminal 5 at Heathrow Airport where failure of the ICT system meant that thousands of passengers lost their bags for over a week after the baggage handlers had to fall back on inadequate manual processes. This was a replication of a failure that occurred when the terminal first opened in 2008 (Parker, 2014).

Secondly, is the use of high frequency or algorithmic trading on the stock exchange? The human trader has no direct link with the trading actions taken. Computer programs automatically buy and sell assets, taking advantage of small gaps in prices to generate profits, an example where individuals may not be aware of the unethical outcomes generated by the business rules included in the program. The use of such software was viewed by the US Securities and Exchange Commission as a likely cause of the "2010 Flash Crash that produced a temporary drop of almost 1,000 points (more than 9%) in a few minutes (Cui & Lauricella, 2011).

Thirdly, the use of ICT is widespread and growing. It is included in ever more products and services and more people are using ICT than ever before. The ethical use of informed consent in end user license agreements is questionable (Flick, 2013). At one time computers were fixed in offices due to their large size and hard-wired connection to the network. Now with the Internet and "palm top" technology, computers can be used anywhere, anytime by almost anybody. New products or new uses of current products arrive so quickly that users are unaware of the ethical implications of their use and there are frequently no policies or laws to provide guidance on the issues involved. Moor refers to this as a "policy vacuum" (Moor, 1996). For example, the arrival of the mobile smartphone raises some ethical issues and presents some policy vacuums such as those described in Table 4.

Ethical Issue	Evidence and Policy Vacuum
The protection of confidential business information:	More confidential business information can now be stored on a phone. Because the device is small it can more easily be lost or stolen leaving the information at risk Because the device is mobile it can be used anywhere there is network access and there is the risks of conversations being overheard in such open spaces as restaurants and street corners (Shinder, 2010).
The extension of the workday and the risk to work/life balance:	The "always on" device risks extending the workday beyond the normal 40 hours per week, for which there is often no compensation. It risks invading personal time leading to undue stress (Thurston, 2012).
E-mail and texting allows immediate communication:	This immediate connectivity, at all hours of the day and night, can set an expectation of an immediate reply, reducing time for reflection and consideration, that may result in poor business decisions making (Derks & Bakker, 2010).

Table 4 Ethical Issues and Policy Vacuums in the Use of Smart Phones in Business

Fourthly, other risks to business include the perfectly cloned images created in the digitization of text, images and sounds that encourage identify theft and theft of intellectual property. Because of their digital content, they are malleable and can be altered in inappropriate ways to misrepresent individuals or situations (Maner, 1996). This makes business especially vulnerable to the ease of passing on trade secrets using a variety of devices such as mobile phones, mini cameras and USB devices (Reynolds, 2012, p. 249). Often the ICT security focus is on preventing external hacking and disregarding the impact of an internal disgruntled employee (Reynolds, 2012, p. 96).

Building on the previous point, large centralized databases of valuable confidential information and the ability to manipulate computer programs to perform logical (although not necessarily ethical calculations), often make it worthwhile for a hacker or cybercriminal to engage in small transactions that due to economies of scale can result in huge rewards (Tavani, 2011, p. 201). At one time, the criminal put themself physically at risk to rob 5,000 customers in the local bank. The criminal needed time to leave the scene and left evidence of their presence behind, making arrest and conviction easier. With faster processing power and network connectivity, the criminal can now "hack" into centralized financial databases and steal from several million customers at once with less personal risk. The jurisdiction responsible for investigation, prosecution and incarceration was geographically determined and was more easily determined than when inappropriate behaviour happens over the Internet.

Fifthly, ICT is now integrated with more products and services today; the camera is an excellent example. Now because of the low price, small size and digital technology, cameras are everywhere and because of both their silent nature and the rise of the "selfie", pictures can be taken quickly without the subject's consent (Brinkman & Sanders, 2013, p. 309). With component development often the developer doesn't know the end destination of the software they are developing. The developer cannot always anticipate the inappropriate use of the technology and therefore design it appropriately to reduce the negative impact. A Calgary couple using their Voice over

IP service to place an emergency 911 call were connected with the Ontario dispatch centre instead of the local one. Their son died before help could arrive (Nathoo, 2008).

And lastly, is the lack of consideration in whether an ICT solution is the best solution for the problem (Adam, 2001). Often the process starts with a discussion of "which" ICT vendor to choose rather than "whether" to choose an ICT solution at all. Is ICT always the best solution for a problem? Inappropriate implementation of ICT is an ethical issue in itself. It wastes time and money and causes undue stress to those involved. Vendors are market-driven with often a view that "if they buy it, we should make it". Often there is no disincentive to develop a new product, no requirement to support or take back previous versions.

Business, governments, educational certification bodies and the professions are concerned about the rise in the unethical use of ICT as evidenced by:

- Increasing number of centres of ethical study in the use of ICT
- Conferences and publications that focus on ethical issues in ICT
- Development of codes of professional ICT ethics
- Provision of training programs and seminars on ethics
- Requirement that programs they certify include a module in computer ethics
- Regulatory discussions involving ICT.

2.2.3 The Challenge

As the previous sections demonstrated, business is important to society and ICT is important to business success. Unethical practices in ICT are impacting business success. With the growth in ICT, more people have access to ICT and ICT is included in an increasing number of products and services. Policy vacuums exist where there are few guidelines on how to address the use of new technologies or new uses of current technologies. Frequently those engaged with ICT are unaware of the unethical practices that can arise and the harm they can cause.

Before discussing possible approaches to reducing the risks to business of unethical practices in the use of ICT, it is important first to understand who are "those engaged with ICT" and may be unaware of the impact of unethical practices.

2.3 RESPONSIBILITY FOR APPROPRIATE USE OF ICT

At one time formally trained, experienced personnel used ICT under relatively close supervision. ICT professionals developed and maintained the information systems and the professionals in the various departments of companies and institutions, such as finance or accounting, made use of the technology in managing their specific function. Decisions on the use of ICT or the resolution of issues would be discussed in a combined ICT and business environment, in this case finance. However that has changed.

2.3.1 ICT Decision Makers

Previously, only large companies could afford the infrastructure of a data processing department that included large expensive mainframe computers and internal private networks run by experienced ICT personnel. With the advent of the mini-computer, desktop computers and packaged software, smaller businesses could afford their own ICT. These new applications, such as word processing and spreadsheet software were much easier to use and could be used without the huge ICT departments described above. Those on the business side started to make their own ICT related decisions without the ICT department involvement (Kanamori & Motohashi, 2006).

Outsourcing now provides a service that can host all or part of a company's ICT infrastructure. More recently, with the advent of the Internet, and the concept of cloud computing, outsourcers can offer specialized applications such as Salesforce.com, where sales management becomes the primary decision maker (Weinhardt et al., 2009). New cost structures, such as those based on a pay per use basis, enable even smaller organizations and departments to benefit from ICT. As a result, there is a shift in the decision making on the use of ICT to the primary use department, such as sales management, in this example, where previously the decisions were made by the ICT department (Kanamori & Motohashi, 2006).

Decision makers face a number of ethical issues in the use of ICT, for which they may not be adequately equipped, such as (Argandoña, 2003):

- Whether the choice of ICT is the right solution for the problem and what is the impact on stakeholders such as customers, employees and partners in the supply chain
- The protection of confidential employee and customer information from both external and internal sources
- The protection of company intellectual property and trade secrets
- Whether ICT will have an impact on the natural environment
- The impact of new technology such as smart phones and the Internet on employee productivity.

Not only have the decision makers changed but so have the users.

2.3.2 ICT Users

Everyone who has the economic means to purchase an ICT device and an Internet connection, has the skills and knowledge to use it, and is in a location with an entry point to the Internet, can access an ever increasing number of services. The numbers of users and numbers of services are growing every year as well as the types of technology available. The technology of choice has moved from the desktop to the laptop to the smart phone to the tablet in a short 20 years and this ease of mobility of ICT devices along with the plethora of wireless and cell phone access points have enabled the use of ICT devices “anywhere”, “anytime” by “anyone”. The number of direct ICT users globally might have been less than 100 million in the 1990s and was over 2.4 billion by 2012 (34% of the world’s population) (Miniwatts, Marketing Group, 2014).

There is a blurring between personal and work related use of ICT, especially with workers having access to the Internet and bringing their own devices to the workplace. Some of the ethical issues they may face for which they may not be adequately equipped:

- With easy access to personal web space such as the cloud or personal data on a smart phone, how does an employee ensure they maintain their workplace productivity and continue to foster a trusting relationship with their employers?
- With the digitization of intellectual property, how do users respect the ownership rights of others when copying digital content doesn't appear to create any harm?
- Video cameras and web-enabled colleagues with mini-cameras are capable of monitoring every move possibly impacting creativity and trust. When is it ethical to do so, respecting the privacy rights of colleagues and the organization? (Rothkopf, 2014)

Having considered those responsible for appropriate use of ICT on the business side, consider now the responsibilities of the ICT professionals.

2.3.3 ICT Professionals

The British Computer Society describes an ICT worker as someone "professionally engaged in any aspect of the building, maintenance, management or operation of ICT or in teaching or training (at degree level) related to the knowledge and skills appropriate to that activity". ICT decision makers and users rely on these ICT professionals to develop and maintain their ICT systems, whether the ICT professionals are part of their organization or work for a vendor or outsourcer (BCS, 2013). Business analysts, database administrators, project managers, off-the-shelf software developers and testers are some examples of ICT professionals (Reynolds, 2012).

ICT professionals, as part of their education and training, as discussed in section 2.2.2.1, have a deep knowledge of ICT, how it works and its strengths and weaknesses. ICT professionals ensure that ICT systems are fit for purpose and meet the requirements for which they were intended but they also need to be aware of the potential harms that can arise from inappropriate practices (CIPS, 2013).

Some of the ethical issues that ICT professionals might encounter:

- The impact of inaccurate, out-of-date, inaccessible information that can result in poor decision making, London Ambulance in (Bynum & Rogerson, 2006, p. 129)

- The impact of poor internal and external security on the quality of information and organizational reputation, Cybercrime (Tavani, 2011, p. 201)
- The impact of inappropriate selection and implementation of ICT solutions on the benefits to the business, NCR Warehouse Manager (Spinello, 2003b, p. 165)
- The impact of distracting technology on productivity in the workplace (Reynolds, 2012, p. 61)
- The impact of digitizing content on protecting intellectual property and trade secrets (Tavani, 2011, p. 230).

The rapidly changing world of ICT, the new technologies or new uses of technology, raise ethical issues for business decision makers, users and those who develop and maintain ICT systems. Not only is it difficult to initially foresee the potential ethical issues, but it is often difficult to decide on the best course of action when there aren't policies and laws in place to give guidance, as is shown in the example on the use of smart phones in section 2.2.2.3 (Kirby, 2013).

It is frequently assumed that unethical behaviour is "immoral" behaviour. An individual knows what they are doing is wrong, that is, it goes against their own moral system, but they do it regardless. For example, they break the law with malice of intent, possibly thinking they will not get caught. Enforcement of laws engages this behaviour. Carroll (1987) continues to suggest that it is important to consider "amoral" behaviour which is much more prevalent. Individuals may behave morally at a personal level but may not recognize an ethical issue or may think it is not their responsibility to address the issue yet the act (or lack of) results is an unethical outcome. Perhaps their excuse is that business is important to society and profit is important to business success and although some may unfortunately be affected in a negative way, it is important to be profitable (De George, 1982; Friedman, 2007).

McPhail (1999) provides an excellent example of amoral behaviour, in suggesting the declining moral standards in the accounting profession are a major cause of the decline in business ethics. He suggests that many accountants think they are behaving ethically as they are working on a basic principle that "economically appropriate action in itself is ethically good". McPhail and others argue that the educational system should bear some of the blame for not preparing students "to respond ethically to the complex issues that arise in the work environment". Carroll suggests that education is an effective way to address amoral behaviour, to raise awareness, generate discussion and develop the knowledge and skills to address these complex issues.

2.4 DEVELOPING A MORAL ATTITUDE

As previously mentioned in section 2.2.1, governments, business themselves, academic institutions, organizations that certify business school and professional associations, are concerned about the unethical practices in both business and its use of ICT.

Primary responsibility cannot lie with government. The Honourable Michael Kirby, retired Justice of the High Court of Australia (2013), suggests that governments are slow and often lack the technical expertise to enact or enforce laws, especially in the use of new technology or new uses of current technology. Governments can help once the need for legislation is identified. However it is important to provide guidance on how to address situations before there are laws or policies in place. Ethics, especially applied ethics in the field of business and ICT can help.

Applied ethics, in this case computer ethics, provides an environment for including an ethical perspective in the decision making process that involves the use of ICT. It provides a context to discuss and decide on the use of ICT that can have an impact on stakeholders such as ICT users, ICT decision makers and society at large. It provides frameworks, standards, principles and methodologies to support the decision making process (Bynum, 2006a).

Business, themselves, although somewhat effective in enforcing their ethical practices through training and enforcement of codes of ethics (Weckert & Lucas, 2013, p. 205) are limited in developing a perspective beyond "obeying the prescribed rules". Time and resources are limited in taking people away from their jobs.

Both business publications and academic journals raise awareness on the consequences of unethical practices, but are limited in developing the individual skills, such as decision making, sensitivity and argumentation, to address the issues. Organizations that certify business schools and ICT programs already require business management degree programs to include an ethics course in their curriculum (AACSB, 2013), (BCS, 2013), (CIPS, 2010), but it isn't clear that the ethics courses are effective as will be discussed in section 3.2.

ICT professionals are seen as knowledgeable experts in using ICT. They work closely with the decision makers and users and would be well positioned to provide guidance on the consequences of unethical practices, not only in the workplace but in their homes and communities. They need to develop the knowledge, skills and, especially, the motivation to carry this out. Developing the knowledge and skills is the easier part, good education programs, as chapter 3 will discuss, can do that. However the bigger challenge is to motivate ICT professionals to identify potential unethical practices that can have an impact on their stakeholders such as users and decision makers and to take action in reducing the risk. Fostering professional responsibility can help.

The above discussion has referred to ICT workers as ICT professionals and the following explains how the term ICT professional is used in the context of the research project. There is an ongoing debate as to whether ICT workers are part of a profession and resolving this debate is not paramount to this research project. Grant (2012), in

Figure 1, provides an interesting perspective of professionalism as a continuum between the legally recognized professions such as doctors and lawyers to someone who chooses to behave in a professional way. However, the profession versus not-a-profession debate can overshadow the more important discussion of "what is a professional" and "what does it mean to be professionally responsible"?

Figure 1 Professionalism – a Continuum

Weckert and Adney (2013) would say that "professional responsibility" is having a "professional attitude" and argue that having a professional attitude is the key to an ICT worker's behaviour rather than whether they belong to a professional organization or not.

Reynolds (2007) describes a professional in the context of those who belong to a profession, as an association of individuals having the following qualities as described in Table 5.

Professional Criteria
Having a recognized body of knowledge acquired through ongoing training, usually higher education and a number of years of related practical experience
Providing related services for a fee (salary), based on their knowledge and experience. They recognize “clients” or stakeholders and subordinate their own self-interest to the needs of their client.
Adhering to established ethical norms such as codes of professional ethics and professional standards that provide overarching principles for proper and improper behaviour.
Applying self-discipline and self-control in acting according to the behavioural norms.

Table 5 What is a Professional?

Deborah Johnson (2001) says a professional is “also autonomous, able to make decisions in their daily work justified by the fact they are professionals”.

A professional then is an individual with recognized knowledge and expertise that provides paid services to clients or stakeholders. A professional recognizes that it is their professional responsibility to exercise self-discipline and provide these services following established ethical norms and practices and a professional is responsible for the consequences of their actions. As shown in **Error! Reference source not found.**Table 5, a formal profession is legally recognized, has a governing body and members are licensed to practice.

Norms refer to the standards or patterns of behaviour that are accepted or expected of a specific group (“Oxford English Dictionary,” 2016). In the case of a professional, norms can be explicitly defined in codes of professional ethics and professional standards, such as the Hippocratic Oath for doctors or they can be tacit, that is known to the majority of the group. A significant part of the initiation of new members is to learn these tacit norms.

Although the ICT profession does not have the formal structure of the medical profession, this research project will refer to ICT workers as ICT professionals with respect to their assuming a professional responsibility for the services they provide.

Gotterbarn adds a concept of positive responsibility, the virtue of having regard for the consequences of their actions. He argues that positive responsibility focuses on "the right thing to do" as opposed to "how to avoid blame and malpractice". The ICT professional has a responsibility to conform to agreed technical standards but they have a "higher degree of care" that incorporates a moral responsibility to ensure that not only do their services meet the needs of the client but no additional harm is incurred (Gotterbarn, 2001). This research project focuses specifically on their moral responsibility.

There are a number of ICT professional associations as shown in Table 6.

Professional Association	Membership
The British Computer Society (BCS, 2013)	Founded 1957; 82,000 members worldwide
The Australian Computer Society (ACS, 2013)	22,000 members; 6.5% of the workforce (Ridge, 2013, p. 45)
The Canadian Information Processing Society (CIPS, 2013)	10,000 members; about 2% of the workforce (Government of Canada's Sectoral Initiatives Program, 2014)
Council of European Professional Informatics Societies (CEPIS, 2009)	32 European countries; 300,000 members, about 10% of the ICT workforce
The Association for Computing Machinery (ACM, 2013)	100,000 members; US ICT workforce about 3,000,000
The Association of Information Technology Professionals (AITP, 2013)	7,000 members; US ICT workforce about 3,000,000

Table 6 Some ICT Related Professional Associations

However, membership of these professional associations is voluntary and includes only a relatively small number of ICT workers as noted in Table 6. For example, CEPIS has some 300,000 members across 32 European countries which is about 10% of the estimated 3 million workers in the European ICT sector (European Commission, 2012). In the US the proportion is much lower. The ICT workforce is estimated to be about 3 million (Grant & Babin, 2007) and membership in the AITP (the Association of Information Technology Professionals), one of the largest and longest established, is only about 7000 individuals (AITP, 2013). Anecdotal evidence suggests that these are largely older members, with some student chapter members.

Unlike long established fields such as the medical profession with specific professional bodies that provide geographic oversight, such as the College of Physicians and Surgeons in Ontario, there is not one professional body that does so for the ICT profession. In addition the medical profession provides disciplinary oversight and members can be disbarred for malpractice, a function not offered by ICT professional associations.

Without a formal recognition by ICT workers themselves that they are part of a professional body and without a formal, universal licensing body and enforcement association, more emphasis is on the ICT professionals as individuals to maintain the reputation of those professional workers. Not only are they responsible for monitoring their own behaviour but more importantly, they need to oversee the behaviours of their colleagues, the organizations in which they work and the communities in which they live to ensure that ICT continues to maintain the trust of its stakeholders and continues to provide business value.

2.4.1 Definition of Moral Attitude

The focus then is on developing a moral attitude in ICT workers because, regardless of where on the continuum the professional falls, exhibiting a moral attitude is paramount to being a professional. A *moral attitude* in the use of ICT includes ensuring that solutions are fit for purpose and cause no harm or damage. It *includes* *the ability to determine how one's actions can affect others and the ability to make good decisions in the use of ICT.*

The next section discusses how other professions have addressed developing a moral attitude as part of their professional ethics training. Rest and Navarez (1994) use the term "moral development" to discuss this in their book "Moral Development in the Professions" and this research project uses the term "moral attitude" to focus specifically on the moral development of ICT professionals in the use of ICT.

2.5 MORAL DEVELOPMENT AND THE PROFESSIONS

In the established professions, in addition to codes of ethics developed by professional bodies, ethics is also addressed in the professional degree program requirements.

In a legally recognized profession, where professionals must be certified to conduct their trade, such as the medical, legal, engineering professions, ethical education is compulsory and embedded within the curriculum. Lehmann et al. (2004, p. 682) surveyed 123 medical programs in the US and Canada and found that: "All responding institutions offered some formal instruction in medical ethics, and among these, 71 (78%) incorporated ethics into required preclinical courses. The primary pedagogic course structure was small-group discussion and the primary pedagogic method was case discussions". For example, the Dalhousie Medical School has a Department of Bioethics and all medical student take a two-year Professional Competence unit that includes 64 case studies to set these issues in a real world setting (Dalhousie, 2014). At Harvard Medical School, the Division of Medical Ethics teaches a medical ethics and professionalism course to all medical students in a small case-based graduate seminar (Harvard University, 2014).

Again, in another legally recognized profession, the legal profession, ethics education is a mandatory requirement. As an example, the Federation of Law Societies of Canada, which approves Canadian law degree programs, requires that each program include a "stand-alone course that addresses a set of prescribed topics (including civility, familiarity with the fiduciary nature of the lawyer's relationship with the client, conflicts of interest, confidentiality and disclosure, professionalism and the public interest in serving the administration of justice)"(Sossin, 2011).

In the engineering discipline, which encompasses a wide range of program types, approaches are more varied and widespread adoption of ethical content in degree programs is more recent (Herkert, 2002). As an example, since 2000, for US engineering schools to maintain their accreditation, they must demonstrate "ethical awareness". However, schools can follow different approaches to ethics instruction: "A few have made ethics classes mandatory; at others, they are electives. Still others weave ethics discussions into standard engineering courses to achieve what they call ethics across the curriculum" (Jones, 2006). In the UK, the Engineering Council makes frequent reference to ethical elements within one of its six areas of learning outcomes in its published standard for accreditation (Engineering Council, 2014). Determining the best ways to meet these accreditation criteria is an issue still in discussion within the engineering education community (Colby & Sullivan, 2008).

Professions such as nursing, dentistry, teaching, and accounting, foster a move from a personal interest or self-interest perspective in decision making to a more principled approach taking into account such things as duties of care, human rights, etc. (Rest & Narvaez, 1994). Their education programs develop a strong sense of responsibility and empathy for the profession's stakeholders such as patients, students, customers. These education programs include developing critical thinking in the context of their profession with case studies and exposure to real world examples (Rest & Narvaez, 1994).

2.6 SUMMARY

The purpose of this chapter was two-fold: to identify the ethical issues that arise in the use of ICT in business and to justify the importance of the research question.

The chapter identified six key areas that are causing concern in the use of ICT in business. So many business processes have been automated that should the ICT fail, there is little knowledge on how to return to manual processes and building on that often the business rules are so complex that it is difficult to anticipate their possible unethical outcomes.

New technologies or new uses of existing technologies arrive so fast that there are often no guidelines on how to use them effectively. The case of digitized content was discussed as an example, especially in the case of intellectual property and how difficult it was to develop policies to protect it from theft and alteration.

ICT developers are often so far removed from the end product and the end user that is difficult to anticipate how it will be used. This has an impact on a proactive design that might minimize unethical practices.

Finally, perhaps one of the biggest concerns is the lack of discussion on whether ICT is the right solution for the problem. The conversation often starts with which vendor to select rather than whether ICT is the right answer. Vendors have a market-driven approach with little disincentive to develop new products. There is often no requirement to service or take back previous versions of the product and every incentive to create a need for a new and better product.

The second purpose of this chapter was to justify the importance of the research question, that unethical practices in the use of ICT in business can have an impact on business success. The increasing numbers of users, decision makers and ICT professionals; the lower cost of ICT and the speed and connectivity to the Internet and the above mentioned unethical practices in the use of ICT are impacting business success. The chapter suggests that ICT professionals are well-positioned because of their knowledge and skill set to help address this issue. Even though they may not be part of an established profession, they could be motivated to help address the issue, but they will need assistance. Other professions have used education to develop a moral attitude towards their stakeholders. The next section addresses how education could be used to develop the same in ICT professionals.

CHAPTER 3 EDUCATION AND ETHICS

3.1 INTRODUCTION

As discussed previously in section 2.2.2.3, unethical practices in the use of ICT can have a negative impact on both business success and, as a result, society at large. ICT professionals are well-positioned to help address this situation as they work closely with other ICT users and decision makers in addition to colleagues in their own industry. ICT changes rapidly, not only in the development of new technologies but in new uses of existing technologies, where there is often little guidance on appropriate practices. ICT professionals not only need the knowledge and skills to identify, articulate and recommend on courses of action, they also need the motivation to step up to the challenge.

Education has been shown to be effective in developing this motivation in other professional groups, such as doctors, lawyers and engineers, who have moral responsibilities to their stakeholders. As discussed in section 2.5, a well-designed professional ethics program could do the same for ICT professionals but it needs to be effective. Not all ICT professionals will pass through a university education. Some may study in community colleges; some may take their training through professional organizations; some may learn from vendors and some may be self-taught through books and periodicals. This research focuses on ethics education as part of a university degree program. It is worthwhile considering whether approaches developed here in university education could also be applied in the other modes and this will be considered in the discussion.

The purpose of this chapter is to answer the second and third research sub-questions, namely:

2. *"What approaches exist that are used in the teaching of ethics?"*
3. *"How might these best be employed in educating future ICT professionals?"*

This chapter presents, in section 3.2, much of the literature on what is currently being done in business and professional ethics education in the university environment. It reports on the ethics education in accredited business and computer science schools; the ethics education required by professional associations and the professional ethics education in universities, to determine the approaches used in the teaching of ethics and how these might be employed to develop moral attitude in ICT professionals. Not all business schools are accredited, not all professionals belong to professional associations and not all professionals attain professional designations at universities. However, in looking for best practices, this is a good place to start.

Moral development involves changing behaviours and section 3.3 investigates moral psychology, to understand the key influencers on moral behaviour and how this could inform a professional ethics program. A new field, positive psychology, considers what is working well and provides a different lens to look at developing moral motivation.

Moral development is not only concerned with developing moral behaviour, it is also concerned with developing moral thinking and decision making (Rest & Narvaez, 1994, p. 22). Section 3.4 then investigates moral philosophy, especially the field of applied computer ethics, for frameworks on how to include an ethical perspective in the decision making process, especially where ICT is involved.

Section 3.5 considers how pedagogy can inform the teaching of ethics and describes the key elements to consider in teaching large compulsory classes of frequently young students with little experience of the use of ICT in the workplace.

Finally, the chapter concludes with a discussion, in section 3.6.1 on Appreciative Inquiry (AI), a specific method in positive psychology and why an AI educational intervention is worth considering.

Academic and professional bodies certify university programs in their respective disciplines. The following section describes the expectations in the teaching of ethics, first from the academic institutions and then from professional certification bodies in Accounting and ICT.

3.2 PROFESSIONAL AND BUSINESS ETHICS EDUCATION

There is a gap in the expectation of ethics content in business and ICT curricula as evidenced by the certification bodies of business and computer science programs. The Association to Advance Collegiate Schools of Business (AACSB) and the Accreditation Council for Business Schools and Programs (ACBSP) are certification bodies for business schools and the Accreditation Board for Engineering and Technology (ABET) certifies computer science programs. The section also investigates the ethics requirements in professional programs certified by the Canadian Information Processing Society and the Accounting Standards Board.

3.2.1 Accreditation Bodies Views on Professional and Business Ethics

3.2.1.1 AACSB and ACBSP

AACSB and ACBSP are American based institutions that accredit business schools both in America and world-wide. As part of the general skills required in undergraduate degree programs AACSB lists "ethical understanding and reasoning, able to identify ethical issues and address the issues in a socially responsible manner" (AACSB, 2013). AACSB has accredited over 700 business institutions worldwide, some of which also have a separate Accounting accreditation. AACSB does not mandate that specific courses exist in specific areas but gives schools wide latitude in how they meet the above standard (Carroll & Buchholtz, 2011, p. 267) (Franks & Spalding, Jr., 2013).

However, AACSB certified institutions describe a number of approaches they use in teaching business ethics (AACSB International, 2004). Some examples are:

- Developing ethical leadership through adherence to honour codes in the institution
- Discussions of ethical and unethical organizations or practices students have been associated with

- Developing ethical decision making through the teaching of multiple ethical frameworks and the consideration of multiple stakeholders to evaluate different perspectives
- Use of case studies to expose students to the types of ethical issues they could encounter in the work place
- A focus on personal values to recognize common virtues across cultures.

There appeared to be five themes suggested above that could be considered in the teaching of ICT ethics:

1. A focus on values and virtues
2. Developing ethical decision making
3. A focus on following a set of rules such as a code of professional practice
4. Developing a moral sensitivity to unethical practices and
5. Making use of ethical frameworks to decide on the right course of action.

The standards for ACBSP are less detailed than those for AACSB. Business ethics is included as part of the Common Professional Component and should comprise at least 30 credit hours of instruction, addressing such areas as the impact of business on society, ethical awareness and global awareness (ACBSP, 2011).

However, what appears to be missing is a focus on developing moral motivation. Given that individuals with the right solid values might know the right thing to do but fail to "do" the right thing in the workplace environment, how does one develop the moral character to act on one's moral decisions (Carroll & Buchholtz, 2011)? The concept of moral motivation will be discussed in more detail in section 3.3.2.

3.2.1.2 ABET

ABET (the Accreditation Board for Engineering and Technology) certifies computer science and engineering schools in the USA and 29 other countries around the world. The criteria for accrediting computing programs (CAC) and the criteria for engineering technology and computing (ETCA) include a high level reference to ethics education in the required curriculum (ABET Board of Directors, 2013a, 2013b):

> “an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity”.

This gap puts more responsibility on managers and decision makers to consider the ethical aspects in the use of technology because their technicians are not being trained to do so.

3.2.1.3 Professional Associations - Accounting

In addition to the accreditation bodies mentioned above, programs are also certified by professional bodies such as the International Accounting Education Standards Board (IAESB). Pre-professional accounting education is frequently delivered by business schools. Of significant interest is a 2006 Information Paper from the International Accounting Education Standards Board, arguing that a “strong emphasis needs to be placed on ethics education, even at the expense of technical training” referencing “the importance of building strong foundations of ethics at the prequalifying level, to be supported by compulsory ethics elements in certified professional development programs”(IAESP, 2006). A different approach to that of ABET, where there is a willingness to sacrifice technical courses for a course on ethics, is perhaps to be expected given the demise of the auditing firm Arthur Andersen in the Enron scandal a few years earlier (Silverstein, 2013).

3.2.1.4 Professional Associations - ICT

As an example, the Canadian Information Processing Society provides accreditation for post-secondary education in ICT. A description of the three types of programs they accredit are listed in Table 7 along with the ethics accreditation criteria (CIPS & CCICT, 2013). Notably, ISTAC emphasizes that both ICT professionals and computer users are socially responsible for the ethical use of ICT, a good perspective for ICT professionals to acknowledge in their handover of technology to computer users.

Accreditation Body	Description	Association Ethics Requirement
Computer Science Accreditation Council (CSAC)(CIPS and CSAC, 2011)	Includes computer science, software engineering degree	Ethics is included as part of developing skills in non-technical disciplines. Knowledge and skills in humanities or social science helps to evaluate social implications of computing.
Business Technology Management Council (BTMAC) (CIPS & CCICT, 2013)	Includes business technology management or like degree	Demonstrate self-awareness and self-management, including mastery of ethical reasoning, client relationship management, business courtesies and self-presentation
Information Systems and Technology Accreditation Council (ISTAC)(CIPS and ISTAC, n.d.)	Includes a diploma in computer systems technology, a bachelor of technology or applied degree.	Aspects of professionalism are to be emphasized throughout the curriculum. Ethical and legal issues surrounding computing, including the social responsibility of programmers and computer users, must be emphasized throughout the program so that students learn that these aspects are part of computing, not merely tangential disciplines. Topics could include: Culture and heritage, culture and technology, global issues (i.e. privacy, surveillance), organizational issues (application of technology, ethical issues in private and public sectors), the law and computer science, safety in software systems, and a review of IT professional codes.

Table 7 Ethics Criteria for Programs Accredited by CIPS

It is notable that there are different expectations of ethics in each of the three programs. The expectation for Information Systems and Technology is to be professional and socially responsible and expect that from their computer users. Those for the computer science, software engineering and business technology management degrees are at a much more generic level and yet their unethical practices can cause as much harm to business and society.

Given the concern in ethics practices in business and ICT, it is surprising that the certification bodies don't provide the same level of direction as ISTAC above. It is also interesting that a Business Technology Management (BTM) program in a business school has more ethical expectations from AACSB than from its own professional body, CIPS. This causes concern because there are no guidelines that can be measured to determine whether an effective ethics education program is being achieved.

The next section investigates specific examples of ethics education in other professions. Rest and Bebeau are significant leaders in professional ethics education. (Rest & Narvaez, 1994) (Bebeau, 2002). Rest suggests that professional education should include the development of skills and knowledge in sensitivity, judgment, motivation and character. Bebeau applies this in dentistry education with significant insights. Ponemon and Armstrong provide insights on measuring development in moral judgment (Armstrong, 1993; Ponemon, 1993).

3.2.2 Professional Ethics Education

3.2.2.1 Dentistry

Although dentistry is not a profession usually associated with business, the work of Bebeau at the University of Minnesota provide good insights into teaching professional ethics. Bebeau had been instrumental in including professional ethics into the four year dentistry curriculum by focusing on addressing each of the components in the Four Component Model developed by James Rest (Bebeau, 1994; Rest, 1994).

Rest and Narvaez's (1994) book ,"Moral Development in the Professions", provides several case studies where the Four Component Model has been used in professional moral development for professions such as accounting, nursing, teaching and journalism (Chang, 1994; Duckett & Ryden, 1994; Ponemon, 1993). Bebeau describes how she developed parallel interventions, measures and feedback mechanisms to support the ethical development of dentists throughout the four years of their program of study (Bebeau, 2002).

Bebeau (1994, 2002; Bebeau & Monson, 2009) suggests that a professional ethics curriculum should be outcome-based and demonstrate effectiveness in achieving outcomes in each of the four components of ethical sensitivity, moral judgment, moral motivation and moral character or commitment. (Rest's model will be discussed in more detail in section 3.3.2.) Following is a brief description of each of the key components and how she measured student achievement in each of the areas.

Bebeau suggests beginning with moral motivation and commitment and discussing what it means to be a professional, referring to the set of values to which they can be held accountable. For example, for ICT professionals, this could be the values identified in a professional code of ethics such as CIPS Code of Ethics (CIPS, 2010) or the ACM Code of Ethics (ACM, n.d.). Some values may not be obvious to students and a professional roles and a responsibilities essay could be used to assess the students understanding in this area.

She suggests assessing ethical sensitivity by asking students to respond to "real-life" situations that relate to the profession. Evaluators can review the response and rate it on the extent to which the student recognizes the issues and professional responsibilities present in the situation.

She uses Rest's Defining Issues Test to assess development in moral judgment and develops the skills through providing feedback on essays that analyse ethical case studies. Evaluation should include how well the student:

- Identified all the ethical issues
- Identified the affected parties, both primary and secondary stakeholders
- Described several consequences that could arise based on the alternatives
- Duties derived from the application of the moral principles
- Willingness to reassess or change one's initial position.

This supports the cognitive approach to ethical decision making that will be discussed later in section 3.4.3.

Moral character is left to the last when students are more comfortable with the concepts, the roles and responsibilities and the ethical decision making process, as well as the process to present a well-reasoned argument. Students are given a case in groups and need to determine how they will put forward their argument to persuade the antagonist to understand their position.

Although the professional ethics education in dentistry included 42 hours of instruction, this was spread over four years. This gives students the opportunity to lay the foundations for ethics in the first year and build on it as they engage in more professional practices. Early work focuses on understanding professional responsibilities and developing well-reasoned arguments with a focus on case studies, role playing and discussions on the ethics of working with patients.

In developing moral attitudes for ICT professionals, education in more than just moral reasoning is required. There needs to be a focus on developing moral motivation as well as a sensitivity or empathy to those to whom one is professionally responsible. The four component model is not a linear model but all work in parallel and as such should be developed in parallel.

The next section investigates the teaching of professional ethics in another profession, more closely aligned to business.

3.2.2.2 Accounting and Auditing

Professional education in accounting has used a number of approaches. A three pronged approach focusing on psychology, philosophy and the accounting profession, studied theories of moral development, ethical frameworks and the responsibilities of the accounting profession. Another focused on codes of conduct and discussion of current controversial issues that included using an example of the Prisoner's Dilemma (Salta, n.d.). The Defining Issues Test (DIT) developed by Rest et al. (Rest, Narvaez, Thoma, & Bebeau, 1999), discussed in more detail in section 4.5.8.2, has been used to measure the change in moral judgment of accounting students from the start to the end of a dedicated ethics class (Armstrong, 1993; Ponemon, 1993).

It is notable that the above professional education examples include approaches similar to those identified by AACSB certified institutions, namely:

1. A focus on values and virtues
2. Developing ethical decision making
3. A focus on following a set of rules such as a code of professional practice

4. Developing a moral sensitivity to unethical practices and
5. Making use of ethical frameworks to decide on the right course of action.

However Ponemon included an additional approach, a simulation exercise in the Prisoner's Dilemma, a form of experiential learning that shows how two rational individuals might not cooperate even if it is in their own best interest.

The next section investigates the common current textbooks used in the teaching of ICT and Business Ethics to identify additional approaches in teaching professional ethics not addressed in the above five themes.

3.2.3 Practices in Teaching Business and ICT Ethics

3.2.3.1 Common Approaches Presented in Textbooks

Table 8 shows that the above five themes are well covered in the current business and ICT ethics text books. However, the focus on stakeholder theory and argumentation are two new areas not previously addressed. Stakeholder theory is discussed further in the following section, 3.2.3.2. Argumentation is discussed in section 3.4.3.

Approach	Example in ICT Ethics	Example in Business Ethics
Values and Virtues	Tavani (2011, p. 64)	Ferrell et al. (2008, p. 135) Trevino and Nelson (2011, p. 46)
Ethical Decision Making	Bynum and Rogerson (2006, p. 60) Reynolds (2012, p. 17) Tavani (2011, p. 74)	Ferrell et al. (2008, p. 119) Trevino and Nelson (2011, p. 52)
Rules, Norms and Standards	Brinkman & Sanders (2013, p. 47) Bynum & Rogerson (2006, p. 60) Reynolds (2012, p. 52) Tavani (2011, p. 101)	Ferrell et al. (2008, p. 88) Trevino and Nelson (2011, p. 20)
Developing Moral Sensitivity/ Stakeholder Theory		Carroll and Buchholtz (2011, p. 27) Ferrell et al. (2008, p. 30) Trevino and Nelson (2011, p. 71) Sexty (2008, p. 44)
Making Use of Ethical Frameworks	Brinkman & Sanders (2013, p. 8) Bynum & Rogerson (2006, p. 60) Tavani (2011, p. 33)	Ferrell et al. (2008, p. 144) Trevino and Nelson (2011, p. 39)
Argumentation	Tavani (2011, p. 74)	

Table 8 Approaches to Ethics Education Used in Business and ICT Ethics Courses

3.2.3.2 The Role of Empathy

In addition to the approaches identified in the above table, discussions on corporate social responsibility linking closely with stakeholder theory (see 2.2.1) are widely used in business ethics courses, but are absent from ICT ethics textbooks (Carroll & Buchholtz, 2011, p. 27; Sexty, 2008, p. 132; Trevino & Nelson, 2011, p. 322). Including a focus on stakeholders would build empathy between the ICT professionals and those users and decision makers for whom they are responsible.

Empathy is the ability to understand and share the feelings of others ("Oxford English Dictionary," 2016). It shouldn't be confused with sympathy, which is the feelings of pity and sorrow for someone else's misfortunes. According to Hoffman (2000), an individual exhibiting empathy is more inclined to be helpful and supportive towards someone else than one feeling sympathy.

Schulman (2005) defines moral as the "acts intended to produce fair outcomes" and suggests that moral motivation comes from empathy, the ability of individuals to put themselves in the position of another and identify with their perspective". Simmons (2014) suggests that an empathy must include both a cognitive and affective perspective to motivate an individual to action. A cognitive sense of empathy considers perspective-taking or role-taking in understanding another's beliefs, desires, intentions, etc. An affective sense of empathy refers to feelings of concern for how an individual is feeling or feelings of concern for how an individual should be concerned if they were fully aware of the situation.

As will be discussed further in section 3.3.3, empathy is an influencer of moral behaviour (Schulman, 2005). Building on the theme of empathy, emotions and "gut reactions" can play an affective role in determining the right thing to do and often ethics courses focus more on a cognitive than an affective approach steering away from the emotions involved in ethical discussions (Adkins, 2011). This is further examined in section 3.5.3 on the pedagogy of including both a cognitive and affective approach in ethics education.

3.2.3.3 Norms and Compliance

Several authors in business ethics discuss the importance of rules, codes of conduct and compliance in discussing ethics. For example, Trevino and Nelson (2011, p. 19) suggest that "ethics (Simmons, 2014) in business consists of principles, norms and standards of business practice that have been agreed by society… If one could just follow the law, a business ethics book wouldn't be necessary". Or Ferrell et al. (2008, p. 108) suggest that government's role is to institutionalize ethics through laws. This is problematic, given that the law cannot be comprehensive and by its very nature is often outdated. This view also presupposes that there is a right answer. Given the new technologies, it would seem that developing an awareness and thinking process would be more effective in the long run, especially in addressing the absence of policy or policy vacuums to use Moor's term (2006).

Many ethics education programs, especially in business, have tied ethics discussions to the law (or at least, positioned ethics education in the law department) (Indiana University, 2015; University of Pennsylvania, 2015; University of St. Thomas - Ethics and Business Law Department, 2015), where there is an attempt to define rules to follow and determine right answers. This is problematic as a right answer in one situation may not be the right answer in a similar situation and developing the skills on how to include an ethical perspective in the decision making process may be more applicable in the long run. Indeed the contrary argument that ethics starts where the law stops might be more relevant!

3.2.3.4 Self-directed Research

Desjardins and Diedrich (2003) discuss the value of self-directed research to foster student engagement and assist in the development of one's personal moral system. He uses product life-cycle case studies in an undergraduate business ethics class where students engage in their own research to understand the issues in the life-cycle of a product from "cradle to grave". Carni et al. (2006) suggest, that student engagement is one of the better predictors or learning and personal development. One of the challenges cited is the high degree of support that students required, especially in their analysis and perhaps could not easily be used with a large class of 250 students but the individual choice of research topic would be beneficial in engaging students in groups to study topics they think would be of interest and to share with the rest of the class.

3.2.3.5 Novices and Competent Students in Ethics Treated Differently

Carroll and Buchholtz (2011) teach both a course in business ethics and a course in business and society and following the courses students were asked to rank how they best learned business ethics in the course based on the following alternatives. They are ranked in order of preference by the students:

1. Lectures/presentations by the instructor
2. Instructor-led discussions after student case presentations
3. My own reading of texts/articles prior to class
4. Studying for and taking the exams
5. Case presentations by student groups
6. My own reading and studying of cases prior to class (Carroll, 2005).

Given the heavy focus on student engagement and hands-on learning, it is interesting that students preferred instructor led discussions and lectures. Carroll suggests that because some of the students may have had little formal knowledge of ethics before the course that they found the instructor-led sessions helpful in providing a starting foundation.

Olson (2011) found that depending on their level of ethics knowledge, students need to be treated differently. He suggests that the novice student with none or a rudimentary knowledge of ethics should be engaged differently than the more experienced student who is competent or proficient in ethics. Table 9 describes the different approaches he suggests.

Experience in Ethics	Teaching Approach
Novice and Advanced Beginners	➢ View the situation as an assembly of facts ➢ Use context free rules that lead to recognition of situational elements ➢ Case studies, reflections on part failures and simulations are effective for this group
Competent and Proficient	➢ Interpret based on the facts they recognize that are similar to situations they have experienced ➢ Consultation on current dilemmas, case-in-point analysis, structured role-plays, case study story-telling by experts. ➢ Focus on simulations to reveal to students what they still don't know.

Table 9 Approaches to Teaching Ethics to Novices versus Competents

3.2.4 Summary of Key Points

The purpose of this section was to determine the common approaches that are used in the teaching of ethics and to suggest how these might best be employed in teaching professional ethics to ICT professionals.

According to AACSB, business schools develop ethical leadership through the development of personal values, the use of codes of conduct, the application of multiple ethical frameworks and consideration of the perspectives of multiple stakeholders. They use case studies to expose students to the types of ethical issues they could encounter in the workplace.

Unlike Bebeau (2002) who suggests that professional ethics programs should focus on developing moral character as well as moral sensitivity and judgment, most business schools do not focus on moral motivation or character nor develop the skills to support taking action that follows a moral decision.

This section investigated the literature on business, professional and ICT ethics education and identified the following approaches that are worth considering:

- ➢ Including an ethical perspective in the decision making process
- ➢ Professional values and virtues

- Understanding the rules, norms and standards of the profession
- Development of sensitivity to the consequences that a decision or action can have on stakeholders
- Understanding of different ethical frameworks and how they can be used to justify a decision or action
- Acknowledgement of the presence of emotions and empathy in developing moral motivation.

There is a recognition that a different approach is needed for those who are new to ethics as opposed to those who are competent, an approach that, for example, utilizes instructor led facilitation and lectures as well as a focus on assimilating facts rather than mapping facts into their previous experience.

There is also a recognition that self-directed research is an effective way to not only engage students but allow them to direct the development of their own professional moral systems.

In order to determine how these might best be employed in educating future ICT professionals, it is appropriate to now consider how psychology, philosophy and pedagogy inform the discussion.

3.3 INFLUENCERS ON MORAL BEHAVIOUR

3.3.1 Introduction

Psychology evolved in the late 1800's as a discipline that studies the mind, focusing on how the human thinks, feels and acts. According to Seligman & Csikszentmihaly (2000), in the late 1940's, psychology had three well established aims: curing mental illness; helping people to lead more fulfilling lives; and identifying and nurturing high talent. This discussion focuses on the last two aims.

As reviewed earlier, see section 2.3.3, a professional exhibiting a moral attitude recognizes that it is their professional responsibility to exercise self-discipline and provide their services following established ethical norms and practices. One of the key educational objectives is to develop the motivation of ICT workers to assume a moral attitude towards their ICT stakeholders. As psychology is the study of people, mind and behaviour (APA, 2014; BPS, 2014) and as a change in motivation involves a change in behaviour, a review of the psychology literature was carried out to determine the factors that influence moral behaviour. Having determined the key factors, the section then discusses how those factors might be utilized in an educational programme.

Schulman (2005) examines the influence of empathy, moral affiliations and principles. Leonard, Cronan & Krie (2004) discuss many influences, but the primary ones of interest to this research project are: consequences, ego-strength and perceived importance. Rest (1994), based on the work of Kohlberg (1969), says there is more to moral behaviour than just moral judgment as Kohlberg describes. Rest claims that moral sensitivity, motivation and character are also important. And finally psychology suggests that a positive approach focusing on what is working well rather than solely on fixing problems can impact moral behaviour.

Each of these will be discussed separately in the following sections. The section then ends with a summary of how some of the key influencers might be utilized in an educational program to promote professional attitude.

First, Rest argues there is more to moral behaviour that just making a moral decision. His Four Component Model is described below.

3.3.2 Sensitivity, Judgment, Motivation, Character

Rest (1994), in his Four Component Model, define four basic psychological processes in which an individual engages in order to behave morally. The components are described in detail in Table 10.

Component	Description
Moral Sensitivity	An individual is able to identify how their own actions can affect other people, especially with respect to causing harm. An individual should be able to determine possible courses of action, who would be affected by each course of action and how those who are affected would regard the effects of the action.
Moral Judgment	An individual is able to consider the different courses of action, make a judgment about which course of action is right and be able to justify their decision using good argumentation.
Moral Motivation	An individual is able to prioritize the moral values above other personal values to ensure that what is done is morally right.
Moral Character	An individual has sufficient ego strength and implementation skills to follow through with their intentions to behave morally and overcome obstacles.

Table 10 Rest's Four Component Model

The model is not linear but rather the processes interact and influence each other and can be quite independent of each other. For a person to behave morally all processes must be present. For example, an individual may recognize the ethical issue but be unable to work out a well-reasoned argument to support the moral judgment being advocated. It is also possible that having recognized the moral issue, and with a recommendation on what should be done, that the individual lacks the moral motivation and/or the moral character, perhaps being swayed by peer or managerial pressure, and not follow through.

As shown in section 3.2.2.1, developing moral sensitivity, judgment, motivation and character was a focus in the curriculum for developing professional responsibility in future dentists (Bebeau, 1994). Armstrong (1993) and Ponemon (1993) have focused on developing and measuring changes in moral judgment in accounting education. Olson (2011) has used Rest in business ethics education.

3.3.3 Empathy, Moral Affiliations and Principles

Schulman defines moral as the "acts intended to produce fair outcomes" and suggests that moral motivation comes from empathy, the ability of individuals to put themselves in the position of another and identify with their perspective" (Schulman, 2005). According to the Oxford Dictionary (2016), empathy is the ability to understand and share the feelings of others. It shouldn't be confused with sympathy, which is the feelings of pity and sorrow for someone else's misfortune but rather according to Hoffman (2000) are more inclined to be helpful and supportive towards them.

Individuals are more likely to feel empathy towards someone they can identify with, someone who is similar to themselves and as a result individuals are more likely to help and protect those they empathize with. McPhail (1999) argues, supported by Bauman (1993) and Miligram (1974), that is it more difficult to inflict pain the closer the physical and psychological distance. An ICT professional who understands the stakeholders affected by their actions, is more likely to be empathetic to their stakeholders' interests and if it is within their control, may be more motivated to behave in a professionally responsible way. For example, ICT professionals who can put themselves in the place of patients whose information will be stored in the patient records system they are currently developing, may have a greater sense of responsibility in building a secure application that protects the confidentiality of their information.

Schulman also suggests that moral affiliations with individuals who act as moral exemplars can provide the motivation to act morally. Role models, who are trusting, respectful and encourage open dialogue, provide moral motivation. Teachers, managers, presidents, doctors and other professionals have key responsibilities to exemplify moral behaviours in their respective relationships and interactions. ICT professionals, especially managers, act as moral exemplars and set expectations on ethical behaviour.

Lastly, Schulman suggests that moral motivation is enabled by the principles that individuals establish for themselves as they develop their own moral system. The principles are influenced by the norms of their society, organizations, profession and religious or ethnic community. This moral system is used to determine right from wrong and when they deviate from these behaviours, it can affect their sense of self-esteem (Greenstein, 1976; Rokeach, 1973).

Development of empathy is similar to Rest's suggestion of moral sensitivity. According to Schulman (2005) it is also important to ensure that those delivering the education are moral exemplars not only in their fair and just treatment of the participants in the educational programme but also in the principles they bring to in-class discussions and debates.

3.3.4 Consequences, Ego Strength and Perceived Importance

Leonard et al. (2004) investigated the factors that affect moral behaviour specifically with respect to the use of ICT. Leonard et al. claim it is difficult to determine how someone is actually going to behave in a specific situation without actually observing the behaviour. Based on the work of previous researchers in the field, they have assumed that "intention to behave ethically" can be used as a predictor of ethical behaviour (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). They investigated previous research in attitude, ethical behaviour and moral development and presented the construct, shown in Figure 2, identifying the factors that influence both the "attitudes towards ethical behaviour" and the "intention to behave ethically" (Banerjee, Cronan, & Jones, 1998). (Additional description of each of the components is included in Appendix R – Leonard et al. Influencers of Moral Development.)

Of relevance to this research, Leonard et al. (2004) found a significant correlation between an individual's understanding of the consequences of an action and the individual's attitude to the moral issue. They also found a significant correlation between an individual's attitude to the moral issue, the strength of their ego, and their perceived importance of the issue and an individual's intention to behave ethically.

It is important to note how the observation from Leonard's study in Figure 2 and those of Schulman above, relate to the components in Rest's Four Components model and that all need to be in place for an individual to intend to behave morally:

- Moral sensitivity is influenced by many of the "attitudes towards ethical behaviour" such as societal or organizational environment and empathy as proposed by Schulman

- Moral Judgment is influenced by principles proposed by Schulman
- Moral character is influenced by "ego strength" and "personal normative beliefs".
- Moral motivation is influenced by "attitude towards ethical behaviour", "perceived importance" and moral exemplars.

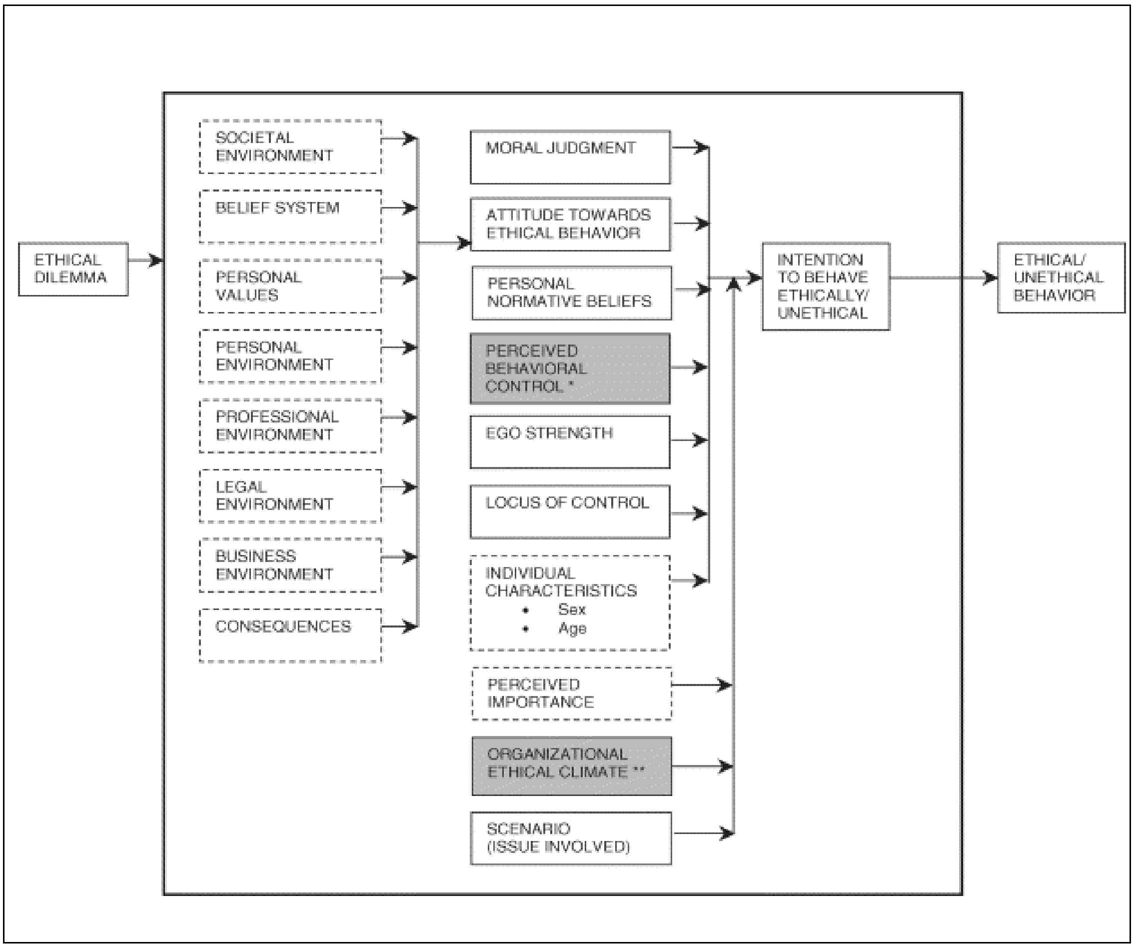


Figure 2 Ethical Behaviour of Information Systems Personnel (Leonard et al., 2004)

In considering the development of an educational program, the above discussion suggests the importance of developing an empathy for stakeholders, the principles to support good decision making and the ego strength to follow through on moral decisions.

The above model describes moral judgment as a key influencer on an individual's intent to behave morally. Rest (1994), based on the work of Kohlberg (1969), suggests additional influencers depending on the predominant approach that an individual uses in making moral decisions and that an educational intervention can have an impact on their predominant approach. The reasoning is explained below.

3.3.5 Approaches to Making Moral Judgments

It is important to be aware of the predominant approach an individual uses in making moral judgment because different factors will influence their moral behaviour (Kohlberg, 1969; Piaget, 1932; Rest, Narvaez, Thoma, & Bebeau, 2000).

Kohlberg (1969), a well-respected and well cited expert in moral development, identified "three levels of development that individuals pass through from birth to adulthood and each level is recognizable by different factors that influence decision-making". Each level is divided into two stages and these stages are important because as will be shown, Rest aligns these with his schema in making moral decisions. The influencers of decision making at each level are described below:

- Level 1- the pre-conventional level. Judgments are based on self-interest. In Stage 1, an individual will consider what they can get away with. External rewards and punishment are the basis of moral reasoning. In Stage 2, the individual focuses on satisfying individual needs.
- Level 2 - the conventional level. In Stage 3, the individual is motivated by winning the approval of others rather than for example a fear of punishment. In Stage 4, individuals focus on maintaining the social order by obeying rules and social norms.
- Level 3 - the post-conventional level. In Stages 5 and 6, judgments are based on principles that uphold human dignity and rights. Broad principles of justice may not agree with the laws of society or authority in general.

Kohlberg describes moral development as moving from a pre-conventional to a post-conventional approach to making moral decisions. Kohlberg said that, as one develops morally, one progresses from one level to the next, leaving behind the previous level. He "administered role-taking scenarios to determine an individual's level of moral development". He found that "most North American high school students have reached the upper end of the conventional and the lower end of the post-conventional level".

This development of post-conventional thinking is important to consider because the moral issues that society and organizations are addressing are sufficiently complex, that there are not always laws and norms in place to provide guidance. In the context of information and communication technology alone, the arrival of new technologies and new uses of technologies create policy vacuums where there is little guidance on what to do (Maner, 1996; Moor, 1996; Olson, 2011).

However, Rest, Narvaez, Thoma & Bebeau (2000) provide a different perspective as shown in Figure 3.

Type = 1 (Consolidated)	Type 2,3	Type = 4 (Consolidated)	Type 5,6	Type = 7 (Consolidated)
Personal Interest (PI)		Maintaining Norms (MN)		Post Conventional (PC)
Focus on direct advantage to the actor, e.g. on the fairness of a simple exchange of favour for favour, good or evil intentions of the parties; the party's concern for maintaining friends; good relationship and maintaining approval.	Transitioning	Maintaining existing legal systems, existing roles and formal organizational structures e.g. policies	Transitioning	Organizing a society by appealing to consensus-producing procedures (such as abiding by a majority vote), insisting on due process and safeguarding minimal basic rights, organizing social arrangements and relationships in terms of intuitively appealing ideals.

Figure 3 Description of DIT2 Types

They suggest that, rather than moving from one stage to the next, individuals follow schema or patterns in making moral decisions and that they may use more than one approach depending on the situation. They classified the schema as:

- ***Personal Interest (PI) (pre-conventional)*** where judgments are based on self-interest (similar to Kohlberg's Stages 2 and 3)
- ***Maintaining Norms (MN) (conventional)*** where judgments are based on following the norms of society such as laws, codes of conduct, corporate policies (similar to Kohlberg's Stage 4)

- ***Post-conventional*** (PC) where judgments are not focused specifically on fundamental moral principles such as justice or duties of care but rather on a sharable ideal for organizing cooperation (although similar to Kohlberg's Stages 5 and 6 it is not tied to principles of justice).

Confirmatory factor analysis of a mega sample of over 44,000 subjects, indicated that the results of the Defining Issues Test showed that participants clustered around the three schema identified above (Rest, Edwards, & Thoma, 1997). Rest's research suggests that as an individual progresses from childhood through adulthood, the percentage of time they use a personal interest (PI) approach decreases in favour of a higher maintaining norms approach (MN) and as they progress further the MN approach decreases and the percentage of time using a post-conventional (PC) approach increases. In some cases participants clearly exhibited a predominant schema and in other cases, they appeared to be transitioning between two schemas. Rest classified their predominant approach as "type", the values of which are defined below:

- Types 1, 4 and 7 are predominant PI, MN or PC approach respectively. These are considered "consolidated".
- Types 2 and 3 are "transitioning" between PI and MN with "2" having a stronger preference for PI and "3" having a stronger preference for MN.
- Similarly types 5 and 6 are transitioning between MN and PC.

It is critical to know an individual's predominant approach because their decision making will be influenced by different factors. A Type = 1 is influenced by external rewards and punishments whereas a Type=4 is influenced by obeying rules and laws. A Type=7 is largely influenced by creating a sharable cooperative environment. Those who are transitioning move between preferences for one of two different approaches. Rest developed Type to describe an individual's predominant approach. As Olsen (2011) suggested in section 3.2.3.5 in his discussions on the "novice" versus the "competent" ethics student, an educational programme should consider that individuals may have different starting points and range of educational interventions may be needed to cater for the different approaches.

The above discussion has reviewed the relevant psychology literature and identified a number of a factors that influence moral behaviour, namely empathy, ego strength, consequences and perceived importance. It suggests that moral development should focus on developing the ability to identify moral issues (sensitivity), use good moral reasoning (judgment) to decide on the right course of action, develop the motivation to resolve conflicting priorities and good moral character to act on the decision.

Importantly, it suggests that those with a personal interest approach to making moral judgments are influenced by different factors than those with a maintaining norms or post-conventional perspective and that different educational interventions may be needed.

A relatively new area, Positive Psychology, suggests that individuals are not necessarily resistant to change but often consider change in a positive way as a means of growth and survival.

3.3.6 **A Positive Perspective**

Gotterbarn (2001), a respected expert in ICT ethics, talks about positive responsibility and the need to do things right, right from the start. As discussed above, developing ego strength, moral attitude and perceived behavioural control increases the intention to behave morally. However, discussions that focus solely on the unethical practices of ICT professionals and the harms and damage they have caused may be counter-productive to developing a sense of pride of profession and the moral motivation to be professionally responsible. Positive psychology provides some alternate thinking.

3.3.6.1 Positive Psychology Replicates What is Working Well

As discussed in section 3.3.1 , in the late 1940's, psychology had three well established aims: curing mental illness; helping people to lead more fulfilling lives; and identifying and nurturing high talent. Seligman & Csikzentmihalyi (2000) argue that psychology was only successfully doing the first, curing mental illness. Psychology focused on diagnosing the problem, such as schizophrenia, depression, etc. and prescribing the solution to fix the problem. Maslow, well known for his theory of human motivation and the hierarchy of human needs, (1943) commented on psychology's negative focus:

> "The science of psychology has been far more successful on the negative than on the positive side. It has revealed to us much about man's shortcomings, his illness, his sins, but little about his potentialities, his virtues, his achievable aspirations, or his full psychological height. It is as if psychology has voluntarily restricted itself to only half its rightful jurisdiction and that, the darker, meaner half" (Maslow, 1954, p. 354).

The problem-fixing approach to psychology is limited in the case of the last two aims as there is not necessarily a specific problem to address. In fact a problem fixing approach develops a lens that continually looks at the world as problems to be fixed as opposed to a creative approach that develops new visions. A better approach might be to study those leading fulfilling lives and find ways to transfer that knowledge, skills and abilities to those in "good health" to help them remain in "good health" (Seligman, 2005).

Linley et al. (2006) drawing on the work of Seligman & Csikszentmihalyi (2000), Sheldon & King (2001) and Gable & Haidt (2005) define positive psychology as:

> "the scientific study of optimal human functioning. It aims to call attention to the positive aspects of human functioning and experience, and integrating them with our understanding of the negative aspects of human functioning and experience. At the pragmatic level, it is about understanding the wellsprings, processes and mechanisms that lead to desirable outcomes".

Positive psychology considers positive strengths such as character, moral courage, well-being, gratitude, empathy to be valuable underpinnings in facilitating change in an individual or organization (Aspinwall & Staudinger, 2003; Cameron, Dutton, & Quinn, 2003; Linley & Joseph, 2006; Lopez & Snyder, 2004; Peterson, 2006).

Calling it "positive" made it seem as if there were two contrasting views to the human condition, the Pollyanna or the curmudgeon approach. However, the human condition is a continuum, not wholly well or wholly ill and it is important to include the two perspectives and take an integrated approach (Held, 2004; Linley et al., 2006).

Much of the literature on positive psychology discusses the achievement of happiness (Haidt, 2003). However, the focus in this study is not on happiness but on effectively achieving the "ideal", whatever the ideal may be. For example in the medical field, a positive psychology approach would investigate "what is it that contributes to the healthy state of an individual?" And then from the findings, develop processes and mechanisms for others on how to live a healthy life to avoid illness (Linley et al., 2006). Recommendations on healthy eating, frequent exercise and developing the immune system have resulted in an increase in life expectancy. The by-product may well be happiness but that is not the primary aim.

The same approach would be equally applicable in the field of ICT. For example, investigate how a medical centre protects the privacy and confidentiality of their patients' information in a manner that gives timely access to other medical practitioners. This approach focuses on a "doing it right, right from the start" approach as opposed to a problem solving or "fix it after" approach (Linley et al., 2006).

3.3.6.2 Positive Psychology and ICT

The discipline of positive psychology has created a new lens to explore the human experience. It provides a shared language and a shared approach for integrating the positive with the negative aspects, what are the good traits or the benefits to concentrate on but also what are the obstacles or the harms to manage or overcome. Linley argues that this is an approach of value not only in the psychology community but can also be applied to other areas of scientific inquiry such as economics and the natural sciences. A positive psychology approach has been used to create a positive work environment (Turner, Barling, & Zacharatos, 2002) and this research projects suggests it can also be used to focus specifically on the use of information and communication technology in the positive work environment (Linley & Joseph, 2006).

From Linley's definition of positive psychology above, in the context of information and communication technology, a positive psychology approach would "call attention to the positive aspects of human functioning and experience" in the use of ICT and "integrate them with our understanding of the negative aspects" (Linley et al., 2006).

And so, at a practical level, there are wellsprings, processes and mechanisms in positive psychology that can lead future ICT professionals to "desirable outcomes". Table 11 applies each of their concepts to the ICT field and gives an example within ICT that relates to the health care industry.

Aspect of Positive Psychology	Description	Example in ICT
1. Positive aspects of human functioning and experience	What works well	Sharing of healthcare data to help prevent disease
2. Integrate with understanding of negative aspects	What doesn't work well	Protection of the privacy of individual healthcare information
3. Wellsprings	Where the wealth of knowledge resides	Moral exemplars: ICT professionals, Health care workers, researchers
4. Processes	What supports what is working well	Understanding the value of healthcare data in preventing disease
5. Mechanisms	What impedes what is working well	Fear of breach of confidentiality of personal healthcare records
6. Desirable Outcomes	What characterizes a good use of ICT	Use of ICT that creates no harm or damage

Table 11 Example of Positive Psychology as Applied to ICT

Table 11 is especially important in the development of the Appreciative Inquiry intervention discussed later in section 3.3.7.

The contribution of positive psychology is relevant to preparing future ICT professionals to deal with the ethical issues they may confront in the workplace. To have those conversations with ICT professionals, particularly those new to the profession, it is valuable to come to the discussions not always focusing on the problems but taking a more holistic approach emphasizing the value of ICT that needs protecting. And then in that context of ensuring that ICT continues to provide benefits, consider the obstacles that need to be managed to ensure the value continues. The focus should be on maintaining the "good life" or society's quality of life and promoting the contributions that ICT can provide to the "good life" while managing or mitigating the negative, unethical impact that ICT can have.

Linley defines those outcomes as "those subjective, interpersonal and social states that characterize a good life" and goes on to describe the factors that influence the "good life” in each of those states: “health and well-being at the subjective level; positive communities and institutions at the interpersonal level and political, economic and environmental policies that promote harmony and sustainability at the social level” (Linley et al., 2006). Dialogues in the ethical use of ICT also need to happen at the individual, interpersonal and social level as well.

3.3.6.3 Positive Approach to Professional Ethics

Handelsman et al. (2002) raise a concern on the negative approach to ethics often exhibited by professions. They speak specifically on the psychology profession and raise concerns on how codes of conducts, licensing boards and sanctions for misconduct affect both the ethical practices and discussions for the practitioner. They compare this approach to a more positive approach, shown in Table 12.

Ethical discussions often focus on what the “law” says as opposed to what is the right thing to do. Handelsman et al. (2002) argue that ethics becomes less about sensitivity, judgment and personal core values and more about following protocols. Arguably ICT professionals are not governed by a disciplinary body, but this highlights some approaches that ICT professionals can use to motivate ethical behaviour in others.

Negative Ethics	Positive Ethics
Limited to codes and laws	Integration of codes with personal ethics, other ethical traditions
Enforceable rules, standards	Aspirational principles: virtues and values
Focused on misconduct, problems	Focused on conduct, positive behaviours, ethical ideas
Identifying specific prohibited activities	Identifying positive virtues
Sanctions for misconduct	Personal and professional benefits of ethical reasoning and behaviour, prevention of negative behaviours and promotion of positive ones
Limited discussion of ethical issues	Broadened discussion of ethical issues
Focused on constraint of behaviour	Focused on integrated awareness of levels of thought and behaviour.
Denial or devaluation of self-interest	Recognition and integration of appropriate self-interest (positive motivations for optimal professional behaviour)

Table 12 Positive versus Negative Ethics (Handelsman et al., 2002)

Thus positive psychology is an approach worth considering in developing the moral attitude of ICT workers. Appreciative Inquiry (AI) is a specific positive psychology approach that facilitates an understanding of what is working well in a given context and then helps to identify initiatives and programmes that can be put in place so that it continues to work well. The next section discusses AI in more detail and how it might be used in computer ethics education (Mills, Fleck, & Kozikowski, 2013).

3.3.7 An Appreciative Inquiry

How people imagine the future influences how they behave in the present. Imagining ICT as protecting information invokes different behaviours than imagining ICT as sharing information and enabling people to build on others' ideas. In addition, inquiry is intervention, what we talk about is what we change and the energy for change comes from positive attitudes such as hope, inspiration and the joy of working together (Shaw, 1997) (Cooperrider, Whitney, & Stravos, 2005, p. 8). These are the foundational principles of Appreciative Inquiry.

Van Vuuren, an advocate of Appreciative Inquiry, discusses its use in developing an ethical organization. He says that "organizations often manage issues, especially ethical issues, from a problem-solving framework where they react to specific issues in the workplace and attempt to "fix the problem", documenting policies and rules to prevent the issue from happening again". Although this is an approach that may solve the immediate problem, it often does not encourage the creative and forward thinking that is required to develop and maintain an ongoing ethical culture (van Vuuren & Crous, 2005).

Weick (2001) and Gergen (1999) argue that problems are often defined in such a complex manner that it overwhelms the ability of those in the organization to actually do something to address the problem. Appreciative Inquiry is an approach that facilitates groups of individuals to share what is going well and how this can be perpetuated and design and enact programs that will facilitate change. The following section provides a more in-depth discussion of Appreciative Inquiry with some examples of how it has been used to facilitate organizational change.

3.3.7.1 Appreciative Inquiry Started in the Field of ICT

As evidenced in van Vuurren above, much of the current discussion on Appreciative Inquiry (AI) is centred on the work of Cooperrider developed over the last thirty years with several colleagues (Cooperrider, Avital, & Stavros, 2008; Cooperrider et al., 2005; Cooperrider & Srivastva, 1987). However, according to Stowell (2013), Appreciative Inquiry has its roots in ICT through the work of Vickers (1968) and Checkland (1999) and Stowell and West (1991) in building expert systems.

Vickers discussed the "appreciative cycle" and the way individuals make sense of the world through the stages of reality, value and finally action judgments as shown in Figure 4. The reality judgment identifies "what is the situation", the value judgment identifies "what ought to be the case" and the action judgment identifies "what ought I to do about the situation". The cycle repeats itself and each iteration of the cycle is influenced by the outcomes of the previous cycle (Vickers, 1968).

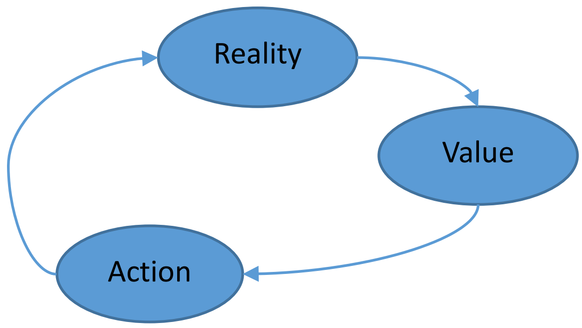


Figure 4 Vickers' Appreciative Cycle (Vickers, 1968)

Checkland (1999) developed a method of inquiry, the Soft Systems Methodology (SSM), that enabled a researcher to engage in appreciating the specific situation while minimizing the bias of their presence. Stowell and West (1991) developed an Appreciative Inquiry Method (AIM) based on the work of Vickers and Checkland that was used to elicit knowledge in the building of expert systems. Stowell and West argue that it is often difficult to solicit subjective or tacit areas of human experience. "AIM is a method developed to aid an 'expert' to give up their knowledge with as little interference from the inquirer as possible".

Cooperrider et al. have taken this concept of "giving up knowledge with as little interference as possible" to the domain of organizational change (Cooperrider et al., 2008). The following section describes his approach and why it should be considered in a computer ethics class for ICT professionals.

3.3.7.2 An Appreciative Inquiry Approach

To begin, it is important to understand what Cooperrider et al. (2008, p. 1) mean by Appreciative Inquiry. A definition of Appreciate:

1. "to value; recognize the best in people or the world around us; affirm past and present strengths, successes, and potentials; to perceive those things that give life (health, vitality, excellence) to living systems
2. To increase in value."

A definition of Inquire:

1. "To explore and discover
2. To ask questions; to be open to seeing new potentials and possibilities".

Appreciative Inquiry is a method of exploration and discovery that focuses on understanding what is working well, in an organization for example, then building on those strengths, successes and potentials to enhance the workings of the organization.

Cooperrider et al. (2003) used Appreciative Inquiry (AI) in the field of organizational change. As opposed to taking a "problem fixing" approach, AI engages groups of participants in a four step process by having them vision what they think the ideal would look like and then designing and developing initiatives that would support the achievement of the vision. The 4-step cycle is shown in Figure 5.

For example, vision the organization that is an ideal place to work. Participants draw on their knowledge and experience to perhaps identify that the organization supports quality family life. From this, they design and develop initiatives that would support a quality family life such as flexible work hours or in-house day care, etc. As initiatives are implemented, the group continually revisits the vision and adjusts or develops new initiatives as needed. The process is iterative and because the group has been involved from the beginning and given a blank slate, there is ownership in seeing the idea develop.

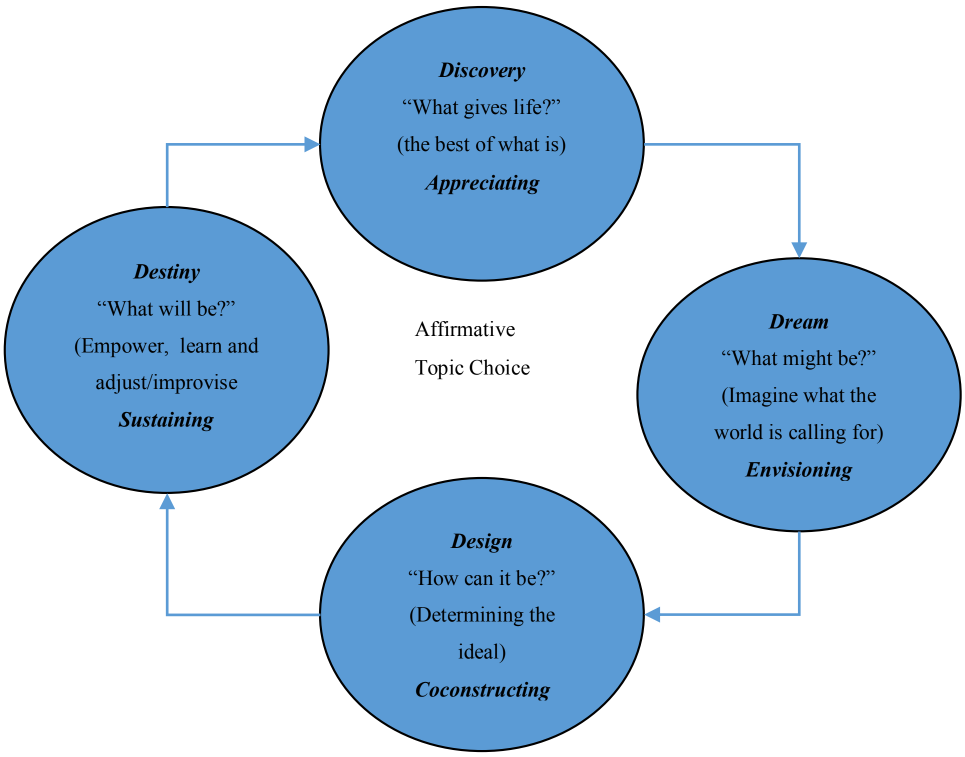


Figure 5 Appreciative Inquiry 4-D Cycle (Cooperrider et al., 2008)

The success of an AI initiative depends on the Topic Choice. Not only must it be relevant to the group but it should also be presented in such a way that it lends itself to a positive voyage of inquiry. Appreciative Inquiry engages participants in the following cycle of activities:

- ***Discovery*** – a focus on meaning-making using dialogue to share views of the positive things that made an impact on them with respect to the specific chosen topic
- ***Dreaming*** **-** building on these shared views, articulate the characteristics, the values, the examples of what this would look like at its best
- ***Design*** **-** coconstructing or working together to articulate what the vision would look like and some of the challenges to be overcome
- ***Destiny*** **-** How to sustain this vision, what programs could be put in place to take this vision forward.
- ***Discovery*** – the cycle then repeats itself building on the previous cycle, evaluating the progress and returning to a focus on meaning-making using dialogue to share views of the positive things that made an impact with respect to the previous cycle.

Appreciative Inquiry works well with "living systems" such as organizations (Cooperrider et al., 2005, p. 3). An important part of every organization is the ICT function that develops, implements and uses ICT and thus any intervention and change initiative that offers significant opportunities for the development of the ICT function would be of value to the organization.

Appreciative Inquiry appears to be a powerful approach. However it is important to not overlook the impact that a negative effect can have on motivating change. For example, in the case of a burning building, individuals were motivated to take undue risks to escape the spreading inferno. However once the threat is over, previous behaviours often return Sidman (1989). AI focuses on the positive, and the positive aspects, such as customer services and employee satisfaction, are generally always there, to act as motivators.

Appreciative Inquiry involves co-collaborating to engage the participants in developing something that has meaning for them and the effective interventions are ones developed by them. The next sections describes examples of the successful use of AI in both organizations and in education.

3.3.7.3 Appreciative Inquiry in Action

Appreciative Inquiry was predominantly used to support change in organizations (Cooperrider et al., 2008). Van Vuuren & Crous (2005) applied AI to create a shared meaning of ethics in a South African based organization. AI facilitated group discussions to identify the positive aspects of the organization that make it an enjoyable and ethical place to work. Engaging with those positive feelings, participants were then encouraged to investigate the risks or obstacles that would encourage unethical behaviour in their workplace and design a program that would include approaches on how to manage it. The final outcomes of the inquiry was a code of ethics for the organization.

Appreciative Inquiry has been used in industry to develop a company-wide approach to sustainability and to improve customer service as explained below:

- Fairmont Minerals (2005) is a producer of industrial sand with offices across the United States who wished to develop a company-wide approach to sustainability. They used AI to launch a discussion with over eight hundred of their stakeholders, including customers, employees, suppliers and members of the community to develop a sustainability plan. Employees were trained in AI and dialogued with stakeholders to include their perspectives in the sustainability plan.

- GTE (now Verizon), a telecommunications organization, recognized there was employee dissatisfaction with their front line, customer service employees. They provided training in AI to over 2,000 front line employees who then launched inquiries into such topics as innovation, inspired leadership, revolutionary customer responsiveness. The American Society for Training and Development (ASTD) awarded GTE the national award for best organizational change initiative based on increased stock prices, morale surveys and customer relations. (Cooperrider et al., 2008, p. 201)

Appreciative Inquiry has also been used successfully in many inquiries in an educational context, from effective teams, to effective learning environments, to specific content topics such as business and society. More detail is included below:

- Head (2006) used Appreciative Inquiry in a graduate class in organizational behaviour to guide student teams to quickly become functional. Students focused on their experiences of the ideal functioning team to both develop concrete suggestions for establishing a functioning team in the graduate classroom and also how to apply this new gained knowledge to change dysfunctional group behaviours.
- Conklin (2009) used Appreciative Inquiry in organizational behaviour courses at both the graduate and undergraduate level to create the preferred learning environment: creating classrooms of preference: an exercise in Appreciative Inquiry
- Neville (2008) used Appreciative Inquiry with a small seminar of undergraduate business students to explore their underlying assumptions about business and society.
- San Martin (2008) empowered high school students to enhance pedagogy using Appreciative Inquiry.

In the case of Neville above, many students found difficulty with an approach different to the lecture style adopted in many of their other classes. However, they were willing to engage and found it beneficial and educational in the end. The inquiry relied on their self-motivation, their use of critical thinking and their self-directed research to explore topics of their own choosing and share perspectives with others in the class.

An Appreciative Inquiry in a computer ethics class may permit students to focus on their positive experiences in ICT to develop a shared history and allow teams to co-create concrete suggestions on how to improve the ethical use of ICT. There was no evidence in the literature that this had been done before.

3.3.8 Summary of Key Points

The purpose of this section was to determine some of the key influencers of moral behaviour with a view to including these in a computer ethics training program to develop the moral attitude of ICT professionals. Rest, as discussed in section 3.3.2, and evidenced by Bebeau (see section 3.2.2.1), provides a useful framework in his four pronged approach that focuses on sensitivity, judgment, motivation and character into which the other influencers map as described below.

The above discussion identified empathy and sensitivity to the perceived importance and consequences of one's decision on others as key influencers on moral behaviour. This is supported by the concept of stakeholder theory and empathy discussed in section 3.2.3.2 on approaches used in business ethics education.

Developing ego strength is also critical to influencing the moral motivation and character to behave morally or take actions on one's decisions. The development of moral judgment and motivation along with good argumentation provide individuals with the articulation to rationally and logically defend their call for action. (Moral judgment and argumentation will be discussed in more detail in the following section.) In addition, an individual may be influenced by rewards and punishments rather than policies and laws or developing a sharable ideal for cooperation depending, on their predominant approach to making moral judgments.

A positive psychology approach, namely Appreciative Inquiry, considers the value of replicating what is going well through the identification of processes, mechanisms and desirable outcomes rather than a focus on fixing problems. In the educational environment it can provide a context of self-directed research that facilitates inquiry and dialogue on creating a shared vision, such as in this case, the beneficial use of ICT in business while minimizing the harms and damage.

The next section investigates the influencers on moral thinking and how it informs the ethical education of ICT professionals.

3.4 INFLUENCERS ON MORAL THINKING

The previous section investigated the factors that can influence moral behaviour from the psychology literature. As discussed in section 2.2.1, moral attitude is also about moral thinking and making moral decisions. Section 3.3.2 examines Rest's Four Component Model, arguing that moral reasoning or judgment is a key influencer on the intention to behave morally and is worthy of separate consideration.

The Oxford Companion to Philosophy (Honderich, 2005, p. 702) defines philosophy as rational and systematic critical thinking about:

- The general nature of the world (metaphysics or theory of existence)
- The justification of belief (epistemology or theory of knowledge)
- The conduct of life (ethics or theory of value).

Moral philosophy is a specific discipline in philosophy that focuses on ethical or moral thinking from several perspectives:

- Meta-ethics ethics investigates the processes used to arrive at ethical principles
- Normative ethics considers frameworks to use to determine a moral course of action
- Applied ethics provides specific principles and rules to apply in specific context or disciplines (Software Engineering Institute, 2016).

Computer ethics is a specific branch of applied ethics that considers the rules and principles in the use of computing resources. This section investigates how moral philosophy and specifically computer ethics assist ICT professionals in developing moral reasoning in the use of ICT (Bynum & Rogerson, 2006; Reynolds, 2012; Tavani, 2011)

The section begins with a clarification of morals and moral systems in the context of moral decision making. Discussions on moral decision making are strongly influenced by the work of Kohlberg and Rest and take a predominantly cognitive approach (Kohlberg, 1969; Rest, 1994). However the work of Damasio (2003, p. 144) and others suggest that emotions play a large part in moral decision making and a consideration of emotions helps to inform how empathy, as one of the influencers of decision making, discussed in section 3.3.3, can be developed.

The section first defines morals, personal and societal moral systems and the process of moral decision making.

3.4.1 Morals and Moral Decision Making

Morals are an individual's explicit beliefs and practices about right and wrong. Many authors use the terms morals and ethics interchangeably but this research project uses the definition of ethics put forward by Reynolds (2012, p. 5) as the "standards of behaviour expected of an individual by a specific group to which they belong". A group could be a specific profession, industry or business function such as finance. In this research project, the group includes the providers, users and decision makers in ICT.

An individual's moral system is the set of rules and principles used to evaluate and determine the right course of action or moral outcomes as shown in Figure 6.

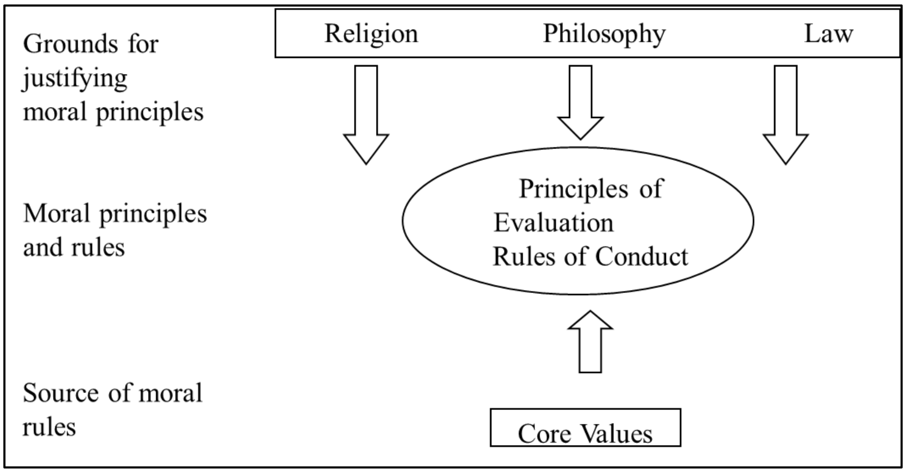


Figure 6 Components of a Moral System (Tavani, 2011, p. 39)

An individual's moral system is influenced by their religion or the predominant religion and the laws in the community in which they live. Their core values are influenced by their peer group, gender, ethnic and cultural heritage and upbringing (Gert, 2005, 2007). The purpose of a moral system is not only to prevent harm and damage but also to promote human flourishing (Bynum, 2006b).

An individual evaluates a situation against their personal moral system to determine the best course of action. Moral behaviour is an action that results in a moral outcome. Rest, discussed in section 3.3.2, states that moral reasoning or moral judgment is one of the factors that influence whether one will behave morally. Moral development, then, is a process of improving one's ability to make moral decisions and follow through with actions that produce moral outcomes (Bebeau, 2002).

The values of a group, such as the society, the profession or the organisation, influence the rules and principles that make up the moral system for that group. The society or organization does not necessarily view its moral system as one that is devoid of harm. Often groups sanction harms against those who contravene the moral system such as those who harboured runaway slaves or those engaged in homosexual practices. The core values may change over time as is evidenced by the abolition of slavery or the acceptance of those with different sexual orientation. With change a mechanism for adjusting the acceptable rules of conduct and principles of evaluation are needed ("The 1807 Act and its Effects: The Abolition of Slavery Project," 2009) (Hurley, 2005).

It is important to note that the values of the individual may not align with the values of the group and as Leonard discussed in section 3.3.4, the professional and organizational environments are great influencers on an individual's moral attitude and thus their intent to behave morally (Leonard et al., 2004). It is important that ICT professionals are aware of the external factors that can influence their moral decisions.

Religious and legal systems may not be able to provide guidance on addressing a wide range of ethical issues in the use of computing, such as the use of smartphones in the workplace. Moral philosophy can help. It can provide the ICT professional with a rational and impartial approach to assessing the implications of smart phone use and aid in developing a way to respond, not only in addressing the current situation but also on how to approach similar situations in the future. It can provide frameworks to aid in considering the rights and responsibilities of stakeholders, the consequences of various actions and the duties and virtues to uphold to foster a functioning society (Tavani, 2011, p. 39).

3.4.2 Moral Reasoning and the Emotions

Several authors have commented on the importance of emotions in the decision making process and that emotion acts as a facilitator of reason rather than a force diametrically opposed (Adkins, 2011; Damasio, 2003; Dark & Winstead, 2005; Fredrickson, 2003; Kaufman, 1999). This approach has largely been overshadowed by the influence of Kohlberg (1969) and Rest (1979) and their focus on a cognitive approach to moral judgment and the primary use of case discussions and philosophical frameworks.

Adkins (2011) suggests the need to include an understanding of emotion in "stimulating empathetic ethical action". There are three neural processes engaged in decision making: cognition, emotion and motivation and emotions fuel our first intuition in ethical situations and then shape our reasoning and motivation (Haidt, 2001; LeDoux, 2003).

Damasio (2003, p. 149), in his research of the brain, suggests that normal decision making uses two parallel complementary paths, as shown in Figure 7.

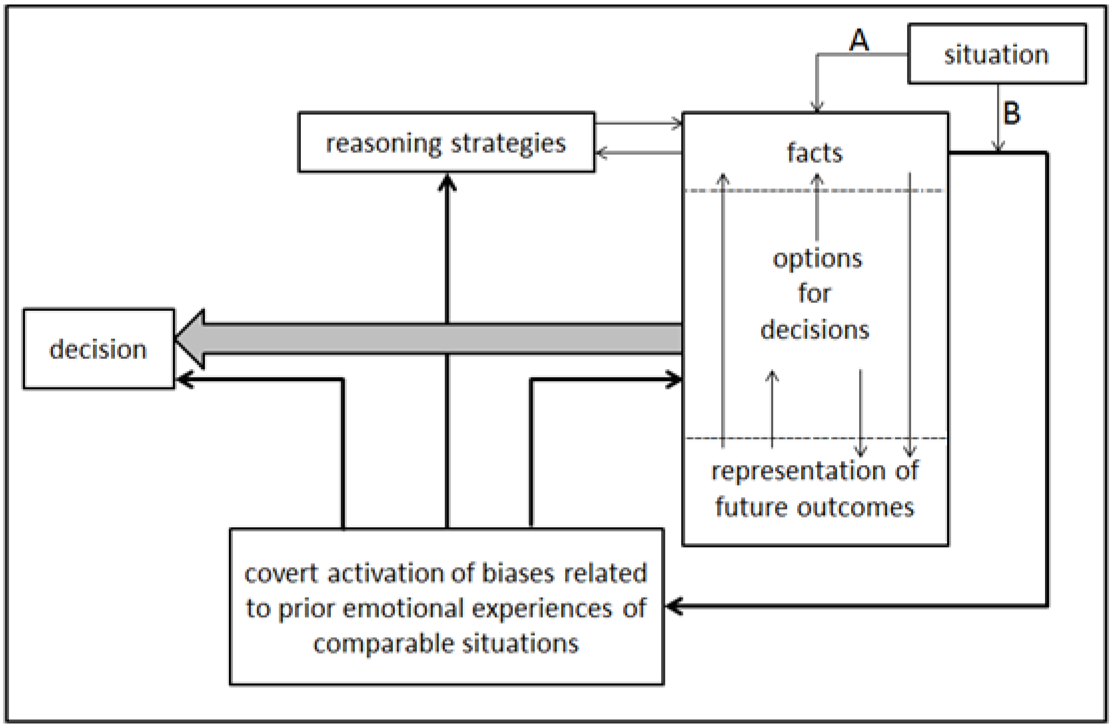


Figure 7 Two Parallel Processes in Decision Making (Domasio, 2003, p. 149)

Path A takes a cognitive approach and path B an emotional path. Path B activates prior emotional experiences, often the immediate response is a gut feeling and may lead to a quick decision if the timing is critical. The emotional signal focuses attention on certain aspects of the problem and enhances the quality of reasoning. It often remembers the emotion of a positive or negative outcome. It isn't a replacement for cognitive reasoning. However it can enhance the process.

Empathy is an influencer on moral behaviour and it is important to develop an empathetic response to stakeholders as part of decision making. Adkins (2011) quotes the work of Green et al. (2004) who studied the neural responses of an individual responding to three types of dilemmas: moral dilemmas in which the individual was personally involved, moral dilemmas where the individual was not personally involved and dilemmas without a moral component.   Adkins reported that Greene et al. (2004) found that responses to another's moral dilemma were more similar to their responses to a non-moral dilemma than to a moral dilemma where they were involved. Hoffman (2000) suggests individuals feel empathy towards those familiar to them and are more inclined to be helpful and supportive towards them. In order to feel empathy, "the empathizer must recognize that the emotion they are experiencing is a reflection of the other's emotion. It can be a response to either a positive or a negative emotion"(Zhou, Valiente, & Eisenberg, 2003).

Ethics education should identify and discuss the dual processes of emotion and cognition in the classroom situation as it occurs and include empathetic stakeholder analysis as part of cognitive decision making (Adkins, 2011).

Despite the over focus on cognition discussed above to the exclusion of the emotional approach, it is still important to ensure that a cognitive approach is also developed. The next section discusses a proposed ethical decision making process, the development of argumentation and the use of warrants to support ego strengths.

3.4.3 **Moral Reasoning and Cognition**

A cognitive approach follows a logical, rational process that considers facts, stakeholders, consequences, and weighs several alternatives to identify the best solution (Bynum, 2006a; Olson, 2011, p. 16; Reynolds, 2012, p. 60; Tavani, 2011, p. 74)

Based on the recommendations of Bynum, Olson, Reynolds and Tavani, the following is a suggested ethical decision making approach. It is included as a primary consideration in the computer ethics class presented later in section 4.4.4.2. The process described in Table 13 begins with an emotional response followed by a cognitive process.

	Considerations	Description
1.	Gut reaction	An emotional response to the situation, acknowledge what feels right.
2.	Statement of the Facts	Focus on the facts that are specific to the concern in the situation.
3.	Impact on Stakeholders	An analysis of the primary and secondary stakeholders and how they are impacted by or can impact the situation.
4.	Consequences	The consequences (both good and bad) of what can happen if the situation is not addressed appropriately.
5.	Backings	Considerations to support the decision: professional standards, roles and responsibilities, policies and laws, utility, rights, duties, virtues.
6.	Alternatives	A number of alternatives that can be considered (at least three to move away from the didactic decision: "will I" vs. "won't I"). Identify the pros and cons of each.
7.	Recommendations	Consider the audience for the recommendation and provide a clear statement of what should be done with sufficient credible backings to support the recommendation.
8.	Evaluation	Evaluation to determine what went well and what might be done differently the next time.

Table 13 Ethical Decision Making (Based on the Work of Bynum, 2006a, p. 60; Olson, 2011, p. 16; Reynolds, 2012, p. 60; Tavani, 2011, p. 74)

The above approach isn't intended to be a linear approach. It may not be a proactive approach due to the urgency of the decision, but may be a reflective approach considering the outcome and how things might be done differently the next time. However, the approach helps to understand the perspectives of those involved and how they are affected by the situation. It helps to understand the consequences of what might happen if the situation is not handled appropriately and all this contributes to developing an empathy towards those involved and an understanding of the perceived importance of the situation (Olson, 2011).

Articulating the recommendation is an important step as it helps develop the ego strength needed to follow through with action, to raise the issue with the manager or the client, for example. The logical, rational argument to support the recommendation gives confidence to articulating the risks and the required course of action and a good preparation for responding to alternatives or objections that may be suggested.

Because backings provide strength to an argument beyond a personal opinion, it is important to understand the different types of backing and how they can be used to support an argument.

Professional ICT standards such as CIPS Code of Ethics (CIPS, 2010), the Software Development Life Cycle (SDLC) (Kay, 2002), and ITIL ("Information Technology Infrastructure Library (ITIL)," 2014) can be used as backing to draw on best practices from the profession to support a recommended course of action, such as citing the SDLC, to reinforce the importance of understanding the requirements before application design begins.

Responsibilities of specific roles such as the chief testing offer, can be used to back the recommendation that the software is not yet field ready. Laws, treaties, and company policies are also good backings. Backings can also cite experts in the field such as is demonstrated in this thesis (Bynum, 2006a, p. 60; Toulmin, Rieke, & Janik, 1984, p. 61).

Moral philosophy, or ethics, also provides backings, through ethical frameworks that can support a recommended course of action. Moral philosophy provides a rational, systematic method to think critically about the conduct of life. Over-arching principles define the society and provide guidance or rules at both the macro (society) level and the micro (individual) level. These principles can change over time, such as the abolition of slavery and the rights of individuals to be free. Some philosophies address how individuals gain knowledge and others address politics and power.

There are philosophies that define the creation and sharing of wealth, such as capitalism, socialism and communism (Stewart, 2009).

Wicks et al. (2010, p. 5) suggest that in a situation there are "*agents* or persons who use *means* to achieve *ends or outcomes* and each has a corresponding moral philosophy to provide guidance". In Western philosophies, Virtue ethics provides guidance to the agent on how to be an honourable and virtuous person. Deontology provides guidance on how to act to fulfil one's duties such as not treating others as a means to an end and Utilitarian provides guidance on the outcome and ensuring consequences that provide the greatest benefits and the least harm.

The advantages and disadvantages of each of these are summarized in Table 14.

Moral Philosophy	Author	Advantages	Disadvantages
Consequence-based (Utilitarian)	Jeremy Bentham John Stuart Mills Peter Singer	Stresses promotion of happiness and utility	Ignores concerns of justice for the minority population
Duty-based (Deontology)	Immanuel Kant	Stresses the role of duty and respect for persons	Underestimates the importance of happiness and social utility
Character-based (Virtue)	Aristotle	Stresses moral development and moral education focusing on honesty, trust, integrity, etc.	Depends on homogeneous community standards for morality

Table 14 Common Moral Philosophies – Advantages/Disadvantages (Tavani, 2011, p. 67)

Business often justifies its decisions using a utilitarian perspective based on cost-benefit analyses and risk assessment. This narrow approach can often result in the lack of consideration of human rights and duties. Although as reported in section 3.2.1, business schools teach a broader range of ethical frameworks in business ethics classes, which is a good thing, it is important to appreciate that one approach doesn't answer all situations. For example, in the case of a virtuous approach, the community involved must be homogeneous enough to agree on all the character traits, i.e. a view of what constitutes honesty may be different between some cultures.

Moor (1999) suggests adopting a Just Consequentialist approach that considers all frameworks as part of process. He assumes that the actor making the decision is virtuous, i.e. exhibits virtuous characteristics and aspires to be a moral person as Aristotle indicated. Moor then suggests the following approach:

1. Identify a list of ethical approaches that do not cause any unnecessary harm to individuals and groups and supports individual rights and duties.

2. Then select the best policy from the list of just policies by ranking these in terms of those that provide the most benefits and the least harms.

Virtues, rights and consequences are all taken into account in his approach. For example, in developing a business case to support the implementation of a specific project, the preferred approach is to consider the cost/benefit analysis or the consequences of the outcome. These are easy to quantify and justify to shareholders given the profit oriented nature of the organization. However, this isn't sufficient. It is important to determine if this is a just approach: are there any basic rights or duties that are violated that will make it non universalisable? Is it prejudiced towards the disabled, towards women, or the people who live in a specific part of town?   Are there any duties of care that are being compromised, such as duties to the natural environment?

As Rest indicated in his Four Component Model, moral judgment is only one factor contributing to moral behaviour. Even though the right course of action has been determined, an individual needs the moral motivation or ego-strength to follow through and act. Developing good argumentation skills can support moral motivation.

"Argumentation is the whole activity of making claims, challenging them, backing them up by producing defensible reasons, criticising those reasons and rebutting those criticisms" (Toulmin et al., 1984, p. 14). One way to develop moral motivation to take action is to develop a good argument to justify the decision and good argumentation skills to present and defend the argument as described by Toulmin. Good argumentation takes into account the stakeholders and justifies the decision beyond personal opinion making use of good logical, rational backings, such as utility, rights, policies, professional standards (Bynum, 2006a). Developing argumentation is critical in a professional ethics education.

Moral philosophy provides a logical, rational framework for discussing the ethical issues and includes both an emotion and cognitive approach to addressing the issues. Computer ethics provides guidance on the ethical issues that arise in an ICT environment (Moor, 2006). The next section looks specifically at the applied ethics discipline of computer ethics and how it informs development of moral attitude and motivation in ICT professionals.

3.4.4 **Computer Ethics**

Computer ethics, also referred to as cyberethics, information ethics, computing and social responsibility, is a relatively new discipline that brings together computer scientists, engineers, teachers, philosophers and, more recently, psychologists to discuss these ethical issues. It is supported both by ICT professionals as well as the professional bodies.

Some academic institutions have established research centres which provide a diverse environment for research, consultation with governments and industries on possible solutions and programmes to inform and educate ICT professionals in addressing these crucial issues. Some examples of these research centres are:

- De Montfort University, Leicester, England (Centre for Computing and Social Responsibility, 2014)
- 3TU, Twente, Netherlands ("3TU Center for Ethics and Technology," 2014)
- University of California at San Diego ("The Center for Ethics in Science and technology," 2014)

- Southern Connecticut State University, (“The Research Center on Computing & Society,” 2014)
- Australian Institute for Computer Ethics (“Australian Institute of Computer Ethics (AiCE),” 2014)
- Carnegie Mellon University (Software Engineering Institute, 2016).

Computer ethics, focuses on three perspectives: supporting ICT professionals in their day-to-day operations; supporting philosophical discussions to address policy vacuums that occur when concepts in society or business change and current norms and laws are no longer sufficient; and considering the social and political implications raised by new technologies or new uses of technology. Each of these perspectives, discussed in more detail in the following sections, should be included in ICT professional ethics education.

3.4.4.1 Computer Ethics Supports the ICT Professional

Gotterbarn (2008), a respected member of both the professional and the academic communities, says computer ethics needs to provide guidance to ICT professions in their day-to-day work. Gotterbarn was instrumental in developing the Software Engineering Code of Ethics and Professional Practice (SEEPP) that has been adopted jointly by the ACM and the IEEE-CS as their standards for the practice and teaching of software engineering but said in an interview (2009) that the principles could apply to other roles in the ICT industry such as data and network specialists, project managers, testers, etc. (Bynum & Rogerson, 2006, p. 279; Tavani, 2011, p. 230).

Buchanan and Henderson (2009) argue that this day-to-day focus should be broader than just ICT professionals as there are other “information professionals” involved in ICT that need to consider its ethical use e.g. marketing analysts, human resource personnel. As discussed in section 2.3.2, although this research agrees with Buchanan, the focus here is to enable the ICT professional as the subject matter expert with the skills and knowledge needed to support other information professionals.

As discussed in section 3.3.6.1, processes and mechanisms are important in identifying what is going well. The above research centres have developed a number of processes and mechanisms to support ICT professionals in doing it right, right from the start and reducing the number of ethical issues that can arise. Some examples are:

- Codes of ethics, such as the ACM, BCS, CIPS give guidelines on the responsibilities to the stakeholders and how to uphold those responsibilities (ACM, n.d.; BCS, 2013; CIPS, 2010b)
- Systems development life cycle (SDLC) provides a number of different methodologies such as Waterfall, Agile, and Rapid Application Design with guidelines on the process, deliverables, metrics, templates etc. to increase the likelihood of developing good software that is fit for purpose (Kay, 2002)
- ITIL provides standards for ICT infrastructure maintenance to ensure that the systems continue to run efficiency with continued high security ("Information Technology Infrastructure Library (ITIL)," 2014)
- Value Sensitive Design uses a process to include a focus on stakeholders and the recognition of ethical issues in the design stage (B. Friedman & Hendry, 2009)
- SODIS is an approach at including the perspective of stakeholders in the requirements definition stage of a software development project (Gotterbarn, Clear, Gray, & Houliston, 2006).

3.4.4.2 Computer Ethics Addresses Policy Vacuums

Moor (1985) suggests that a second perspective is needed. As technology changes our ways of doing things, it raises new issues or changes our views of existing concepts creating a "conceptual muddle". It is difficult to develop policies or laws to address the new situation until the conceptual muddle is addressed. "Property" is a good example.

Property was once a tangible object for which the owner had rights of control. Once tangible property is purchased, control transfers to the owner. If the object is stolen, punishment is usually related to the amount of harm or damage caused to the owner. For example, in the case of the theft of a smart phone, damage is the replacement cost of the smart phone and perhaps the loss in productivity of being without the phone (Bynum & Rogerson, 2006, p. 279; Tavani, 2011, p. 230).

Property now includes intellectual property and the conceptual muddle is the need to redefine the concept of property. With digitization of content, the damage in making an unauthorized copy of software may not be as obvious because the owner still has access to their property and can continue to function. However, arguably, it is the secondary stakeholder, the software developer or development company that incurs the damage, the loss of a potential sale, which depending on the frequency of occurrence can have a huge impact in their not getting a sufficient return on their investment to cover the development costs. Computer ethics provides the framework to discuss the muddles and develop the policies or laws to fill the vacuum (Bynum & Rogerson, 2006, p. 279; Tavani, 2011, p. 230).

3.4.4.3 Computer Ethics Assesses the Impact on Society

Bynum and Rogerson (2006, p. 19) say that computer ethics provides a perspective to assess the impact that technology has on aspects of society such as health, wealth, work, the political system and personal relationships. This is particularly important in considering the use of new technology or the new uses of current technologies and the unintended consequences that need to be recognized and managed. Unethical practices can arise when some users are excluded. For example, an increasing number of government services are available on line but some may be restricted due to poor eyesight, inability to type or inability to understand the complex interface. The third perspective of computer ethics facilitates those discussions.

As discussed in the previous section, it is important to develop the moral reasoning of ICT professionals in the use of computing resources so that they are guided not only by norms and policies but also by motivations to create a sharable cooperative environment as discussed in section 3.3.5.

3.4.4.4 The Challenge with Current Computer Ethics Discussions

Dark and Winstead suggest, in section 3.4.2, that computer ethics education loses a lot of its impact by using a predominantly cognitive approach at the expense of an affective and social approach in analysing ethical issues. Emotions play a significant part in the decision making process (Adkins, 2011) and Schulman (2005) suggests that developing empathy towards one's stakeholders can develop a sense of professional responsibility and consequently be more inclined to look after their best interests. Positive psychology suggests that focusing on what is going well can develop a sense of well-being which in turn is a positive facilitator of change (Linley & Joseph, 2006).

In reviewing four textbooks used in computer ethics education and one book on case studies, three of the texts adopted a cognitive approach that analysed case studies with a view to determine the best course of action. The topics included in each of the texts focus on similar key issues of security, privacy, intellectual property and the transformation of work. There was little focus on the great benefits that ICT provides or developing an empathy towards those stakeholders (Brinkman & F. Sanders, 2013; Reynolds, 2009; Spinello, 2003b; Tavani, 2011). There was little to foster a sense of pride, a sense of professional responsibility in those students who are new to the profession. The fourth book, however, created a different impression, one of the importance and value of technology and the responsibility of being a professional (Bynum & Rogerson, 2006). This book provided a good start on which to build.

Johnson argues that philosophers are best prepared to teach a computer ethics course because computer scientists and engineers aren't trained to accomplish the learning outcomes, such as raising awareness of ethical issues in the use of computers and engaging in discussion about their impact on individuals in society and how to address those issues. Martin and Gotterbarn disagree with Johnson, suggesting that the important thing is that computer ethics courses be taught and if the only resource available is the computer scientist or the engineer, then this is better than not teaching the subject at all (Johnson et al., 1994). Perhaps in considering the design of the computer ethics course, it will not only develop the moral attitudes in future ICT professionals but provide a framework to support the computer scientists or engineers who find themselves in the front of a computer ethics class.

The computer ethics research centres as shown in section 3.4.4, foster the exchange of ideas between philosophers and technologists. Some have broadened their participants further to include psychologists, such as the involvement of Huff (2006) at The Centre for Computing and Social Responsibility at De Montfort University. The psychology perspective in moral development has always been present, e.g. the work of Kohlberg and Rest, but more can be done.

3.4.4.5 Future Technologies

The future brings with it other conceptual muddles. Greenwald (2011) in his article *Building a Cutting Edge Business? Don't Ignore Policy, Law and Ethics*, Forbes Magazine, suggests that it is important that business, especially those involved in developing or using new technologies such as bio- and nanotechnology and robotics, focus not only on the benefits that the new technology provides but more importantly on the harm that it can cause. Goodman (2012) a senior advisor to Interpol, and the head of the Future Crimes Institute, suggests that these new technologies can cause great harm if not managed properly.

Goodman suggests that Moore's Law moves faster than enacting legislation. New technologies can be developed quickly and, as quickly, people can find ways to use it inappropriately. Potential ethical issues should be considered throughout the whole product or service development life cycle as the interactions with the various stakeholders are considered. This gives companies, industries and governments the heads up on potential issues where guidelines and policies can be put in place while legislation is considered.

Ethics can help us in determining how to use ICT in a moral way, reducing the harm and damage. It provides the frameworks and the processes to help us assess the situation, and apply rules and principles to decide on the appropriate course of action.

Moral philosophy can help develop the principles and rules to guide access to software, considering the rights of ownership of the creator, the consequences that loss of revenue can have on the continuing availability of software, the fostering of a climate of dishonesty and theft and the overall impact on the knowledge of the commons. The principles and rules developed might then be applied in a broader sense to other types of digital content in the future.

3.4.5 **Summary of Key Points**

This section identified the following influencers on moral thinking and moral behaviour:

1. An empathetic approach towards stakeholders and a knowledge of the consequences and perceived importance of the action taken affects moral sensitivity, one of Rest's Four Components that influences moral behaviour.
2. Developing moral reasoning that includes an emotive and a social approach in addition to the cognitive approach.
3. Individuals will be influenced by different factors such as personal rewards, the law depending on their predominant approach to making moral judgements
4. Good argumentation can influence the ego-strength needed to resolve conflicting priorities and also to take action.
5. A positive approach to moral discussions that focuses on replicating what works rather than a specific focus on fixing problems.

From the above discussions, three areas merge as important considerations. One is the need to include both an emotional and cognitive approach, the second is to include a positive rather than problem fixing focus and the third is to develop good argumentation skills.

Although many instructors are not comfortable with an emotional focus in ethical discussions in the classroom, especially in engineering and technology, Adkins (2011) suggests that it is important to acknowledge and discuss the emotional response as an effective way to develop empathy with one's stakeholders. This would enable moral development in those students with a predominant personal interest perspective in their ethical decision making. A cognitive response that follows a logical rational approach, considering alternatives and making use of ethical backings encourages thinking that aims to develop a cooperative environment rather than relying only on norms and policies to make moral judgments. With the fast changing use of technology, this is especially important in ICT as there are often no policies to consult in the decision making process.

The development of a strong argument and argumentation skills helps to increase the ego-strength and courage that motivates individuals into action. Both written and oral argumentation skills are important to be able to justify one's argument drawing on substantial backings beyond personal opinion.

Ethical dialogue in the use of ICT should address three perspectives: the support of the ICT professionals in their day-to-day work; the resolution of conceptual muddles when concepts change in society; and the impact of ICT, especially future uses of ICT, on society. Computer ethics provides approaches to support these endeavours.

Having investigated the influencers on moral behaviour and moral thinking, the next section considers the influencers on moral learning that could be included in the design of an educational program for ICT professionals.

3.5 INFLUENCERS ON MORAL LEARNING

The previous sections discussed the influencers on moral behaviour and moral reasoning to determine both content and approaches that could be included in an ethics course for ICT professionals. This section investigates the influencers on moral learning. What does pedagogy say about approaches to teaching that could have an impact on developing moral attitude? The section concludes with a recommendation on the structure, content and approach to be considered in teaching ethics.

It is important to discuss computer ethics in an ICT context, with a focus on developing a virtuous individual who can apply a process of analysis to decide on the right course of action and defend their decision rather than a process of indoctrination of the "right answer". Dark and Winstead (2005) suggest a balanced approach that includes an affective and social as well as a cognitive perspective.

In the same way that education caters to different learning styles, it should cater for different approaches to making moral judgments (Olson, 2011; Rest, Edwards, et al., 1997). Lastly, pedagogy emphasizes the importance of student engagement and how

Bloom’s Taxonomy can be used to facilitate engagement (Anderson et al., 2001; Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956).

To begin the discussion on the influencers of moral learning, the next section addresses the importance of teaching computer ethics in a specific ICT environment.

3.5.1 Discuss ICT Ethics in an ICT Context

Traditionally ethics is taught in a moral philosophy class that focuses on developing critical thinking, applying moral frameworks and developing good argumentation. Ethical discussions have a societal rather than a business or professional focus and provide few tools to help in recognizing and addressing ethical issues in an ICT context.

In business faculties, ethics may be taught as a separate course or integrated with other business courses that focus on the broad spectrum of ethical issues faced by organizations, often those with a financial focus. Although these courses provide little time or expertise for specific ICT issues, users and decision makers need to be aware of the ethical risks in using ICT.

In a special edition of the Journal of Information Systems Education on the need to incorporate ethics and social responsibility within the ICT curriculum, the editors (Harris, Lang, Yates, & Kruck, 2011, p. 187) emphasise that ethical questions “can give rise to dilemmas and trade-offs, and are influenced by culturally-embedded behavioural norms”..and emphasise that “We therefore recommend that instruction in ethics should be a core component of the curriculum for all IS students”.

A separate applied ethics class for ICT professionals provides the opportunity to develop critical thinking, apply ethical frameworks and develop moral reasoning skills, in an environment that is relevant to ICT in the workplace. It enables discussions to move beyond the common topics of privacy and security to more complex discussions. Discussions such as whether ICT is the best solution for the problem or whether valid assumptions were used in analysing the data to support making a good decision. Often the ethical discussions have more relevance and interest when students develop a specific understanding of the impact that ICT can have on both their stakeholders and themselves. These techniques applied in an ICT context might then be applied to a broader business or society focus.

3.5.2 Focus on Virtue Rather Than Indoctrination

Ethics education should discuss the virtues of an ICT professional and develop an understanding of the importance of integrity, honesty, trustworthiness, etc. (Huff, Barnard, & Frey, 2008). Although reference to ICT professional codes of ethics can provide a framework in which to situate the discussions of virtues, discussion of virtues is limiting in that it provides no guidance on how to make moral decisions or have the moral courage to take action. Moor (1999) suggests a virtue approach should be used in conjunction with other approaches.

Technology changes quickly, either with the arrival of new technologies such as smartphones and drones or new uses of existing technologies such as software to monitor an employee's work performance. Often there are no policies or norms in place to provide a "right answer". ICT professionals need to rely on their professional responsibility along with post-conventional thinking to consider the situation and determine the best action to support a cooperative, functioning society (Olson, 2011).

Ethics is dependent on the situation and it is difficult, given the brief amount of information in a case situation discussed in class, to categorically decide on the right course of action. A better approach is to develop a sound process of moral reasoning and argumentation that can be replicated in a different context such as in the wider business or society context as mentioned above (Bynum, 2006a; Haines & Leonard, 2005; O'Boyle, 2002; Paradice & Dejoie, 1991).

3.5.3 Include an Affective and a Social Approach

Dark and Winstead (2005) suggest that ethical education should look past the solely positivist, cognitive approach in offering right answers and prescriptive solutions. ICT professionals should understand their responsibilities to other stakeholders and their role in building a future society with ICT and, supporting a positive psychology approach, engage in a discussion on what this future would look like. They should look beyond the views of authority figures simply because this is “the way we do it here” and critically examine their own assumptions and beliefs to understand where those assumptions might introduce bias.

Discussing computer ethics education from a Durkheimian perspective suggests that moral assumptions are not “taught”, but are acquired through indirect acts of socialization, ritual and myth. Rigoni and Lamagdeleine (1998) argue that there needs to be a moral element included in professional education where they acquire better insights and ability to make moral decisions through their socialisation and experiences in their professional education rather than from the formal class curriculum.

Dark and Winstead (2005) agree with Reynolds (2007) that it is important to take a cognitive approach in teaching moral development. They emphasize that moral development also has an affective and social aspect that is often disregarded when a solely cognitive approach is taken. Dark and Winstead describe “affective” as exhibiting caring and responsibility for others. An affective approach is concerned with reaching out to the emotional or empathetic side to change the attitudes and preferences of individuals in the way they act and behave. Their “social” approach is concerned with recognizing and responding to situations or policy vacuums where there is a need for social action, for example in the development of new policies in the workplace or new regulations at the community level.

Dark and Winstead (2005) recognize that including an affective approach may be a challenge for many academics and engineers who may find it difficult to deal with an emotional, non-rational approach and the ambiguity of there not necessarily being a right answer. As Schulman (2005) discussed, see section 3.3.3, the teacher as moral exemplar, is an influencer of moral behaviour and the ability to facilitate a learning environment that is respectful, where students feel free to question and their opinions are respected by the instructor and their peers is a critical component in moral learning.

3.5.4 Focus on the Process rather than the Outcome

Adults relate and remember particulars and then generalize from them rather than the reverse. Because of this, using case studies in the teaching of ethics is suggested. Ethics classes should develop a process of reasoning that can then be applied to specific examples with a focus on applying the process rather than "getting a right answer". Considering several alternatives develops moral imagination and, if effective, can identify ethical solutions to the problem instead of the solution immediately considered (Kidwell, Fisher, Braun, & Swanson, 2011).

Maclagan (2003) emphasises the importance of using cases to examine moral problems, differentiating between moral issues (where the "right" solution might appear to be fairly obvious) and moral dilemmas (where multiple equally valid responses are possible). He suggests that cases can be used to help students address these dilemmas, providing a better understanding of competing moral demands and perspectives. Riemenschneider et al. (2011), while examining students' ethical decision making in the use of ICT, demonstrated the usefulness of mini-case type scenarios in helping students better understand the ethical issues.

It is important to focus on skills to present a good argument that can be justified with good critical backing that helps present the argument in what might be a hostile business environment. To develop ego strength it is important to have confidence in raising the ethical issue. Critical thinking and argumentation develop the skills to defend an argument beyond one's personal opinion, considering the perspective of the stakeholders and using good backing to support the argument beyond one's personal opinion (Toulmin et al., 1984). Including practice in oral argumentation skills, aids in the development of confidence in the ability to defend one's position in a logical, rational manner.

3.5.5 **Consider the Moral Starting Point**

As suggested by Rest (see section 3.3.5.), include an assessment of students at the start of the class to determine the level of experience in ethics, their opinions on ethical ICT and their approaches to making moral judgments. An individual whose predominant approach is personal interest (PI) might respond to a focus on stakeholders and consequences and develop an empathy and sense of professional responsibility towards others, moving to a more maintaining norms (MN) approach.

In parallel, consider a focus on future technologies or new uses of current technologies for which there is a policy vacuum, to develop an individual with a predominantly maintaining norms approach to making moral judgments to adopt a more post-conventional perspective. And, to assist those with a predominantly post-conventional approach in their continuing moral development, consider a focus on whether a specific technology should be considered for use in a specific situation and applying frameworks to consider if this is of benefit.

3.5.6 **Engage Students with the Material**

Good pedagogy suggests that ethics education should engage students with the material. In describing her experiences in using formal debates in computer ethics education, Peace (2011) found them to be "an excellent way to develop students' crititcal thinking skills, communication skills, higher level learning skills, and to simply have a more entergaining classroom experience", recognizing that "students can be more familiar with new technologies and their impacts than the instructor" and that "creating a more participative enviornment can lead to a better learning environment for all involved".

One of the challenges in engaging undergraduate students in computer ethics is their lack of business experience and their lack of knowledge of ethics and so it is important to provide relevant case studies that can connect them with real world experiences to which they can relate. Using student centric learning where the instructor facilitiates student learning, having the students engage in self-directed research, using role-playing, in class discussions and debates are some options. However it is important to remember Carroll's observations as reported in section 3.2.3.1, where students, especially those new to ethical concepts, appreciated the instructor's lectures and facilitated discussions.

In order for ethics to remain engaging, discussions should move to addressing more complex issues. There must be a basic foundation of ethical concepts and terminology on which to build the more complex discussions. Bloom's Taxonomy is an effective tool in determining a hierarchy of learning outcomes. Kidwell et al. (2011) have used it to develop a curriculum for professoinal ethics for accountants. Learning is an iterative process and complex behaviours are made of simple components which must be learned first to build the foundation on which more complete behaviours can be considered Bloom et al. (1956, p. 10).

Bloom, later revised by Anderson (2001), defined a series of progressive levels as shown in Figure 8. Key learning outcomes would be achieved through an iterative process of progressive levels of complexity.

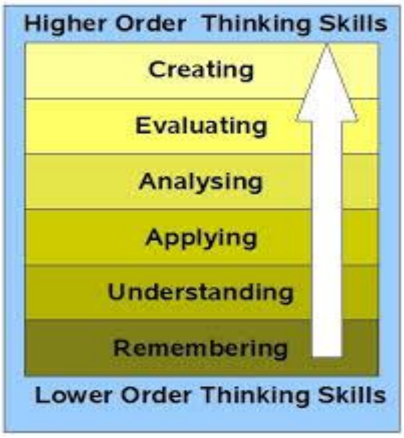


Figure 8 Bloom's Taxonomy (revised) (Anderson et al., 2001)

Kidwell et al. (2011) identified six skills and knowledge areas for accounting ethics: codes of conduct, the profession, moral development, classical ethical theories, decision making models and corporate governance. They then mapped the development of knowledge and skills according to Bloom's taxonomy to ensure that students not only understood the concepts but were also able to apply and evaluate their impact. This approach has been adopted to present the content and approach for the ethics course discussed in section 4.4.4.2.

3.6 CHAPTER SUMMARY

The purpose of this chapter was to answer the second and third research sub-questions, namely:

2. *What approaches exist that are used in the teaching of ethics?*
3. *How might these best be employed in educating future ICT professionals?*

The second research sub-question was answered in section 3.2.4 and the research then investigated the psychology, moral philosophy and pedagogy literature to determine the influencers on moral behaviour that could inform the ethical education of ICT professionals.

The literature suggested that moral behaviour is influenced by moral sensitivity and an empathy towards one's stakeholders. These can be gained by understanding the consequences of the use ICT on an individual or group. A focus on the integrity, responsibilities and virtues of an ICT professional can foster a sense of professional pride and a motivation to action.

Moral behaviour is also influenced by the ability to make good decisions relying on both an affective (emotional) and a cognitive approach and developing good argumentation skills to justify one's decisions. Using good argumentation that considers the pros and cons of alternatives can develop the ego-strength needed to act on one's decisions, providing the logical, rational backings to support one's position. Backings can be drawn from codes of professional conduct, moral frameworks, and ICT principles and best practices, such as the Systems Development Life Cycle (SDLC), Value Sensitive Design and ITIL processes for managing ICT operations.

Moral motivation and pride of profession can be influenced by approaching discussions as an Appreciative Inquiry and replicating what is working well rather than using a "problem solving" approach.

As discussed in sections 3.3.5 and 3.2.3.5, depending on an individual's primary approach to making moral judgments and their previous experience in ethics, several parallel teaching approaches may be needed. In the case of the primary approach to moral decision making, influencers such as personal rewards, policies and laws or intent to foster a well-functioning society may all need to be included in an educational intervention to reach the diverse range of participants.

The ICT professional is not only responsible for providing services in the development and implementation of ICT in a professional manner but they must also raise concerns on the potential impacts to business and society at large, that new technologies and new uses of technology can have. This can involve recognition of how the change in concepts, such as property, can have on current policies and laws.

The literature on pedagogy in the teaching of computer ethics, suggests that an affective and a social approach is as important as a cognitive approach to develop an empathy with stakeholders and a recognition that social action may be required to change laws or develop policies. The learning environment should focus on facilitating engagement with the material to support an individual developing their own moral attitude and decision making processes that can be applied in the work environment.

In summary, this chapter argues that an educational intervention needs to:

- Develop an understanding of the current and future uses of ICT and the benefits it can provide
- Foster an empathy and moral affiliation between the ICT professional and their stakeholders through recognition of the consequences of unethical practices in the use of ICT
- Foster a pride of profession that would support the ego strength of the ICT professional in being motivated to carry out this role

- Develop the ability to make good decisions in the use of ICT applying ethical frameworks, professional standards, policies and laws, considering alternatives and justifying recommended courses of action.

The next section discusses how these might best be employed in educating future ICT professionals.

3.6.1 A Suggested Approach to ICT Ethics Education

The purpose of this professional education research project was to develop the moral attitude of future ICT professionals. Bebeau (2002), based on the work of Rest (1994) and her experience in professional education for the dentistry profession, suggests that ethics education should include each of the four components in Rest's model discussed in section 3.3.2. This forms the framework for the suggested ethics education, presented in Table 15. (See section 3.2.2.1 and section 3.3.2 respectively for further details on Bebeau and Rest respectively.)

Four Component	Description
Moral Sensitivity (affective)	Develop an empathy to stakeholders through recognition of the consequences of one's decision and the perceived importance of resolving ethical issues in the use of ICT.
Moral Judgment (cognitive)	Develop and apply a process of decision making that includes an emotional and cognitive approach to consider alternatives and justify a recommended course of action.
Moral Motivation	Develop and apply good argumentation to support the recommended course of action using good backings such as ethical frameworks, professional ICT standards, policies and roles and responsibilities. Use an Appreciative Inquiry approach to foster a visioning rather than problem fixing approach.
Moral Character (social)	Develop professional integrity and professional virtues to foster a professional responsibility to address current and future ethical issues in the use of ICT contributing to ego-strength.

Table 15 Suggested Structure for a Computer Ethics Class based on Findings

An ethics program should include an affective, cognitive and social approach (Dark & Winstead, 2005). As can be seen in Table 15 above, Leonard et al.'s (2004) consequences, perceived importance and ego-strength and Schulman's empathy, principles and moral exemplars also map into the above framework.

As discussed in sections 3.3.5 and 3.2.3.5, students may differ in their knowledge of ethics, their opinions on ethical behaviours in ICT and in their approaches to making moral judgment. Assessing these at the start of the course provides insights on the class demographics to both the instructor and student. Assessing again at the end of the course enables the student to see their progress. These assessments should not just be used for course evaluation but rather for pedagogical purposes to assist the instructor in directing learning. Suggested tools are discussed in section 4.3.4.3.

Developing empathy towards one's stakeholders and a sense of professional responsibility to act on their behalf is a critical objective of the educational program. As discussed in section 3.3.6.1, a positive psychology approach facilitates a motivation to change. Appreciative Inquiry is a method that facilitates the engagement of a group to focus on an ideal, such as the ethical use of ICT, understand what it looks like and describe how to maintain the ideal, thinking of the programs that might be put in place to achieve this. In this context, the future ICT professional considers the ideal environment when a specific aspect of technology is provided to a stakeholder group and what appreciating those benefits might look like. The group then considers what might need to be in place to ensure those benefits continue and argues for changes in policies if required. It is an approach that supports development in each of the four components in Table 15.

In this research project an Appreciative Inquiry intervention was studied to determine its impact on developing moral attitude. The next section demonstrates the relevance of the research question.

3.6.2 Justification of the Research Question

The prior examination of the literature suggests that there are gaps in the literature on computer ethics education that an Appreciative Inquiry has the potential to fill.

Although there is widespread agreement that ICT professionals are morally responsible for delivering products and services that are fit for purpose and cause no harm or damage (Bynum & Rogerson, 2006; Gotterbarn, 2001; Johnson, 2001; Reynolds, 2012; Tavani, Herman T., 2007; Weckert & Adeney, 2013) and computer ethics education has been shown to be effective in developing a moral sensitivity in and moral judgment with respect to impact of ethical issues that arise in the use of ICT, (Holland, 2011; Jagger, 2011; Staehr & Byrne, 2003), much of the education provided takes a cognitive, rules-based, problem-focused approach (Brinkman & F. Sanders, 2013; Reynolds, 2012; Spinello, 2003b; Tavani, Herman T., 2007) that misses the value of including a positive, affective and social perspective (Dark & Winstead, 2005).

Some do take a more positive approach (Gotterbarn, 2006; Huff, 2006; Moor, 1996), that can develop a pride in the profession but pride of profession is not action and more can be done by including perspectives from Psychology in computer ethics education. Although Rest's Four Components have been included in some professional ethics education, little has been done in the field of ICT (Rest & Narvaez, 1994). Psychology, especially Positive Psychology has been used to initiate change in organizations and professions such as medicine but again little has been done in the field of ICT.

An Appreciative Inquiry approach, could fill this gap. Although Appreciative Inquiry has been used in organizational change and in education (Conklin, 2009; Head, 2006; Van Vuuren & Crous, 2005) , it has not been investigated in computer ethics education with ICT professionals.

An Appreciative Inquiry focusing on developing ***empathy*** through looking at the benefits and risks of a specific technology to a specific group of ***stakeholders*** and developing a strong argument on what could be done to minimize the risks thus developing the ***ego-strength*** in ICT professionals to take forward their recommendation. The Appreciative Inquiry would help participants identify the issues and impacts of decisions on the use of ICT on stakeholders (***moral sensitivity***) and on what to do (***moral judgment***) related to Rest's four component model (Rest & Narvaez, 1994, p. 22) with tools to measure changes in moral sensitivity and moral judgement as evidence of the impact of an Appreciative Inquiry, thus supporting the key research question:

> *How does an approach to teaching, namely an Appreciative Inquiry, affect the moral attitude of future Information and Communication Technology (ICT) professionals in the ethical issues that arise from the use of ICT in business?*

Education programs require time and money to develop and deliver and, to justify the investment, they need to be effective. The potential harms that ICT can cause are only going to increase and it is important to educate ICT professionals as quickly as possible.

The first three sub-questions have already been answered in chapters two and three:

1. *What are the ethical issues that arise in the use of ICT in business? (chapter 2)*
2. *What approaches exist that are used in the teaching of ethics? (chapter 3)*
3. *How might these best be employed in educating future ICT professionals? (chapter 3)*

The next chapter addresses how the main research question and the last two sub-questions will be answered.

4. *How can an Appreciative Inquiry educational intervention affect students' moral attitudes and how can such a change of attitude be measured?*
5. *What are the outcomes of the measures on a collective and individual basis?*

It includes the justification of the research methodology, the research design, the choice of measurement tools and how the data was collected and analysed.

CHAPTER 4 RESEARCH METHODOLOGY

4.1 INTRODUCTION

Investing in education involves time and money and it is important to ensure that an educational program achieves the desired learning objectives. This research project assessed the impact of a Positive Psychology approach, namely Appreciative Inquiry, on the moral attitudes of future ICT professionals as an educational intervention. This chapter describes the strategy, methods and processes followed to answer the overall research question and includes the answer to the sub question: *how can a change in moral attitude be measured?*

The chapter begins with a discussion in section 4.2 on the research philosophy, how the researcher arrived at using a functionalist paradigm as the underpinnings of the research. It describes the phenomenon being studied, namely moral attitude.

Section 4.3, the research strategy, presents the research question and describes, in the context of educational research, the strategies that were considered in answering the research question. It provides justification for a quasi-experimental approach using quantitative methods to compare the changes in moral attitude between a Control group and a group that includes an Appreciative Inquiry intervention.

The research design section, 4.4, describes how the research was operationalized to answer the research question. It states the hypotheses to be tested and describes the constructs and the relationship between them. It describes the overall design principles of both the computer ethics course and the Appreciative Inquiry as well as the choice of measurement tools. Because the research project includes human subjects, the section describes how ethical concerns were addressed.

The research implementation section, 4.5, describes the sample used in the quasi-experiment and how both the computer ethics course and the Appreciative Inquiry were developed, administered and measured. It reports on the selection and pilot of the measurement instruments. It describes the data collection and data analysis process followed using factor analysis and paired t-tests to identify the changes in moral sensitivity and moral judgment between the Control and AI groups. Before considering the research strategy, it is important to understand the underpinning research philosophy of the researcher and the phenomenon being studied.

4.2 RESEARCH PHILOSOPHY

According to Creswell (2009, p. 5), it is important for the researcher to articulate the philosophical worldview or assumptions that influenced the research project as well as the related strategy of inquiry and the specific research methods and procedures. Although Creswell uses Guba's (1990) terminology calling it the "worldview", others refer to this as "epistemologies and ontologies" (Crotty, 1998) and this research project used the term "paradigm" to describe the basic set of beliefs that guided this research project (Guba & Lincoln, 2005).

According to Cohen et al. (2011, p. 4), a number of approaches are used to understand phenomena, namely:

- Relying on past experience
- Applying deductive or inductive reasoning
- Engaging in research.

Research is "systematic, controlled, empirical and critical in the investigation of hypothetical propositions about the presumed relations among natural phenomena" (Cohen et al. 2011, p. 4). Research is empirical, that is, a subjective personal belief is validated against objective, empirical facts and tests. Coming from a scientific and engineering background, the researcher's natural inclination was towards an objectivist approach where a subjective belief such as "an appreciative inquiry can have an impact on moral attitude of future ICT professionals", is tested through objective verification.

Research is self-correcting. It relies on its being carried out in the public domain for continual comment and verification, enhancing the foundation on which further research can develop. Good research builds on the shoulders of those who have gone before. It is the researcher's belief that research should have an applied application in mind, such as the ability to apply these findings to the ethics education of future ICT professionals.

The phenomenon being studied, in this research project, is moral attitude. It was studied in the context of the moral attitude of future ICT professionals towards the intention to behave morally in the use of ICT. Moral attitude, as previously defined in section 2.4, is the ability to determine how one's actions can affect others and the ability to make good decisions in the use of ICT. Using the framework of Burrell and Morgan (1979), the following section describes the phenomenon in order to justify the underlying functionalist paradigm chosen.

The moral attitude of an individual depends on the individual to exist and is constructed by the individual. However, as discussed in section 3.3, there are many factors that influence an individual's moral attitude that exist apart from the individual such as evidenced by Leonard, Rest and Schulman (Leonard et al., 2004; Rest, 1994; Schulman, 2005).

The individual interfaces with a real world that influences the development of their own moral thinking. An individual's ethical decision making process is subjective and is the product of individual cognition. It is influenced by their upbringing, the laws and norms of the society where they live and their life experiences. An individual encountering a dilemma assesses the situation in their own mind and determines the right course of action; the individual assesses the positions and attitudes of those around them, drawing on their own moral system, and these perceptions become reality in the mind of the individual.

An individual's moral attitude can be observed in a specific situation, how they recognize the ethical implications of a specific situation, how they articulate the moral judgment they have made and how they actually behave. However, moral attitude is a sensitive and personal issue that may not be articulated honestly in the presence of an observer or may be influenced by an observer. The observer can be a team member, a course peer, an instructor as well as the researcher themselves.

The research question is ideographic, that is it seeks an explanation to predict what happens in the social world looking for regularities and causal relationships. In this case, how education influences the moral attitude of future ICT professionals. This is educational research, and educational research should be linked to a change in pedagogy (Pring, 2004, p. 8). There may not necessarily be a right answer, but there is a good enough answer that encourages application accompanied by further detailed research.

Drawing on Burrell and Morgan's framework in Figure 9 and assessing the phenomenon of moral attitude being studied, the research is objectivist in its approach as indicated by the "RP" for research project.

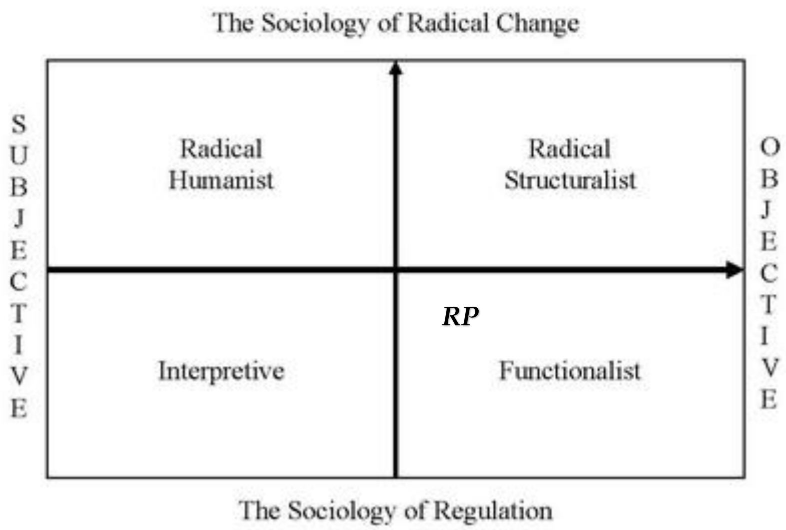


Figure 9 Research Paradigm (Burrell & Morgan, 1979)

The research inhabits the lower quadrant, with a regulation rather than a radical change focus that is primarily concerned with explanations that emphasize society's overall unity, consensus, persistent and cooperative approach in addressing the issue of unethical practices in ICT rather than a radical, conflict, coercive approach focusing heavily on change (Burrell & Morgan, 1979, p. 11). This does not preclude a move to a more radical approach depending on the outcome of this research. The research moves in the middle ground between subjectivity and objectivity - a positivist tending toward an interpretive approach.

Orlikowsky and Baroudi (1991) consider three different approaches: positivist, interpretive and critical studies. Their definition of a positivist study reinforces the above functionalist observation as they describe a positivist study as "testing a theory in an attempt to increase predictive understanding of a phenomena…it includes formal propositions, quantifiable measures of variables, hypotheses testing and drawing of inferences about a phenomenon from the sample to a stated population". In this case, the research project is testing the proposition that an Appreciative Inquiry approach affects the moral attitude of future ICT professionals in a computer ethics class by measuring the change in moral sensitivity and moral judgment over the course. The findings from this could then be applied to the wider population of future ICT professionals.

Before finalizing on this approach, it is important to review the other strategies considered.

4.3 RESEARCH STRATEGIES

This section provides background information and the context for the research project. It then discusses the strategies considered in conducting the research and justifies the research methods adopted. This research project investigated the moral attitude of future ICT professionals in the use of ICT and determined the effect of an approach to teaching on these moral attitudes. The research questions were:

> *How can an approach to teaching have an impact on the moral attitude of future ICT professionals to the ethical issues that arise from the use of Information and Communication Technology (ICT) in business?*

The remaining subsidiary research questions are:

4. *How can an Appreciative Inquiry educational intervention affect students' moral attitudes and how can such a change of attitude be measured?*
5. *What are the outcomes of the measures on a collective and individual basis?*

In addition to understanding the purpose and the context in which the research is conducted, it is important to understand the background leading up to this research project which had an influence on the research methodology chosen. This research project has been underway for a significant period of time. It focused on solving a specific problem, namely developing the moral attitude of future ICT professionals. Each stage of the research builds on what has gone before, and the researcher was deeply involved in the teaching activities which limited some of the choices.

4.3.1 The Context - Educational Research

As part of AACSB accreditation for a Canadian business school, the researcher was asked in 2008 to develop a required Computer Ethics course for the undergraduate Business Technology Management (BTM) program. The BTM program is part of a four year Bachelor of Commerce degree. Over 200 students would be required to take the 12 week course in the winter semester of the second year. The researcher collaborated with an instructor who was currently teaching a computer ethics elective to thirty, fourth year students in the same program. Joint reflection and discussion focused on how to consistently deliver a compulsory rather than elective course, to students who were more junior and had less business experience, in a larger class format. One of the key learning objectives was to develop the moral attitudes of future ICT professionals in the ethical use of information and communication technology.

4.3.2 The Research Project Environment

After researching into effective methods in teaching ethics, discussions with members of the university learning and teaching office and attending a workshop with an international body of instructors in business ethics sponsored by the accreditation body for business schools, AACSB (Gentile & Samuelson, 2005), the new course was developed and delivered in the winter semester of 2009. Feedback from students, assessment of attendance and course grades and reflections by the instructor identified not only the areas to be improved for the next delivery of the course but also what worked well that should be continued. The observations (Grant, 2009b) were presented in a conference paper and discussed with the attendees at the ISECON 2009 conference (an ICT education conference). Some of the key observations:

- Students passed the course with an overall class average of B- (72%), which is a little higher than the university class average of C+ (67%).
- Attendance, taken in the workshops, showed about 85% attendance with the same students absent from week to week, which is significantly higher than the average attendance of 65% experienced in other similar classes at the university.
- Student feedback indicated an approval rating on both the value of the learning experience delivered by the course and the way the course is taught to facilitate learning of 1.9/5. In consultation with a senior administrator at the university, he confirmed that this is around the average for all courses taught in the business school.
- Students could easily identify how the primary but not the secondary stakeholders were affected by a situation; a challenge because it is often with the secondary stakeholders that the ethical issues arise.

Although the course assessments showed that students understood and could apply most of the concepts in computer ethics, it was not clear that their moral attitude had developed and the next phase of the project looked for an appropriate mechanism to demonstrate that a change in moral attitude had occurred.

The research project, measurement tools were selected and piloted in a small class environment to determine their suitability and ease of administration. They were then used in a Control group to assess changes in moral attitude.

Although, there was a change in moral attitude in the Control group, it was not apparent that the change happened for all students. In addition, students appeared despondent that ethical conduct didn't seem to be getting any better during in-class discussions on such topics as corporate social responsibility. This led to the development of the Appreciative Inquiry intervention and including the intervention as part of the computer ethics class.

According to Pring (2004, p. 8), and others especially doing action research, educational research should be done in the context of solving a valid problem and should focus on changes in pedagogy (Elliot, 1998; Noffke & Somekh, 2009; Price & Valli, 2005; Reason & Bradbury, 2001). The phenomenon being studied should be clearly defined and a research methodology chosen that is appropriate to the research question. The results should aim to be measurable and conclusive with guidance on how changes in the pedagogy could be implemented. Pring describes a number of different strategies that could be used, one of which is a functionalist approach that tests a hypothesis using an experiment.

Action research is research that informs change (Elliot, 1998; Pring, 2004, p. 121). Although this research project displays aspects of action research as it informs the teaching of the computer ethics course by planning, gathering data, analysing, implementing and reflecting on the outcomes and then planning for the next iteration, there are stronger strategies to be considered as evidenced in Cohen et al.'s Research Methods in Education (2011), Pring's Philosophy of Educational Research (2004), Yin's Case Study Research: Design and Methods (2003) and Denscombe's The Good Research Guide (2003).

4.3.3 **Strategies Considered**

According to Yin (2003, p. 5) there are three things to consider in choosing a research strategy:

- The type of research question
- The extent of control an investigator has over actual behavioural events
- The degree of focus on contemporary as opposed to historical events.

Cohen et al. (2011, p. 128) present a number of research strategies. Table 16 summarizes the purpose, characteristics, advantages and disadvantages for each research strategy. Other authors provide similar lists with some variations (Creswell, 2009; Denscombe, 2003; Oates, 2006).

This research had a proposition to test, namely: Appreciative Inquiry has an impact on moral attitude. Grounded theory, because of its focus on developing a theory from the data or observations, was therefore not considered (Denscombe, 2003, p. 109).

The research question is prescriptive. It describes how an Appreciative Inquiry can be included in a computer ethics course to have an impact on the moral attitude of future ICT professionals. The moral attitude of the participants measured at the start of the course was compared to those measured at the end of the course to determine the change. To remove the effect of the computer ethics course itself, the results were compared to a Control group, a similar computer ethics course without the AI intervention.

Strategy	Purpose	Characteristics	Advantages	Disadvantages
Survey	Gather large scale empirical data in order to make generalizations	What, when, where, why, how many? Use of questionnaires, often administered remotely.	Reduces influence of observer. Efficient method of gathering data.	Lacks behavioural control to ensure repeatability and representative sample.
Experiment	Compare under controlled conditions Generalize about efficacy Objective measurement of treatment	How, why, how much? Pre-test, Post-test Isolation of variables Generalizations to wider population	Simplistic, control and experimental group, ability to measure comparison Test a theory	Difficult to control all the variables, Possible need for deception, creation of artificial settings
Case Study	Focus on one instance of a particular phenomenon in a real life environment to provide in-depth account of relationships, experiences.	How, why? Individual uniqueness, in-depth analysis, subjective, descriptive	Good at explanatory research where researcher has little control and focus is on contemporary events.	Researcher influence in honesty of responses. Lacks behavioural control to ensure repeatability
Action Research	Involve participants in plan, implement, review, evaluate an intervention designed to improve local practice	How, why? Action, improvement, reflection, problem solving	Participants as researchers, reflection on practice	Lacks behavioural control to ensure repeatability
Ethnography	Broad description of a people or culture	How, why? Subjectivity, honesty, multiple perspectives	Broad investigation of a specific group rather than a specific focus such as moral attitude.	Researcher influence in honesty of responses. Lacks behavioural control to ensure repeatability

Table 16 Purpose, Characteristics and Disadvantages of Research Strategies (Cohen et al., 2011)

Although historical events were not a concern in this research project, the ability to control behaviour was of a concern in order to ensure repeatability, consistency and reduce the external factors that can influence an individual's ability to discuss their moral attitude in an open and honest manner. Surveys, ethnographic studies and case studies do not provide the behavioural control.

A case study approach uses direct observation and is preferred in examining contemporary events when the relevant behaviours cannot be manipulated. A case study approach could have been used here. A group of students could have been observed as they engaged in an ethical discussion to arrive at a recommendation on what a protagonist should do in a given situation. The process could then have been repeated in a course that included an Appreciative Inquiry (AI) intervention and the changes in moral attitude compared. The challenge was controlling the behaviours sufficiently to ensure that it was only the AI that was causing the effect and not the influence of the other participants or even the observation of the researcher who was also the instructor.

Experiments are conducted when the researcher can manipulate behaviour as was required in this situation. The researcher wanted to change the moral attitudes of future ICT professionals. This was not done in a laboratory but rather in a field setting in which the researcher treated whole groups of people in a different way i.e. providing only computer ethics training to one group (the Control group) and then including the Appreciative Inquiry intervention in the computer ethics training to a different group (the AI group).

Thus, an experimental strategy was appropriate. However, in this situation, the experimental design takes place through several cycles, with a focus on feedback and improvement in teaching so it also included some elements of action research.

4.3.4 Choosing Research Methods and Tools

4.3.4.1 Considerations in Designing a Quasi-Experiment

As Denscombe (2003, p. 61) says "the point of conducting an experiment is to isolate individual factors and observe their effect in detail". Specifically he identifies three things that are core to conducting experiments:

- Controls: identifying factors which are significant and can be observed
- Identification of causal factors: the introduction or exclusion of factors to pinpoint causes of outcomes
- Observation and measurement: precise and detailed observation of outcomes and changes that occur following the introduction or exclusion of relevant factors.

In determining controls, factors can be excluded or held constant and the selection of groups is also important. In particular, control groups are frequently used to provide a baseline for comparison to a subsequent experiment. In essence, the two groups should be matched samples with a new factor being introduced to the experimental group, with the "belief that any difference between the groups can be attributed to the factor which was artificially induced" (Denscombe, 2003, p. 63).

In this case, the research project is observing the effect of an independent variable, an Appreciative Inquiry, on the dependent variable, moral attitude. The experiment takes place in a computer ethics class delivered to future ICT professionals. To control the effect of the computer ethics class on moral attitude, a Control group is used.

A differentiation is made between a laboratory and a field experiment. In the social sciences, a laboratory experiment is often viewed as an artificial setting with limited validity beyond the context of the laboratory (Bryman, 1989 in Denscombe, 2003, p. 61). However, in field experiments, often viewed as quasi-experimental in naturally occurring settings, the researcher has less control over the circumstances of the situation. Interestingly, experiments in the classroom, while clearly real life based, do allow the researcher more control than in other field settings.

Thus, an experiment in the classroom met to a significant degree Denscombe's advantages of experiments, namely, it is repeatable, allows a degree of precision in measurement and is convenient. In addition, it avoided some of the disadvantages such as the creation of artificial settings and questions regarding the representative nature of the subjects. It still faced challenges regarding the control of the relevant variables.

This, then, was a field experiment with some elements of action research, building on previous work done in the field. There was already a large recurring group of participants who were engaged in an educational intervention, namely a 12 week computer ethics course in the winter semester of each academic year. The researcher was the only instructor for the course reducing the variance from multiple instructors. The course was developed following good pedagogy in the teaching of computer ethics (C. Grant, 2009b). Given that education had been shown to have an effect on moral development, a continued educational intervention would seem appropriate. This was educational research and experiments are a common form of research in the educational domain.

The experimental design introduced a new causal factor, the use of Appreciative Inquiry (AI). AI had mainly been used in organizational change initiatives (van Vuuren & Crous, 2005) (Cooperrider et al., 2008; Cooperrider & Srivastva, 1987) with some educational change initiatives focusing on improving the in-class experience (Conklin, 2009; Head, 2006; San Martin, 2008). This research was the first instance of using Appreciative Inquiry in a technology context where the focus was on developing the moral attitude of future ICT professionals in the ethical use of ICT. The research was exploratory to determine if there was a relationship that was worth studying in more detail. This was a positivist study using quantitative methods.

The researcher is also the instructor and developed and taught the computer ethics course several times before teaching it to the Control group. To reduce the likelihood that other new causal factors would be inadvertently introduced, the course was taught to four different sections in the Control group and five different sections in the AI group. The measurements were then analysed as one group to lessen the probability that additional causal factors were included. In addition, the same course materials, lectures notes, assignments, case studies were provided to students in both groups through the virtual learning system (Blackboard).

4.3.4.2 Observation and Measurement Methods

Table 17 suggests a number of different methods for data collection (Cohen et al., 2011; Denscombe, 2003; Oates, 2006).

Method	Purpose	Characteristics	Advantages	Disadvantages
Interview	Gather more in-depth information from fewer participants	Use of structured, semi-structured or unstructured questions conducted by an interviewer. Could be used as preparation or follow up to a questionnaire	Provides more detailed information and an opportunity to explore in detail.	With a small number of participants, is the information representative. More time consuming and costly. Risk of influence by interviewer.
Observation	Opportunity to witness first-hand how people behave	Use of systematic or participant direct observation in real life settings such as focus groups.	Ability to see behaviour rather than rely on what people say they do or say they think.	Influence of observer Difficulty in repeatability, consistency.
Testing and assessment	To assess performance and abilities.	How, why, how much? Controlled administration of confidential tests.	Repeatability, confidentiality, consistency	Difficult to discover the unknown, questions are defined beforehand.
Documents	Analyse, interpret the uniqueness of real individuals through accessible written documents	Who, what, where, how many, how much?	Individual uniqueness, in-depth analysis, subjective, descriptive	Lacks behavioural control to ensure repeatability

Table 17 Methods of Data Collection

Three specific approaches, structured interviews, focus groups and analysis of documents were considered in more detail.

The use of structured interviews, such as Kohlberg's Moral Judgment Interview (1969), to determine how approaches to moral judgment changed over the course were considered. However, a large number of interviewers would be required to administer the test. Consistency and interview bias was considered to be a problem.

Focus groups were considered to study how the use of language and the ability to recognize and decide on ethical issues changed in the discussions on the ethical use of ICT. Moral attitude is an individually constructed phenomenon and it was felt that other participants in the focus group and the researcher, who was also the instructor, could influence the views of a participant.

And finally, analysis of individual written assignments, such as a weekly ethical reflection journal, to determine how the use of language changed over the course was considered and rejected, given the challenges in organizing such a large volume of data in a way that could apply qualitative analysis tools such as content analysis.

In determining a change in moral attitude, interviews, assignments and observations were not considered to be consistent or easily repeatable. Although a review of documents, such as assignments, was considered, these can be inconsistent unless administered in a controlled, structured environment.

Assignment data related to student performance was also available and used:

1. Differences in student grade distributions
2. Performance in assignments
3. Levels of participation
4. Student assessment of their class experience through formal survey

Given the opportunity to study moral attitude in the large compulsory computer ethics course and to ensure consistency, repeatability and reliability between a control group and a treatment group, it was decided to use a quantitative approach to measure changes in moral sensitivity and moral judgment, the two components identified earlier, see section 4.2, as contributing to moral attitude. This strategy would support an initial focus to determine if Appreciative Inquiry was a reasonable approach to changing moral attitude that would warrant further study. The following section describes the measurement tools considered.

4.3.4.3 Measurement Tools Considered

Moral attitude in the use of ICT, as previously defined in section 2.4, includes the responsibility to stakeholders to ensure that ICT solutions are fit for purpose and cause no harm or damage. Moral attitude includes the ability to recognize how one's actions can affect others and the ability to make good decisions in the use of ICT. Rest identifies these as moral sensitivity and moral judgment, two of the four components in his influencers on moral behaviour (see section 3.3.2). As a reminder, this research project defines moral attitude as including "both the *sensitivity* to recognize the consequences or impact of one's actions with respect to the use of ICT on various stakeholders and the ability to make moral *judgments* on the right course of action".

A number of tools were considered in measuring changes in moral judgment, namely:

- The Moral Foundations Questionnaire (Ditto et al., 2011)
- The Sociomoral Reflection Measure (Gibbs, Basinger, & Grime, 2003)
- The Moral Judgment Test (Lind, 1999)
- The Defining Issues Test 2 (Rest, Narvaez, Thoma, et al., 1999).

The Defining Issue Test 2 was chosen for a number of reasons.

4.3.4.3.1 The Defining Issues Test 2

Fundamental to this research is the work of James Rest, recognized as a seminal figure in the field of moral development with an h-index of over 40 (Rest, 1974, 1979, 1994; Rest, Edwards, et al., 1997; Rest, Narvaez, Thoma, et al., 1999; Rest et al., 2000). As described earlier in section 3.3.5, based on the work of Kohlberg (1969), he developed the concept of schemas and described how individuals use schemas in making moral judgments rather than progressing through stages as Kohlberg had suggested. Rest had developed an instrument, the DIT and laterally DIT2, which has been used extensively in moral education programs in the professions to demonstrate development of moral judgment (Rest & Narvaez, 1994). It has been used in the teaching of computer ethics to determine changes in moral judgment in ethics education (Holland, 2011; Jagger & Strain, 2006; Staehr & Byrne, 2003).

The DIT and latterly the enhanced DIT2 had been used for over 25 years and was well validated in terms of several criteria that are relevant to this study. It is "significantly related to cognitive capacity measures of moral comprehension; sensitive to moral education interventions"; validated for longitudinal studies and significantly linked to many "pro-social" behaviours linked to desired professional decision making. It is highly repeatable and highly consistent without being simplistic. It is easy to administer, a distinctive advantage in an experiment using a large sample (Bebeau & Thoma, 2003).

The DIT2 Researcher's Guide and student instruction booklets and answer sheets were provided by the Center of Ethical studies at the University of Alabama. The DIT2 is a computer-marked, paper-and-pencil test that presents a hypothetical dilemma and asks participants to respond emotionally to what the protagonist should do. The test then presents twelve statements asking the participant to rate and rank each statement in terms of the influence it had on their decision (Bebeau & Thoma, 2003). As discussed in section 3.3.5, these ranked responses are then used to assess the percentage of times the participant uses a Personal Interest (PI), Maintaining Norms (MN) and Post Conventional (PC) approach in making their recommendation on what the protagonist should do.

The N2 index is the overall score by which a participant is characterised and a change in N2 over the course represents the participant's moral development (Rest, Thoma, Narvaez, & Bebeau, 1997). The N2 index is calculated based on a high PC score and a low PI score. The MN score can go up or down but it is the increase in higher order thinking, i.e. PC score and decrease in lower order thinking, i.e. PI score that affects the overall N2 index.

Participants exhibit a predominant approach, i.e. they are consolidated in one schema, or they are transitioning between two approaches and have a preference for one of them. As discussed in section 3.3.5, the Type can range from 1 to 7 with 1, 4, and 7 representing the consolidated PI, MN, PC approaches and 2, 3 and 5, 6 representing those transitioning between two schemas. It is expected that development in moral judgment would show an increase in N2. However, the DIT2 Guide suggests that studying the "pathways" of how individuals change is also insightful, especially if there appears to be no significant change in N2. A pathway is the path a participant follows from starting Type to ending Type e.g. "2 to 6" or "7 to 4".

It has been used extensively in professional ethics education to measure development in moral judgment (Armstrong, 1993; Bebeau, 1994; Ponemon, 1993). The Center for Ethical Studies analyses the completed forms and provides a report summarizing, for each participant, their approach to making moral judgments.

The DIT2 scenarios are societal focused which makes it easier for students at the start of the class to relate to the topics given their lack of business and ICT experience. The DIT2 uses a sophisticated algorithm to assess the participant's approach to moral judgment in each of the scenarios. Because the scenarios have been widely used, there is the opportunity to compare the students approach to those of other students at their educational level. See Appendix D- Defining Issues Test 2 Measurement Tool to review the scenarios in detail. It would be possible to write one's own scenarios but the amount of time and effort required, the loss of comparison data to others at the same educational level and the challenge in writing relevant scenarios were deemed outside the scope of this project.

As discussed below, there was a survey instrument available to measure moral sensitivity that had been used in the ICT environment in the UK to measure the moral sensitivity of ICT professionals that did include the ICT content.

4.3.4.3.2 The IMIS Survey

A number of survey instruments were considered including those of Kidwell et al. (1987), Krie & Cronan (1998) and Prior et al. (2002). Prior was chosen based on the following reasons.

The Centre for Computing and Social Responsibility, De Montfort University, UK, had developed and administered a survey on the ethical attitudes of IS professionals on behalf of the Institute for the Management of Information Systems (IMIS) (Prior, Fairweather, Rogerson, & Freeman, 2002). The survey had been administered to IMIS members every two years since 1998. In 2006, the survey was expanded to include final year undergraduate students in computing related courses at a UK university. The survey assesses the opinions of current and future ICT professionals in areas such as the protection of intellectual property, confidentiality, privacy and surveillance and the use of computing resources.

The survey consists of thirty-one statements, such as “it is acceptable for me to use other people’s passwords with their permission to access data I am not authorized to see”, and respondents are asked to assess whether they agree, disagree or are indifferent to the statement using a five point Likert scale. Each statement has an assumed ethical position and the survey data can be used to determine the student views at the beginning of the course, their views at the end of the course and how those views changed. (See Appendix E – IMIS Survey on Computer Ethics Opinions Measurement Tool to view the survey.)

The survey also gathers information on age, gender, number of years of ICT related work experience, previously taken an ethics course and their educational level.

The survey had been administered six times over a ten year period, from 1998 to 2009, and the results of each survey published in a separate report (Prior, Fairweather, & Rogerson, 2000; Prior, Fairweather, Rogerson, & Dave, 2004; Prior et al., 2002; Prior, Fairweather, Rogerson, & Hawash, 2006; Prior, Fairweather, Rogerson, & West, 2010; Prior, Rogerson, Fairweather, Butler, & Dixon, 1998).

There was therefore the opportunity to make comparisons between this study and the views of ICT professionals in the workforce to support the generalizability of this study to the population at large. The IMIS Survey is also a good measure to use because:

- It covers some of the key common ethical issues in the use of ICT
- The survey gives a good starting position around which to determine in-class discussion or to use to determine topics for future classes.

Each of the IMIS Surveys was administered, analysed and the results published comparing them to results of previous surveys. The participants in one survey were not necessarily the same participants as those in the preceding surveys. The study reported on changes in replies over the years but not for specific individuals. The survey had also been used to assess the opinions of university students in an American, a Canadian and a UK university (Grant & Chadwick, 2010; Lilley, Gumbus, & S. Grodzinsky, 2010; Prior & Leigh, 2010).

To summarize, in choosing an instrument it is important that it demonstrates construct validity (Trochim, 2001, p. 69). From the above discussion, each of the DIT2 and the IMIS survey demonstrate reliability in that the tests have been administered several times with consistent, repeatable results. Research on the use of DIT and DIT2 has shown it is significantly related to cognitive capacity measures and changes in approaches to moral judgments and thus measures moral judgment, one of the components of moral sensitivity.

The IMIS survey has been used repeatedly with ICT professionals to measure opinions on the use of computing resources and it could be argued that this demonstrates moral sensitivity, recognition of an ethical issue and the impact one's behaviour could have on others. There is no empirical evidence to support the construct validity. However, the topics relate well to the critical ethical issues under discussion in the current literature. Given the size and complexity of the DIT2, the IMIS survey is well written for the audience with several questions included on each ethical issue.

The next section describes how the research project is designed to answer the research question.

4.4 RESEARCH DESIGN

4.4.1 Introduction

This section describes the research design within the paradigm and assumptions described above. It reviews the research question and the proposed hypotheses. It describes the relationships between the constructs. It describes the design of the ethics course and the appreciative inquiry intervention as well as the choice and justification of the measurement instruments as well as their validity. Because the research involves the use of human subjects, this section also describes how concerns of voluntary participation, informed consent, anonymity and confidentiality were addressed.

4.4.2 Research Questions and Construct

The purpose of the research project was to determine how education can develop the moral attitude of future ICT professionals. It investigated current practices in teaching and influencers on moral behaviour, moral thinking and moral learning to inform the content and delivery methods of a computer ethics course. The primary research question is as follows:

> *How does an approach to teaching, namely an Appreciative Inquiry, affect the moral attitude of future Information and Communication Technology (ICT) professionals in the ethical issues that arise from the use of ICT in business?*

The first three sub-questions and the second part of question 4 have been answered in the preceding chapters, namely:

1. *What are the ethical issues that arise in the use of ICT in business? (answered in chapter 2)*
2. *What approaches exist that are used in the teaching of ethics? (answered in chapter 3)*
3. *How might these best be employed in educating future ICT professionals? (answered in chapter 3)*

4 (b) How can such a change of attitude be measured (answered in 4.3.4.3)

A quasi-experimental approach, as described in the following section, was used to answer the two remaining questions:

4(a) How can an Appreciative Inquiry educational intervention affect students' moral attitude?

5 What are the outcomes of the measures on a collective and individual basis?

Figure 10 shows a model of the construct being studied.

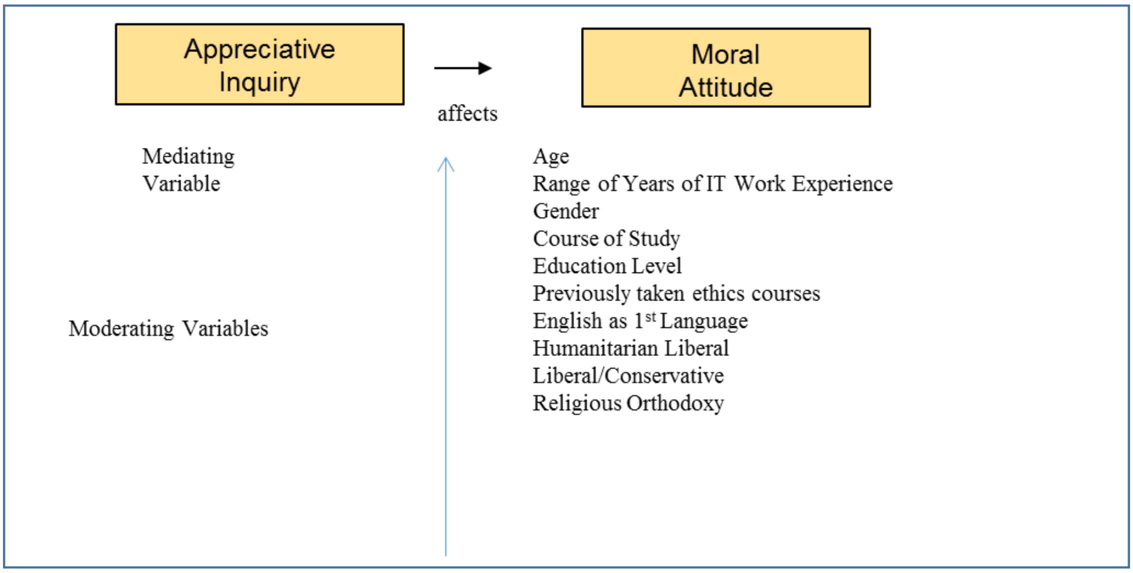


Figure 10 Construct Being Studied

The independent variable is the Appreciative Inquiry intervention and the dependent variable is the moral attitude of future ICT professionals. Moral attitude consists of moral sensitivity and moral judgment and each was tested separately. Moral sensitivity investigated the change in opinions on the use of computing resources and moral judgment investigated the changes in approaches to making moral judgments. The following section describes the research propositions that were tested.

4.4.3 Research Hypotheses

The research hypotheses and the null hypotheses are shown in Table 18. The approaches used to test each of these hypotheses is described in sections 4.5.8.2 in Data Analysis.

Question 4: How can an Appreciative Inquiry (AI) educational intervention affect students' moral attitudes?
Hypothesis 1: There is a significant difference between the change in moral sensitivity of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention. Hypothesis 2: There is a significant difference between the change in moral judgment of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention. Null Hypothesis H1-0: There is no significant difference between the change in moral sensitivity of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention. Null Hypothesis H2-0: There is no significant difference between the change in moral judgment of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention.

Table 18 Hypotheses: AI has Impact on Moral Attitude

4.4.4 Research Process

This section describes how the research was operationalized in order to answer the research question. It then describes the computer ethics course and the Appreciative Inquiry intervention and how the two measurement tools were used to assess changes in moral sensitivity and moral judgment. It concludes with how potential ethical issues in the research were managed.

4.4.4.1 Operationalizing the Research

Figure 11 shows how the research was operationalized (Trochim, 2001, p. 21). Positive psychology affects moral attitude. Appreciative Inquiry is a positive psychology intervention. The hypothesis being tested was that Appreciative Inquiry can affect the moral attitude of ICT professionals. The effect was demonstrated by a change in moral attitude. In order to observe this, a computer ethics course with an Appreciative Inquiry intervention was delivered to a class of future ICT professionals and the change in moral sensitivity and moral judgment, was measured and compared to a Control group that only received the computer ethics course.

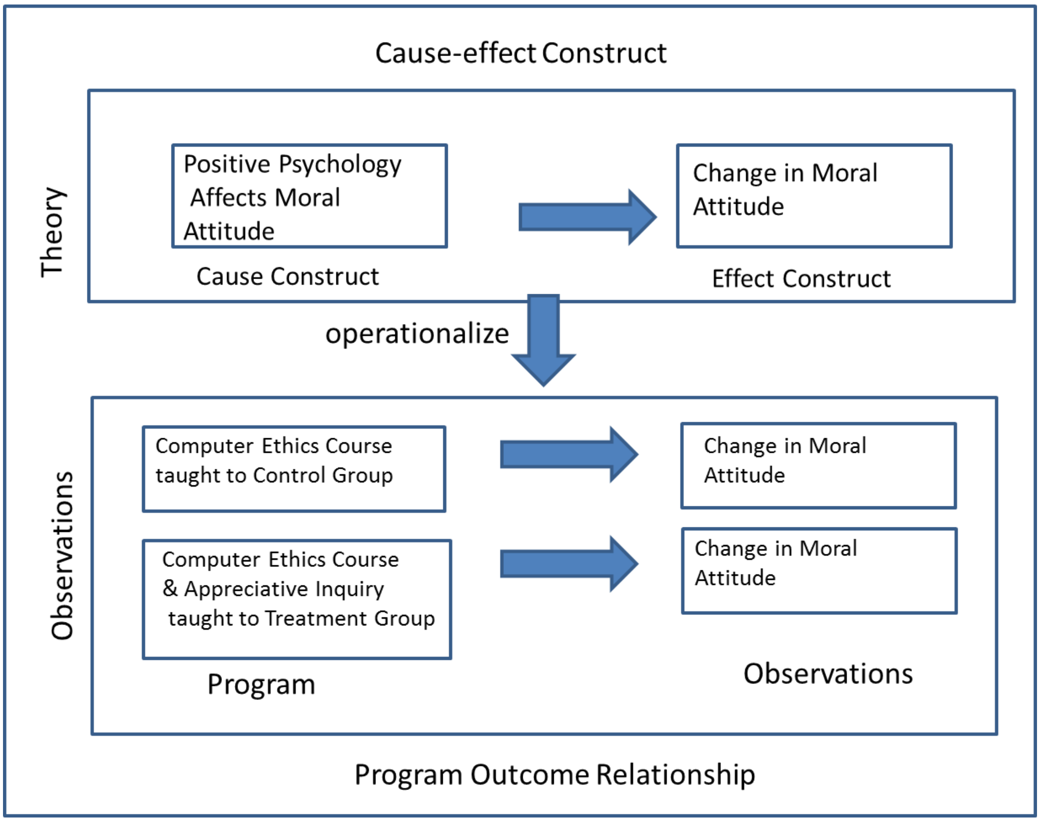


Figure 11 Operationalizing the Research

The Appreciate Inquiry Intervention demonstrates content validity as it is a recognized Positive Psychology intervention designed following the 4D principles of Appreciative Inquiry (Cooperrider et al., 2005).

4.4.4.2 Measuring a Change in Moral Attitude

To cater for the effect of the computer ethics course itself on the moral attitude of the participants, a Control group was used. The same computer ethics class was taught to the Control and the AI groups. Appreciative Inquiry was taught only to the AI group.

As discussed in section 4.3.4.3, two measurement tools were chosen to measure the changes in moral attitude, the DIT2 and the IMIS Survey. Figure 12 shows the quasi-experimental approach that was used. O1 to O4 were the observations gathered using the measurement tools described above.

Non Random AI	O1	X+Y	O2

Non Random Control	O3	X	O4

Figure 12 Quasi-experimental Approach

The "dotted line" that separates the AI group and the Control group indicates that the groups have two different sets of participants. The AI group included all the students registered in the computer ethics course delivered in the daytime in the winter semester, 2013. The Control group included all the students registered in the same computer ethics course delivered in the daytime in the winter semester, 2010. The AI group included the Appreciative Inquiry. Following is the legend:

- O1 and O3 – the observation of the pre-test for the computer ethics course for the AI group and Control group respectively
- X – the delivery of the computer ethics course
- Y – the delivery of the Appreciative Inquiry Intervention
- O2 and O4 – the observation of the post-test for the computer ethics course for the AI group and Control group respectively.

"X" represents the computer ethics course and "Y" the Appreciative Inquiry Intervention. Their design is described below.

4.4.4.3 Demonstrating Validity

To counteract the effect of the regression to the mean of a single sample group, a Control group was introduced. This brings the added threat of the difference in the two groups at the start of the experiment. It is important to ensure that the research demonstrates internal validity, that the findings can be supported by the data. Not only does the data need to be accurate but the findings must describe accurately the phenomena being researched. The following approaches have been included in the research process to reduce the threats to internal validity in a multi-group study (Trochim, 2001, p. 194):

1. The phenomenon, namely moral attitude had been well defined as well as moral sensitivity and moral judgment, the two components that were being measured by the two measurement tools, the IMIS survey and the DIT2 respectively, see section 2.4.1 and 4.3.4.3.

2. Events could occur in the course delivery between pre- and post-test that could be attributed wrongly to the treatment. There could be specific classroom incidents, such as a disruptive student or a disruptive group that could affect the delivery of the material. There could be a change in the learning facilities that caused disruption to the class. There could be a change in the circumstances of the instructor, such as a death in the family or an illness that would have an effect. Other than the instructor teaching on crutches as a result of a skiing mishap, there were no identifiable differences in the teaching between the two groups.

3. The instructor/researcher was aware of the risk of introducing additional causal factors and took the following steps to deliver the computer ethics course to the Control group and the AI group in the same way. The same course syllabus was followed, the same class structure was used, the same evaluation assignments and tests were used. The course materials, e.g. lecture notes, case studies, assignments and communications were delivered to students through the virtual learning environment (VLE), Blackboard. The same VLE course shell was used for the Control and AI groups. All students in both the Control and AI groups took their 1 hour lecture together and then divided into 2 hours workshops to apply the learnings. Because the instructor facilitated all the workshops, there was an additional focus to ensure that each workshop was delivered in the same manner so that no workshop was disadvantaged for having an early morning class, for example.

4. Although the workshops were delivered in four sections for the Control group and five sections for the AI group, it was decided to treat them as one group in the analysis to further reduce the possible unintentional influence of a variation in delivery. In addition, both the Control and AI groups were chosen in the Winter semester where the student course load was similar, the tempo and events, such as elections at the

university were similar and the classroom facilities available were similar. Both groups were laptop enabled making it easy to complete and submit assignments at the end of the two hour workshop.

5. Some external events happening between the course delivery to the Control group and the course delivery to the AI group could be wrongly attributed to the Appreciative Inquiry. The time between the Control group and AI group was kept to a minimum. Because this was in many ways similar to an Action Research project, the educational intervention, although planned as part of the research project, was not developed until after the results of the Control group were analysed. It took longer than the anticipated year to ensure the Appreciative Inquiry was ready to be tested. The advantage of this was to reduce the social threats of the effects of competition between the two groups if they were aware of each other's existence. However the rise of social media and twitter, especially in the context of the Arab Spring happened in 2011 between the teaching of the Control and AI groups.

6. There was the added risk of instructor influence during the administration of the two measurement tools (the IMIS survey and the DIT2) at the start and end of the course. The course teaching assistant administered all the tests in a controlled environment where anonymity of results was maintained. Although a different teaching assistant administered the tests in each of the groups, the guidelines for administering the test were documented following the Pilot and each teaching assistant followed them for the Control and AI groups. The teaching assistant gave out the tests, assigned the personal identification numbers, and reviewed the tests to check for obvious errors such as incorrect coding of the personal identification numbers; not coding the computer marked bubble answer sheets correctly (pen versus pencil, etc.); not completing all the parts to the questions in the DIT2, which would render the DIT2 null and not able to be processed. Students received marks for simply handing in the completed tests and not on the answers. There were not penalties if the tests couldn't be processed.

7. Undue instructor/researcher enthusiasm for the Appreciative Inquiry was also a risk that could affect the results. The instructor was enthusiastic generally on the mission of helping future ICT professionals understand the potential ethical issues in the use of ICT and developing skills and knowledge to help them address these issues both at the

university and the workplace. The Appreciative Inquiry was just another mechanism such as debates and case studies.

8. Selection of subjects could skew the results and so could loss of members. All students who registered for the course in the semester were accepted into the study. Only those students who completed all assessments were analysed and a demographic analysis was conducted to ensure that the sample group was the same demographically to the class group.

9. Socially desirable responding (SDR), the tendency of participants to answer the questions in a way that would be viewed favourably by others was reinforcing the anonymity and confidentiality of their responses. The only one who would know their answers was the teaching assistant who wasn't responsible for marking any of their assignments and they weren't receiving a mark for the answers, only that the test was completed.

The research must be dependable, consistent and replicable over time. The following approaches have been included in the research process to reduce the threats to reliability:

1. Stability
    - Correlation coefficients were calculated for the reliability of pre- and post-tests using the Pearson Statistic or t-test.
2. Equivalence
    - T-test – high correlation coefficient similar mean and standard deviations between 2 groups (Control and AI; start and end)
3. Internal Consistency
    - Verification of the Cronbach alpha measure of reliability for DIT2.

The following two sections describe the design of the computer ethics course and the design of the Appreciative Inquiry.

4.4.5 Computer Ethics Course Design

Ryerson University faculty are members of a faculty association and teaching activities are governed by a collective agreement. Although faculty are expected to follow university and school protocols for the development of course objectives, learning outcomes and course content, methods of course delivery are chosen by individual faculty members.

Ryerson University is now an AACSB accredited university and at the time of developing the course was in the process of applying for certification. The course outline was developed following AACSB standards (see section 3.2.1.1) and agreed with the school's curriculum committee. In this specific school environment, making changes to course objective and outlines are not encouraged therefore they were not amended in any way to reflect the specific research goals of this study. Naturally the primary purpose of this course was not to meet the research objectives but to meet the learning objectives expected by the school.

Pedagogy is the theory or principles of education; a method of teaching based on such a theory ("Oxford English Dictionary," 2016). Coe et al. (2014) suggest that the focus of good pedagogy should be on the achievement of the learning outcomes. Two things according to Coe et al. contribute significantly:

1. A teacher with a deep knowledge of the subject who understands how students think about the content, can easily identify misconceptions and adapt the materials to meet the needs of the students and
2. Including a scaffolding approach that builds on previous learning, provides model responses and encourages questioning.

4.4.5.1 Development of the Learning Outcomes

Guided by Bloom's Taxonomy, which includes a scaffolding approach i.e. building on previous learning and progressing from understanding to application or experiential learning, the following learning outcomes were developed:

1. Describe the role that ethics plays both in the workplace and society at large and be able to apply an ethical framework and techniques as part of the business decision making process
2. Understand multiple frameworks and philosophies that can be applied in the ethical decision making process

3. Articulate the current ethical issues arising from the use of ICT in the global environment and some techniques in addressing them
4. Demonstrate an effective ethical approach to supporting community learning both in your group, your section and the overall ITM407 class
5. Apply critical thinking to identify ethical issues, the impact of alternative courses of action and be able to defend your decision in a clearly articulated oral or written form.

Refer to Appendix A – Course Syllabus Computer Ethics Course to see the course syllabus with a list of the learning outcomes and the course modules. Refer to Appendix B - Assessing Learning Outcomes for how each learning outcome was assessed.

4.4.5.2 Principles of Design

Based on a review of the literature, the following principles form the foundation for the course design. Each is discussed in more detail in the following sections.

- Supporting the development of professional responsibility in ICT professionals towards their stakeholders
- Using effective teaching techniques to develop specific skills
- Using effective teaching techniques to develop specific knowledge.

4.4.5.2.1 Development of professional responsibility towards stakeholders

As discussed in section 2.2.1, ICT professionals provide ICT solutions to their stakeholder groups such as ICT users and decision makers. It is important that they are professionally responsible and deliver solutions that provide benefits, are fit for purpose, and cause no harm. The Four Components, discussed in section 3.3.2, support their ability to behave morally in the following ways:

- Develop an understanding of the current and future uses of ICT and the benefits it can provide
- Foster an empathy and moral affiliation between the ICT professional and their stakeholders through recognition of the consequences of unethical practices in the use of ICT

- Foster a pride of profession that would support the ego strength of the ICT professional in being motivated to carry out this role
- Develop the ability to make good decisions in the use of ICT applying ethical frameworks, professional standards, policies and laws, considering alternatives and justifying recommended courses of action.

Figure 13 provides a model of this relationship.

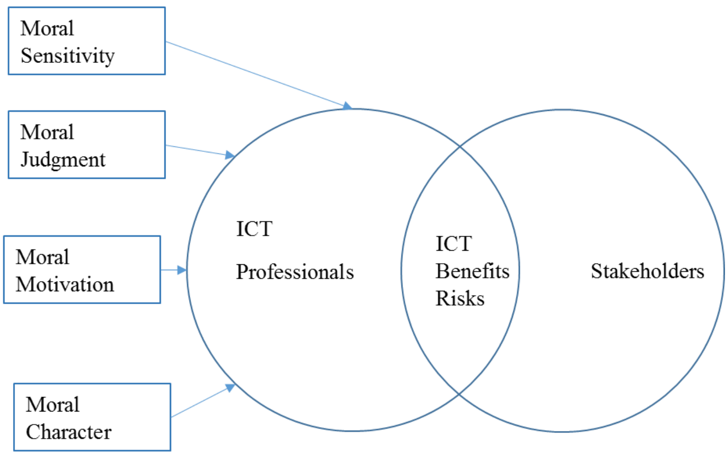


Figure 13 Relationship between ICT Professionals and Their Stakeholders

4.4.5.2.2 Using effective teaching techniques to develop specific skills

Building on the discussion and the table developed in section 3.6.1, Table 19 provides the teaching techniques used to develop the skills in each of the Four Components identified above.

Component	Description	Teaching Technique
Moral Sensitivity (affective)	Develop an empathy to stakeholders through recognition of the impact of the ethical issue Understand consequences and perceived importance in addressing the issue Develop professional responsibility to address the issue	Case studies/in class discussions Stakeholder analysis Understanding consequences Codes of ethics and virtues Personal reflection Role play
Moral Judgment (cognitive)	Use of principles such as professional standards, policies, role responsibilities and ethical frameworks to consider alternatives Justify a recommended course of action.	Consider alternatives pros & cons Argumentation Case studies Self-directed research
Moral Motivation	Resolve conflicting priorities Ethical decision making Perceived importance Professional responsibility	In class discussions Self-directed research Case studies Argumentation
Moral Character (social)	Ego-strength Moral exemplars	Presentation of justified recommendation in oral and written form.

Table 19 Design Structure of Computer Ethics Course

4.4.5.2.3 Using effective teaching techniques to develop specific knowledge

A summary of the five knowledge areas, identified in section 3.6.1 are presented below:

1. An understanding of the benefits that ICT provides
2. An understanding of stakeholders and how they are affected by the use of ICT
3. Development of a set of tools to help in raising concerns on practices
4. The inclusion of ethics in the decision making
5. The ability to present and defend one's position on unethical practices.

Based on the above design principles, the following Course Design Model, shown in Table 20, was developed and structured in a scaffolding manner to show how each of the knowledge areas are developed in the course from understanding to practical application following Bloom's Taxonomy.

The computer ethics course included a group project as part of the course evaluation. (See Appendix C – Group Project Description - Control Group for a description of the group project.) In the group project, teams of four to five students worked together to investigate an ethical issue in the use of ICT, write a report and present their findings to the class. The group project took a "problem fixing" approach. The next section describes the design of the Appreciative Inquiry that replaced the group project in the computer ethics class.

4.4.6 The Appreciative Inquiry

As discussed in section 3.3.7, how we imagine the future influences how we behave in the present and what we talk about is what we change. The energy for change comes from positive attitudes such as hope, inspiration and the joy of working together.

Blooms Level/ Content	*Information and Communication Technology*	*Stakeholders*	*ICT Professionals*	*Ethical Decision Making*	*Argumentation*
6 Create	A recommendation on how to address the ethical issues	Create a common perspective	Create a policy	Develop a recommendation	Present the argument
5 Evaluate	The ethical issues that arise in a specific use of ICT	How to develop a common perspective	Policy vacuums	Evaluate Alternatives	Evaluate objections and develop rebuttal
4 Analyse	What can affect those benefits continuing?	How perspectives are different for each stakeholder	Impact of issues	Analyse the situation and develop alternatives	Analyse the audience for the argument
3 Apply	ICT to stakeholders to realize benefits	Consequences of a situation to impact on stakeholders	Apply causes of ethical issues to new technologies	Apply to a case and gather the facts	Develop an argument and identify backings
2 Understand	ICT's capabilities	ICT professional's responsibilities to stakeholders	Causes of ethical issues in use of ICT	The Decision Making Process	Backings: ethical frameworks, professional standards, duties, policies
1 Remember	What is ICT?	What is a stakeholder?	Evolution and importance of the ICT profession	The role of emotion and cognition in decision making	What is an argument
Blooms Level/ Content	*Information and Communication Technology*	*Stakeholders*	*ICT Professionals*	*Ethical Decision Making*	*Argumentation*

Table 20 Computer Ethics Course – Course Design Model

These are the overall design principles of the Appreciative Inquiry (AI) are as follows:

1. Encourage the development of language, concepts and the sharing of ideas and perspectives on the value of ICT in a specific context
2. Identify the stakeholders that will benefit from the use of ICT and the ethical issues that can arise that will prevent the continuation of those benefits
3. Develop a sense of responsibility for how to ensure those benefits continue to be realized
4. Develop good argumentation to support recommendations on how (3) above could be managed.

AI is an iterative process that builds on what has gone before.

Figure 14 shows the four stages in the cycle.

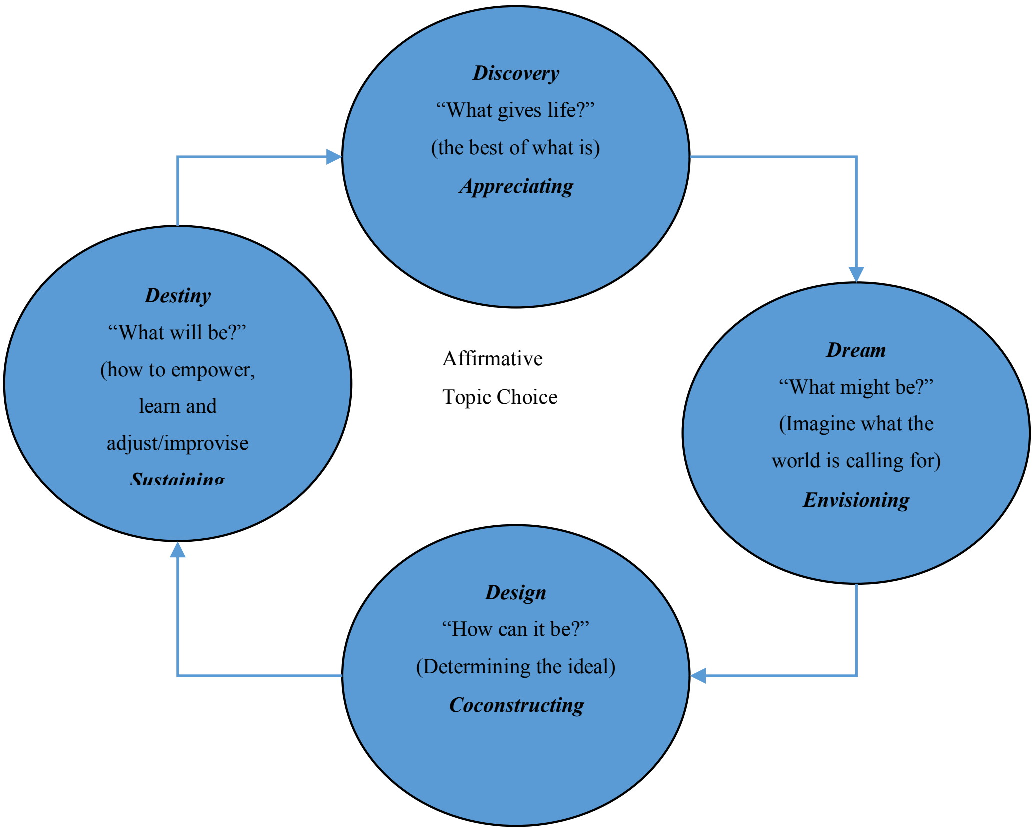


Figure 14 The Appreciative Inquiry Intervention

As discussed in section 3.3.7.2, the success of an Appreciative Inquiry depends on the Topic Choice. Not only must it be relevant to the group but it should also be presented in a way that lends itself to a positive voyage of inquiry. For ICT professionals that topic choice was "The Ideal Use of ICT". Student groups then chose a specific aspect of ICT to focus on, such as hand-held devices to access patient data for patients and healthcare professionals. Once the specific topic is chosen, they then engaged in the following cycle of activities:

- ***Discovery*** – a focus on meaning-making using dialogue to share views of the positive things that made an impact on them with respect to this Ideal Use of ICT
- ***Dreaming*** **-** building on these shared views, they articulated the characteristics, the values, the examples of what this would look like at its best
- ***Design*** **-** coconstructing or working together to articulate what the vision would look like and some of the challenges to be overcome
- ***Destiny*** **-** how to sustain this vision, what programs could be put in place to take this vision forward.

The Appreciative Inquiry was an effective self-directed research project for a group of future ICT professionals. They chose a new use of technology to investigate such as smartphones in the workplace or 3d printers in manufacturing or nano-technologies in health care and envisioned what its ideal use would look like to a specific group of stakeholders. The group then designed the initiatives or programs to achieve and sustain the vision.

Any research that involves human subjects, requires ethics approval at both Ryerson and De Montfort Universities. The following section discusses the ethics approval process.

4.4.7 Research Ethics

The researcher applied to Ryerson University for ethics approval involving the students at their university. Request for ethics approval and certificates of approval are included in Appendix S – Ethics Approval. These certificates were forwarded to

De Montfort University. Specific concerns on voluntary participation, informed consent, maintaining anonymity and confidentiality are addressed below.

4.4.7.1 Voluntary Participation

It is important that participants were not pressured or coerced into participation in the research project and could freely withdraw at any time without penalty. This is especially important when the research was conducted in the context of an educational intervention where the researcher was also the instructor. The measurement tools were techniques that were part of the course materials for the ethics course. A summary of both the survey results and the DIT2 was provided to the students. The survey was used to identify topics for further discussion in the course and the DIT2 was used to consider different approaches to making moral judgments and inform students of their predominant approach and how it may change in the course. The expectation was set at the beginning that this was part of a research project but that no personal information would be identified an individual. When the course was completed and all the grades had been submitted, each teaching assistant contacted the students by email and asked for a return confirmation to allow their data to be included in the research project.

4.4.7.2 Informed Consent

As discussed above in consideration for surveillance, participants must be made aware of the purpose of the research study, the data being collected, how it would be used, who has access, how long the data will be kept and when and how it will be destroyed. The informed consent form and a copy of the email sent to students is included in Appendix P – Informed Consent.

4.4.7.3 Anonymity

Tests and surveys were coded with unique student identification numbers (not their university student numbers) so that individual survey results could be associated with the corresponding individual moral judgment results for cross tabulation purposes. No personal information was associated with the data and coding of the student identification number was carried out by the research assistant. No personal information was included on the DIT2s that were sent to the University of Alabama for processing by the Center for Ethical Studies.

4.4.7.4 Confidentiality

Surveys and tests were completed in paper form and all surveys and tests are kept in a locked filing cabinet in the locked office of the researcher. No personal information is shown on any of the documents, only the unique student identification number was recorded as discussed above. All electronic data is kept on the researcher's laptop which is password protected as well as the backup files.

The next section describes the processes followed in executing the research project.

4.5 RESEARCH IMPLEMENTATION

This section describes the research study sample and how it was chosen followed by the time line describing the various stages in the study. It then discusses the computer ethics course that was taught to all participants in the research study followed by a description of the Appreciative Inquiry. The section then describes the data collection process and the data analysis conducted. The next section describes how the sample was chosen for the quasi-experiment.

4.5.1 The Sample

The Ted Rogers School of Information Technology Management (ITM) at Ryerson University in Toronto, Canada, with approximately 1,400 students, provided a four year Bachelor of Commerce Degree with a Business Technology Management major (Ryerson University, 2014). Most students graduating from the program become ICT analysts such as business analysts or database analysts and move on to project management and ICT management positions. Although the program is only fifteen years old, some have become Chief Information Officers. This program was certified by AACSB as discussed in section 3.2.1.1.

The School of Business Technology Management provided, to all second-year students, a three hour-per-week compulsory twelve week course in computer ethics for ICT professionals. Two hundred students attended the ethics course in the winter term (January to April) while a smaller group of fifty students attended the course in fall term (September to December). While the students ranged in age, in number of years of ICT work experience, ethnic background, gender, and exposure to ethical discussions on the use of ICT, most were young, male and lacked ICT business experience. The aim of the course was to increase student awareness of the ethical issues arising in the use of ICT and provide some tools to help make good ethical decisions in the effective use of ICT in the workplace.

The course was divided into a 1-hour lecture for all 200 - 250 students and 2-hour hands-on workshops for 40 to 50 students each. The researcher developed the initial course seven years ago and has been the sole instructor throughout the research project.

The sample included all students who take the computer ethics course in the winter term. This sample was appropriate to demonstrate external validity e.g. the sample is representative of the group to which the research project wished to generalize, future ICT professionals. Students graduating from the program start careers as ICT professionals such as business analysts. There were two groups: the Control group (Winter 2010) where the ethics course was taught and the AI group (Winter 2013) where Appreciate Inquiry was substituted as the group project in the delivery of the same computer ethics course.

According to Denscombe (2003, p. 16), this is a non-probabilistic convenience sample. Convenience sampling is used when a convenient sample is available and often used in studies using post-secondary students. However, just because the sample is convenient does not undermine good research practice. In this case, the sample provides a large study group of future ICT professionals with consistent demographics in a controlled environment. Because the measurement tools were an integral part of the course learning and because of the need to provide equitable ethics training across the students, random sampling was not used.

Only those students who completed both the start and end assessments and gave their consent to participate in the study were included in the research study. Seventy percent of students participated from the Control group and sixty percent participated from the AI group.

4.5.2 Research Project Time Line

This research evolved over four stages. See Figure 15 and Table 21 for an overview and detailed timeline of the research.

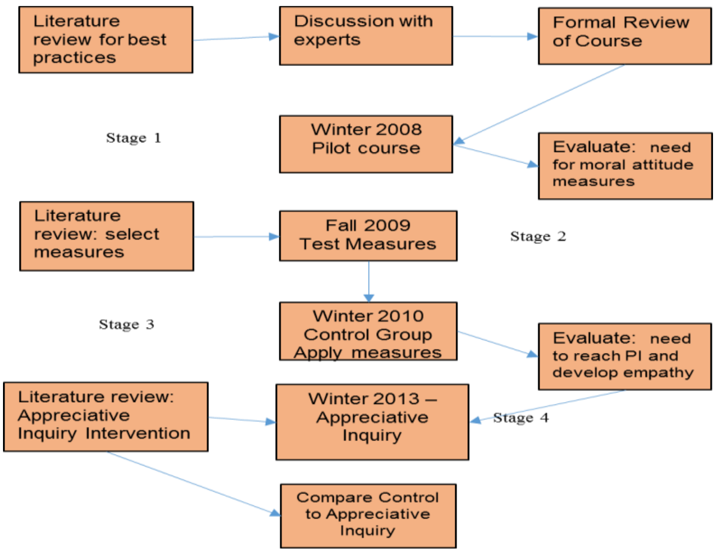


Figure 15 Overview of the Research Project

Stage 1 included the delivery of the first computer ethics course in Winter 2008. The need to measure changes in moral attitude was identified, measurement tools identified and piloted in a small class format in Stage 2 of the project. These measurement tools were then applied in Stage 3 to the computer ethics class in Winter 2010 to determine: "Does an ethics course have an impact on the moral attitudes of future ICT professionals?"

Although the results of Stage 3, showed a positive change in moral attitude, the course appeared to have a greater impact on those who started with a more advanced approach to moral judgment. Consideration of the characteristics of a less advanced approach to moral judgment, suggested that developing an empathy towards stakeholders and developing a focus on one's professional responsibility towards delivering safe technology, might have an influence on the moral development of the less advanced future ICT professionals.

This led to the development of the Appreciative Inquiry Intervention that was included in the computer ethics course in Winter 2013 as part of Stage 4 of the study which investigates the effect of an Appreciative Inquiry by comparing it to the Control group in Stage 3.

4.5.3 Computer Ethics Course

There were a number of topics on the ethical use of computers that could be covered in a computer ethics course, such as intellectual property, privacy and confidentiality, etc. However it was important not to lose sight of the overall objective: to develop a moral attitude in future ICT professionals. This involved not only raising awareness but also developing the skills, knowledge and techniques that could be used in addressing them.

The course was structured to develop five key knowledge areas as shown in the Course Design Model in Table 20 :

1. An understanding of the benefits that ICT provides
2. An understanding of stakeholders and how they are affected by the use of ICT
3. Development of a set of tools to help in raising concerns on practices
4. The inclusion of ethics in the decision making
5. The ability to present and defend one's position on unethical practices.

The course began with laying the foundations in each of the knowledge areas as per Bloom's levels 1 and 2 and then built on those to apply, analyse, evaluate and create new knowledge. A more detailed description is available in section 4.4.5.2.

Increasing demand and government funding pressures are increasing class sizes at this university and class sizes of 200 and upwards are becoming common. In order to

Activity	Date	Outcome
Stage 1		
Developed Computer Ethics Course	Fall 2007	Computer Ethics Course ready for compulsory, large class format.
Piloted the Computer Ethics Course	Winter 2008	Gathered data on evaluation, participation, attendance, student feedback; assessed development in ethical decision making.
Evaluated the Pilot	Spring 2008	Identification of need for measures for moral attitude.
Submitted proposal to DMU for PhD	Fall 2008	Accepted into doctoral program
Paper for ISECON conference on teaching computer ethics	Fall 2008	Delivered paper (C. Grant, 2008)
Submitted paper to Information Systems Education Journal	Winter 2009	Accepted into Information Systems Education Journal (C. Grant, 2009b)
Investigation of Measurement Tools for Moral Attitude	Winter 2009	Identification of DIT2 and IMIS Survey
Submission of Registration Document to DMU	Summer 2009	Approved Fall 2009
Stage 2		
Pilot Measurement Tools in a small evening class.	Fall 2009	Identified administrative changes required. Analysed moral judgment and moral sensitivity data and determined tools to be suitable for larger study.
Stage 3		
Investigated Literature on Influencers on Moral Development	Fall 2009	Presented Paper at ECIM Conference on Influencers on Moral Development (C. Grant, 2009a)
Taught the computer ethics class and used the moral attitude measures	Winter 2010	Gathered moral sensitivity and moral judgment data and began rudimentary analysis.
Presented two papers at ETHICOMP 2010.	April 2010	On results of pilot and rudimentary analysis of moral sensitivity and moral judgement (C. Grant, 2010; C. Grant & Chadwick, 2010)
Analysed the data	Summer 2010 – Winter 2011	Gathered data, loaded into SPSS, performed data cleansing and coding. Conducted analysis. Observed change in moral sensitivity and moral judgment. Consider educational interventions to have greater effect on moral attitude for all students.
Stage 4		
Investigated Literature for Educational Intervention: • Positive Psychology • Appreciative Inquiry	Fall 2010 – Fall 2011	Developed Appreciative Inquiry intervention.
Piloted Appreciative Inquiry in computer ethics class	Winter 2012	Identified changes in administration and format of Appreciative Inquiry
Taught the Computer Ethics class with Appreciative Inquiry	Winter 2013	Gathered moral sensitivity and moral judgment data.
Analysed the data	Summer 2013	Entered cleansed, coded and analysed data.
Extended Leave	Oct 2013 – Aug 2014	
Continued analysis of the data and wrote up results	Summer/Fall 2014	
Presented Papers on Improving Ethical Awareness of ICT Professionals at HR Conference and Improving Moral Behaviour in Business at Business Ethics conference.	Dec 2014	(C. Grant & K. Grant, 2014a, 2014b)

Table 21 Summary of Stages and Timeline for Research Study

facilitate student participation and consistent student engagement with the material, the following approach was taken in the delivery of the computer ethics course:

- the course was structured as a one hour lecture for all students followed by 2-hour workshops of 40 - 50 students
- course concepts, preparations for the workshop and administration activities were covered in the 1-hour lecture
- workshops included group debates, case studies, role playing activities, in-class assignments and a group project.

The course outline (see Appendix A – Course Syllabus Computer Ethics Course) provides a description of the course, the methods of teaching, the methods of evaluation and the topics covered. The main purpose of the course was to:

> "provide future business leaders and IT professionals with practical information and approaches to ethical questions and professional practice as they would likely encounter in the modern corporation. Students will gain a better understanding about such topics as the relevance of ethical approaches and governance in the workplace, ethical issues arising out of the internet in a global community, and frameworks and philosophies that influence our personal ethical framework. Students will have an opportunity to apply and demonstrate their knowledge through in-class debates, personal assessment of ethical questions and case studies."

The Learning Outcomes were assessed as shown in Appendix B - Assessing Learning Outcomes. The first column presents the learning outcome, the second column describes the assessment criteria and the third column how the criteria were applied. Student assessment was based on in-class assignments, an ethical reflection, a mid-term and final exam, and a group project report and presentation.

An Ethical Decision Making Framework (EDMF), described in section 3.4.3, was an integral part of each assessment. Presentation and application of the EDMF began in the first weeks of class and each week built on the previous week until by week six students could apply the entire framework to more complex uses of technology. The textbook by Spinello (2003), as well as current news items, provided good case studies for the students to assess ethical situations and provide recommendations. Recommendations were based on good argumentation as discussed in section 3.4.3.

Graded in-class assignments were given in each of the first six classes and were due at the end of the class. The purpose of the in-class assignment was to ensure application of the ethical decision making process, and to develop critical thinking and argumentation skills on ethical issues in the use of computing. Emphasis was on applying the framework as opposed to getting a right answer and assessment was based on good argumentation rather than the specific outcome.

The Computer Ethics course includes a group project where four to five students work together over half the course to investigate an ethical issue and make recommendations on how the ethical issue could have been addressed. The topics are assigned, students research the topic, write a report and present their recommendations to the rest of the class either as part of a debate, as participants in the role play of a case study, or a presentation to the class. The project is problem focused, takes a largely cognitive and social approach and considers the laws and policies that may be breached.

As described in section 5.4.1, the computer ethics class showed a change in moral attitude. The change in moral judgment was more obvious in those transitioning to a post-conventional approach. The Appreciative Inquiry Intervention described below was developed to support growth in moral attitude for all approaches to moral judgment.

4.5.4 The Appreciative Inquiry Intervention

The Appreciative Inquiry (AI) was a group-based exercise that permitted students to focus on the positive experiences they have seen, been involved with or read about where ICT has provided someone (the stakeholder) with value and the stakeholder would feel disadvantaged if this ICT was no longer available. AI provided teams with the language and concepts needed to discuss the stakeholders and their benefits and to articulate the ethical issues that could affect the stakeholder in continuing to benefit from the technology. AI enabled groups to develop concrete suggestions on how to improve the ethical use of ICT.

The step-by-step process followed in the Appreciative Inquiry intervention is described below. The process took the entire twelve weeks with the Introduction in week 1 and the final presentations in the last week of the course, week 12.

Step 1 - Introduction: In the first week, start students thinking about the value that ICT provides to society and why it is important. The first exercise is as follows:

> **Exercise:** We've just talked about ICT, what it is and how it is important to our society. Thinking about what was said, think of a time where you experienced (perhaps seen or read about) ICT has provide significant value to someone you know and who would that someone be. Make notes on your thoughts, discuss your observations with the person next to you and be prepared to share your discussions with the rest of the course.
>
> The purpose of the exercise was to have students think about why ICT is important to our society, in the workplace, in our personal lives and who benefits from ICT, helping to identify the concept of stakeholders and also the importance of looking after ICT so that it continues to provide value.

Step 2 - Appreciating: Randomly assign students to groups of 5-6. Have the group consider areas where ICT is appreciated and choose one they wish to explore. Some areas students have chosen include: sports marketing, drone warfare, hand-held devices in healthcare, smartphones and relationships.

Step 3 - Envisioning: Have the students work in their groups to envision the benefits that the ICT provides and to which stakeholder group. The instructor walks around the class, facilitating discussions when approached. (With 55 students in the class, it was not possible to have each group share their views with the class. They shared their perspectives in their final presentations in weeks 10 to 12.)

Step 4 - Co-constructing: Have the group discuss how to continue achieving the benefits and identify some things that might hinder those benefits being appreciated. Students now begin to focus on how to protect those benefits and what are the ethical issues that could arise. How would the stakeholder be affected by them? What are some things they could do to manage those ethical issues? The group discusses their ideas with the instructor before writing up their final report

Step 5 - Sustaining: Have the group present their findings to the class, helping them to understand the value that ICT provides, what society or business should be concerned about and their recommendation on how the concern might be addressed.

Step 6: Have students vote on the group presentation that provided the most insights and the most value to their learnings.

Step 7: To wrap up and share the learnings further, the top group from each of the five sections then presented their findings to the whole course in the large lecture hall for all students. To encourage attendance and participation, a bonus mark was given to each student who submitted a ballot at the end of the presentation.

Step 8: Each group submitted their findings in a group project report.

The next section describes how the change in moral sensitivity and moral judgment is measured in both the Control and AI groups to demonstrate the change in moral attitude achieved by Appreciative Inquiry.

4.5.5 Data Collection

4.5.5.1 Establishing the Environment

The researcher's office was set up with a locked filing cabinet where the surveys and DIT2 tests could be stored in a secure fashion. The teaching assistants developed a process to administer the tests to the students and code them with a unique identifier that would be anonymous to the researcher. The instructor introduced the tests, their relevance to the course and the importance of answering them honestly. As part of the computer ethics course we wanted to determine what the overall thinking of the class was with regard to specific situations in the use of ICT and also our predominant approaches to making moral judgements.

The teaching assistants gave directions to the students on the completion of the tests and verified that the tests had been completed correctly, once the unique identifiers had been assigned. Both an Excel Spreadsheet and SPSS database were established to store the results of the tests.

4.5.5.2 Moral Sensitivity

The paper survey was administered in the first week of the course. See Appendix E – IMIS Survey on Computer Ethics Opinions Measurement Tool, for the survey. Guidelines were given to answer the questions as honestly as possible as the focus was not on a right answer but rather on recording the student's opinion. Marks were given for the completion of the survey but not for their responses to the questions. Students could earn up to four percent of their final grade; two percent for the starting measurements (one each for moral sensitivity and for moral judgment) and two percent for the final measurements (again, one each). Some students took 5 minutes to complete the survey, others took as long as 15 minutes. The students completed the survey on the instrument and handed it to the teaching assistant.

To maintain anonymity, each student was assigned an identification number by the teaching assistant. The teaching assistant recorded who had completed the survey by cross-referencing the identification number at the top of the survey with her student list and entered the grades into the student's grade book in the virtual learning environment. Students raised questions if they didn't see a grade when they had completed the survey. Often this was a result of their incorrect recording of their unique identification number on the survey instrument. Disputes could be resolved by referencing the class attendance list or giving the student the benefit of the doubt. If students missed the first tests, they were given the opportunity to complete them up until the time the DIT2s were sent for processing.

Surveys were collected, checked for completeness and entered first into Excel and then later transferred to SPSS for analysis. A summary of the results for each workshop was presented to the students for comment and discussion.

This process was repeated at the end of the semester with both tests administered in the same class. Ample warning was given on when the tests would be administered. If a student didn't complete the tests on the day it was assigned, they missed the opportunity as the DIT2s needed to be sent for processing to have the results back before the end of the semester. The teaching assistant reminded students of their unique identifier to ensure their start and end tests could be processed together. By comparing the identification numbers, it could be determined if a student completed both the start and end surveys and the data was disregarded if both were not present.

The data was coded numerically. For example, the answers to the questions were entered such that Strongly Disagree was coded as 1 with Strongly Agree coded as "5". Questions were adjusted so that all questions had "1" as a more ethical response, with the exception of the questions on surveillance which were left in their original form. Data was also coded to numeric values so that, for example, gender was represented as "1" for males and "2" for females. Refer to Appendix N – Data Dictionary for detailed information.

4.5.5.3 Moral Judgment

In the second week of the course, students were given the DIT2 test as part of an in-course assignment. See Appendix D- Defining Issues Test 2 Measurement Tool for a sample of the instructions and the answer sheet. They were asked to read the five scenarios and answer the questions. Based on the feedback from the pilot, more time was spent in going through the instructions and an example on how to complete the questionnaire. Despite further instructions, a few students still missed the concept of answering three different sets of questions for each scenario. Marks were assigned for completion of the DIT2 (as described in section 4.5.5.2) but not for how they answered the questions.

The tests were checked for completion in pencil and stray pencil marks that would have invalidated automated computer marking. The tests were sent to the Center for Ethical Studies at the University of Alabama for processing. Three weeks later the analysed data was returned with individual student reports and a CD with data in a form suitable for SPSS analysis. The teaching assistant shared individual student results with each individual student using their unique identification number. The summary results were shared with the class. The same process was followed in week 12 of the course.

The survey and DIT2 test data were entered into an SPSS database. A further description of the data is included in the Data Dictionary included in Appendix N – Data Dictionary.

4.5.6 Data Analysis

The analysis was conducted in two phases. The first phase, described in the next section, tested the suitability of the two measurement tools and identified changes required before the tools could be used in a large scale environment. The second stage analysed the impact of the Appreciative Inquiry on the moral attitudes of future ICT professionals by comparing the changes in moral attitude for a group where AI was included in the computer ethics class to a group where it was not included.

4.5.7 The Pilot – Evaluation of Approach and Measurement Methods

4.5.7.1 The Purpose of the Pilot

The purpose of the pilot was to evaluate the suitability of the two measurement tools: the IMIS Survey for its suitability in measuring changes in moral sensitivity and the DIT2 for measuring changes in approaches to moral judgment. The pilot would also help to identify any process changes needed before administering to a larger group. The tools were also tested for:

- Ease of administration to a large group
- Consistency and repeatability
- Anonymity
- Fostering an honest response
- Remoteness from the instructor and researcher.

The pilot group consisted of forty-four students enrolled in the Fall 2009 computer ethics course delivered in the evening to both full-time and part-time students studying information technology management. Both the moral sensitivity test and the moral judgment test were administered to the participants at the beginning and end of the course as described in sections 4.5.5.2 and 4.5.5.3 respectively. The course as described in section 4.4.5 was delivered to the participants.

Students were given the Instruction Booklet with minimal verbal instructions and they completed the assessment as part of a course assessment in week 3. Marks were allocated for completion of the test; one mark for the DIT2 and 1 mark for the IMIS Survey. The test was administered and checked by the teaching assistant and completed forms sent to the Center for Ethical Studies for processing. Within three weeks the analysed data was returned with individual student results and a CD with data in a form suitable for SPSS analysis. The data was not shared with the students at this stage.

The second DIT2 test was administered in week 11 and the above process repeated. However, no marks were allocated for completion of this test. Both the start and end DIT2 results were provided to each individual student to enable them to see the change in their approach to making moral judgments. However, due to underestimating the time required for the Center of Ethical Studies to process the tests, these results were provided after the course had finished and final grades were submitted.

The IMIS Survey was administered in paper form in week 2 and again in week 11. The IMIS Survey was distributed and collected by the teaching assistant. The instructor spent some time discussing the importance of answering the questions honestly as opposed to focusing on what they thought was the right answer and emphasised the anonymity of the response. A summary of the changes in opinions on the use of computing resources were returned to the students.

Thirty-six students successfully completed both measures at the start of the course, eight students were absent. Twenty-two of the above students completed both measures at the end of the course. The lower than expected number may have been due to the timing of the tests towards the end of the semester where students had other commitments such as assignments, presentations or group projects that were due in other courses. There may have been insufficient reminders of the upcoming tests and as there were no incentives such as grade marks associated with the tests, many may have decided not to come to class. Attendance in evening classes tends to be less than day classes, as students often travel great distances from their place of work to the downtown campus.

Of these students, nineteen successfully completed both start and end measures in both tests. A student's DIT2 test could not be processed if a student did not colour the bubble sheets to enable successful reading by the computer or did not read the instructions and failed to complete all three sections on a scenario. The DIT2 program performs validity checks to analyse for consistency of response and rules out tests that appear to have been answered randomly, without consistent rigour. These tests and the corresponding surveys were removed from the final analysis.

The DIT2 test is more complex than students anticipated. Students appeared to not read the instructions thoroughly and it was identified that more time needed to be set aside to explain the test to the students by the teaching assistant. In addition, the teaching assistant needed to review the DIT2's to ensure accurate colouring of the answers as well as the unique id number which was also coloured into a set of bubbles.

Of the final nineteen assessments, fourteen of those students provided their consent to be included in the study. Consent for requests was made after the course had finished and all grades had been submitted. Students were asked to sign and return a completed form (see Appendix P – Informed Consent) for an example of the form. It would be more effective to provide the form to students earlier in the course and then follow up with copy of the form in an email with a request to reply with one's consent or non-consent.

All completed IMIS surveys were entered into an Excel spreadsheet for analysis. The data was coded numerically e.g. No/Yes responses were entered as 1=No and 2=Yes and a blank indicated no response. The data was checked and there were no entries that were outside of the acceptable limits.

Strongly Disagree was coded as '1' through to Strongly Agree which was coded as '5'. An answer of '1' was generally a more positive response to support the statement with the exception of questions 9, 10, 14 and 15.

The DIT2 test results that were processed by the Center for Ethical Studies were transferred to an Excel spreadsheet for analysis.

4.5.7.2 Student Demographics

The demographic profile of the students taking the course is shown in Table 22. There were equal numbers of students enrolled in full time and part time degree programs with a few students taking the course as part of a certificate. The male/female ratio is consistent with the demographics of the program overall. Because this was an evening course, there were more students who were part-time, older and had full time jobs than might be found in a day class and this is reflected in the percentage of participants with work experience.

Gender			***Courses***			***Age***			***IT Work Experience***		
Sex	***%***	***Cum %***	***Program***	***%***	***Cum %***	***Age in Yrs.***	***%***	***Cum %***	***Yrs of work***	***%***	***Cum %***
Male	80.6	80.6	FT	44.4	44.4	<25	68.6	68.6	None	36.1	36.1
Female	19.7	100.0	PT	44.4	88.8	25-40	31.4	100.0	<1 yr	22.2	58.3
			Certificate	11.2	100.0	41-50	0.0		1-2 yrs	13.9	72.2
			Other	0.0		>50	0.0		3-4 yrs	16.7	88.9
									5-9 yrs	5.5	94.4
									> 9 yrs	5.6	100.0

Table 22 Demographics of Stage 2 Sample at Start N=36

The demographics of those who completed all measures is shown in Table 23 below.

Gender			***Courses***			***Age***			***IT Work Experience***		
Sex	***%***	***Cum %***	***Program***	***%***	***Cum %***	***Age in Yrs.***	***%***	***Cum %***	***Yrs of work***	***%***	***Cum %***
Male	93.8	93.8	FT	18.8	18.8	<25	60.0	60.0	None	31.3	31.3
Female	6.0	100.0	PT	68.8	87.6	25-40	40.0	100.0	<1 yr	12.5	43.8
			Certificate	12.4	100.0	41-50	0.0		1-2 yrs	24.9	68.7
			Other	0.0		>50	0.0		3-4 yrs	18.7	87.4
									5-9 yrs	6.3	93.7
									> 9 yrs	6.3	100.0

Table 23 Demographics of Sample in Stage 2 that Completed All Start and End Measures N=14

Those who participated in the final measurements tended to be older, have more work experience and were registered in the part-time programs. Full-time students typically take more concurrent courses (five as opposed to one or two) and have more tests and deliverables due at this time of the semester and may not have participated due to conflicting priorities. About 50% of the women in the course were full time students which would support the larger drop in their participation.

As shown in Table 24, about one third of the participants reported having previously taken an ethics module and one fifth had taken an ethics module on the use of computer technology.

Previous Ethics Modules Taken		
	Computer Ethics	***Other Ethics***
Yes	19.4%	36.1%
No	80.6%	63.9%

Table 24 Percentage of Students Who Have Previously Taken an Ethics Module

4.5.7.3 Changes in Moral Sensitivity

The answers on the 5-point Likert scale were coded such that Strongly Disagree was "1" and Strongly Agree was "5". The percentage of students who reported Strongly Agree and Agree are reported together in the column labelled Agree. The same approach was used for Strongly Disagree and Disagree. The full results of the survey are summarized in Appendix F – Pilot Test of Measurement Tools. Table 25 shows the key findings on the changes in moral sensitivity.

The questions were grouped into seven key areas based on the groupings used in the IMIS report (Prior et al., 2006). In the majority of cases, Disagree and Strongly Disagree indicated a more ethical position with the exception of questions 9, 10, 14 and 15. In the questions on surveillance, no knowledge and no consent was assumed to be the less ethical position and knowledge and consent the more ethical position.

The IMIS Survey showed many changes in moral sensitivity, some to a more supportive and others to a less supportive position. Unauthorized copying of software in the university or the workplace showed the biggest shift to a less supportive position with the exception of copying software for personal use. According to in-class discussions, it appeared that the absence of an authoritative body such as the university or employer had an impact on the change in their opinions. Other changes were less dramatic.

Due to the small number of participants, there are few conclusions that can be drawn from the results of the survey. However, overall the instrument measured changes in moral sensitivity and is an effective measurement tool worth testing in a larger environment.

Topic	Questions	More Ethical	Less Ethical	No Change
Unauthorized copying of software	1 – university 4 – workplace 8 – personal	22% 28%	 11%	
Understanding IT work environment	5 – testing 10 – consult with those impacted 11 – challenge 12 - objectives 13 – stakeholders	5% 7% 6%	 7% 11%	
Accessing unauthorized information	6 - authorized 7 – not authorized		5%	Was at 100%
Personal use of computing resources	2 – profit 3 – no profit	11%	 11%	
Ethics programs and code of ethics	9 – ethics awareness 14 – IT code 15 – company code			Started High 89% 100% 100%
Surveillance Consent/Knowledge	16 - workplace 17.1 – teaching areas 17.2 - residences 17.3 – VLE	11% 0% 17%	 6%	
Surveillance No Consent/No Knowledge	16 - workplace 17.1 – teaching areas 17.2 - residences 17.3 – VLE	11% 0% 0%	 6%	

Table 25 Changes in Moral Sensitivity in the Pilot Ethics Course

4.5.7.4 Changes in Moral Judgment

The results of the changes in moral judgment for the fourteen students who completed both tests is shown in Table 26. The complete results can be found in Appendix F – Pilot Test of Measurement Tools.

Item	Average Start of Course	Average End of Course	Change	Comments
PI	24.7	28	3.3	Increase in Personal Interest approach
MN	36	38	2.2	Increase in Maintaining Norms approach
PC	31.2	28	-2.9	Decrease in Post Conventional
N2	32.3	26.4	-5.9	Decrease in N2
Type	4.5	4.8	0.3	Increase in Type

Table 26 Summary of Changes in Moral Judgment for the Pilot Group

The DIT2 results showed changes in moral judgment although not the changes anticipated. It was anticipated that the class would show development morally and would show a decrease in both a Personal Interest and Maintaining Norms approach in favour of an increased Post Conventional approach, resulting in an overall increased N2.

The pilot showed the class moved to a more PI and MN approach and less PC resulting in an overall decrease in the N2, indicating, according to Rest, a potential regression in moral development.

However, looking at the changes in Type gives an indication on how the individuals changed. Type identifies an individual's primary approach to making moral judgments. Type has a value from 1 to 7 where 1 is primarily Personal Interest and 7, Post Conventional. Table 27 looks at the effect of the computer ethics course on the change in primary approach to making moral judgments.

Change in Type from Start to End for 14 participants	Number
Type stayed the same	6
Type increased	4
Type decreased	4
	14
Type remained consolidated (C to C)	2
Type remained transitioning (T to T)	8
Type moved from transitioning to consolidated (T to C)	2
Type moved from consolidated to transitioning (C to T)	2
	14

Table 27 Change in Type

Half of the participants showed no change in Type, while a quarter showed an increase and a quarter showed a decrease. Half of the participants remained uncertain of their overall Type continuing to transition between two consolidated approaches and two participants moved from a consolidated to a transitioning approach.

The graph in Figure 16 shows a plot of the overall shift in Type from the start of the class to the end of the class.

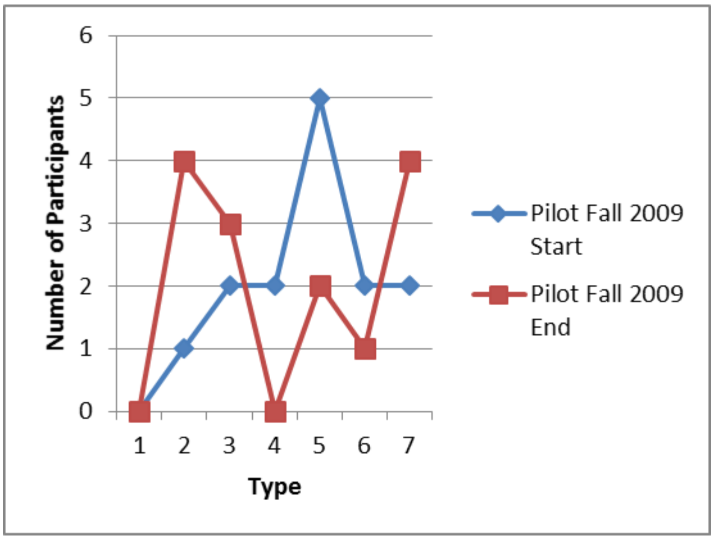


Figure 16 Change in Type Distribution from Start to End of Ethics Course

The predominant approach at the start was "5" shown by the spike in the preceding figure which moved to a double spike, either a personal interest or post-conventional spike at the end of the course. Of the 14 respondents, only two were consolidated in a specific schema – four at the post-conventional level. None were consolidated at the personal interest or maintaining norms but were transitioning between two approaches.

The DIT2 Guide includes a table of results by education level. It includes the average PI, MN and PC percentages by grade level from grades 7 to 9 through high school, 1st through 4th year undergraduate and post-graduate students. The results for this study group correspond to the results of a first year university education level in the DIT2 Guide table.

4.5.7.5 Summary of Findings and Next Steps

The purpose of the pilot was to evaluate the suitability of the measurement tools to assess the impact of a computer ethics course on moral attitude.

Both the DIT2 and IMIS Survey were easy to administer, could be applied consistently at the start and end of the class and with the addition of the identity code and the involvement of the teaching assistant could easily maintain anonymity. The process was found to be easily repeatable. The DIT2 did show a change in moral judgment measures, although not the anticipated increase in N2 nor the shifts from a PI or an MN perspective. The IMIS survey showed a change in moral sensitivity in a number of key areas and worthy of further investigation in a larger class environment.

The response rate for the post-course response indicated that an incentive was needed to encourage more completion of the second measures. The next study provided marks for completion of the end measurement tools. The pilot showed that more time is needed in explaining the DIT2 guide to help students understand what is required and working through an example would also be helpful.

The students were interested in the change in survey results and the theories behind the moral judgment tests and including these as part of the pedagogy should be considered.

The next sections describes the analysis conducted to assess the impact of an Appreciative Inquiry on changes in moral attitude as described in the following section.

4.5.8 **The Impact of Appreciative Inquiry**

When the tests were administered to the students taking the computer ethics course in Winter 2010, there was a plan to use this group as a Control group against which future interventions could be compared. Although the intervention at that stage was unknown, the process was conducted in a rigorous and repeatable manner. Some data analysis was conducted following the teaching of the Control group and the rest of the analysis was conducted following the delivery of the Appreciative Inquiry. The following section describes the analysis conducted.

The hypotheses developed are shown in Table 28.

4.5.8.1 The Appreciative Inquiry Intervention and Hypothesis

To answer the research question, the analysis compared the difference in the change in the moral attitudes of those in the AI group with those in the Control group. Both changes in moral sensitivity and changes in moral judgment were compared.

Factor analysis was used to group the thirty questions into ten themes for easier analysis. Even though the IMIS survey is an established instrument, the audience for this use of the IMIS survey (future ICT professionals in university) is different from the audience for which the survey was initially designed (ICT professionals in the workplace who are members of IMIS). The Factor Analysis is described in 4.5.8.3. Table 28 builds on Table 18 to provide the framework for the analysis to be conducted.

Question 4 (a): How can an Appreciative Inquiry educational intervention affect students' moral attitudes?
Hypothesis 1: There is a significant difference between the change in moral sensitivity of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention. Hypothesis 2: There is a significant difference between the change in moral judgment of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention. Null Hypothesis H1-0: There is no significant difference between the change in moral sensitivity of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention. There is no significant difference in the change in the opinions on the following ten themes: • Surveillance – no consent • Surveillance – consent in private environments • Surveillance – knowing and consenting • Authority – copying software and accessing confidential data • Surveillance – consent and knowledge • Codes of ethics and ethics programs • Using other's computing resources • The ICT working environment • Testing • Stakeholders Null Hypothesis H2-0: There is no significant difference between the change in the moral judgment of future ICT professionals taking a computer ethics course and those taking a computer ethics course with an Appreciative Inquiry intervention. • There is no significant difference in the change in the average PI, MN, PC, or N2 for the class. • There is no significant difference in the change in the average Type for the class.

Table 28 Hypotheses

Figure 17, a reproduction of Figure 12, provides a diagram of the quasi-experiment with a description of the key components. It is followed by a description of the analysis to be performed.

Appreciative Inquiry	O1	X+Y	O2

Control	O3	X	O4

Figure 17 Quasi-experimental Approach

As a reminder, the AI group and the Control group are separated by a "dotted line" indicating two different sets of participants. The legend of the coding is repeated from 4.4.4.2:

- O1 and O3 – the observation of the pre-test for the computer ethics course for the AI group and Control group respectively
- X – the delivery of the computer ethics course
- Y – the delivery of the Appreciative Inquiry Intervention
- O2 and O4 – the observation of the post-test for the computer ethics course for the AI group and Control group respectively.

The following analysis is performed:

1. A comparison of the differences in the starting positions of the AI and Control groups between O1 and O3:
    a. Demographics
    b. Previously taken an ethics module
    c. Position relative to education level in Center for Ethical Studies table
    d. Opinions on the use of computing resources
    e. Approaches to making moral judgments.
2. A comparison of the differences in the ending positions of the AI and Control groups between O2 and O4:
    a. Opinions on the use of computing resources
    b. Approaches to making moral judgments.

3. Position relative to education level in Center for Ethical Studies table A comparison of the differences in the changes in moral sensitivity and moral judgment between the AI and Control groups:
    a. Paired t-tests between O1 and O2 to determine the significant changes in moral sensitivity and moral judgment for the AI group from the start to the end of the course. Calculate the change as Dai = O2 – O1.
    b. Paired t-tests between O3 and O4 to determine the significant changes in moral sensitivity and moral judgment for the Control group from the start to the end of the course. Calculate the change as Dc = O4 – O3.
    c. An analysis of the differences between Dai and Dc.

4.5.8.2 Approach to Analysing the Moral Judgment Assessment

The Center for Ethical Studies analyses the DIT2 test for each student and returns the result as an electronic report and a CD suitable for loading into an SPSS database. To complete the test, the student read the five scenarios in the DIT2 test and made a recommendation on how the protagonist should resolve a specified moral dilemma. The moral dilemmas are not ICT related but two cases are related to decisions made by a professional e.g. a journalist and a doctor.

The student was asked to review twelve statements and rank the top four statements in order of the affect they had on their moral decision. The test is evaluated for the percentage of responses that used a personal interest (PI) perspective in making these recommendation. It also includes the percentage of responses that used a maintaining norms (MN) and a post-conventional (PC) approach. These were described in section 3.3.5.

Rest suggests that as humans develop they use more of a PC approach and less of a PI and MN approach. The N2 value is a factor that is calculated from the PI, MN and PC value. It is a sum of the three values with more weight given to the PC approach and less to the MN and PI. Type, ranging in value from 1 to 7, provides an individual's overall approach to moral judgment.

It would be expected that if a participant's moral reasoning develops that their PI and MN values would decrease and their PC value increase resulting in an overall increase of N2. In addition their Type would increase and they would move to a more consolidated rather than transitioning approach. Table 29 identifies the coding used in analysing moral judgment. The "A" designates data gathered at the end of the course.

Moral Judgment Measure at Start	Moral Judgment Measure at End	Change in Moral Judgment Measure	Description
PI	PI_A	Delta_PI	Personal Interest
MN	MN_A	Delta_MN	Maintaining Norms
PC	PC_A	Delta_PC	Post Conventional
N2	N2_A	Delta_N2	Overall weighted approach to moral judgment
Type	Type_A	Delta_Type	Predominant approach to making moral judgments

Table 29 Coding Conventions for Moral Judgment Analysis

The Center for Ethical Studies provides a table summarizing, by education level, the means scores on the Defining Issues Test. The results of the analysis on approach to moral judgment is compared to those with a second year university education.

4.5.8.3 Approach to Analysing the Moral Sensitivity Assessment

In the moral sensitivity questionnaire, Appendix E – IMIS Survey on Computer Ethics Opinions Measurement Tool, participants are asked to respond to 30 statements using a 5-point Likert scale from strongly disagree (1) to strongly agree (5). The survey also includes demographic questions. The more ethical answer is (1) strongly disagree. Questions where the more ethical answer was (5) were transposed to ensure that a positive change in the moral sensitivity score would indicate a positive change in moral sensitivity.

Factor analysis was conducted on the questionnaire to determine if there were clusters of questions that showed a correlation in their answers.

4.5.8.3.1 Identifying Themes

According to Field (2009, p. 628), Factor Analysis is a technique that looks for the "existence of clusters of large correlation coefficients between subsets of variables and suggests that those variables could be measuring aspects of the same underlying dimension”. A KMO (Kaisere-Meyer-Olkin Measure of Sampling Adequacy) and Bartlett’s Test were conducted on the 31 items in the survey to determine if they were suitable for factor analysis and to demonstrate a high correlation between the questions. Table 30 shows the results.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.731
Bartlett's Test of Sphericity	Approx. Chi-Square	3206.494
	df	465
	Sig.	0.000

Table 30 KMO Analysis to Support Principal Component Analysis

The KMO measure verified that the sample was adequate for principal component analysis.

> The KMO =.731 is above the acceptable limit of 0.5 and Bartlett’s Test of Sphericity, $\chi 2$ (465) =3206.494, $p<.01$ indicates that the correlation between items is sufficiently large for principal component analysis.

An initial analysis was run on the survey questions using eigenvalues > 1 and the Rotated Component Matrix identified ten clusters of survey questions with each survey question having a coefficient >.6. These ten clusters had eigenvalues over Kaiser’s criterion of 1 and in combination explained 68% of the variance in the sample. The Scree Plot, shown in Figure 18 supported these findings. The slope of the line shows a steep drop in the first four components and a further drop before levelling off at component ten. Appendix G - Factor Analysis Measuring Changes in Moral Sensitivity provides the detailed results.

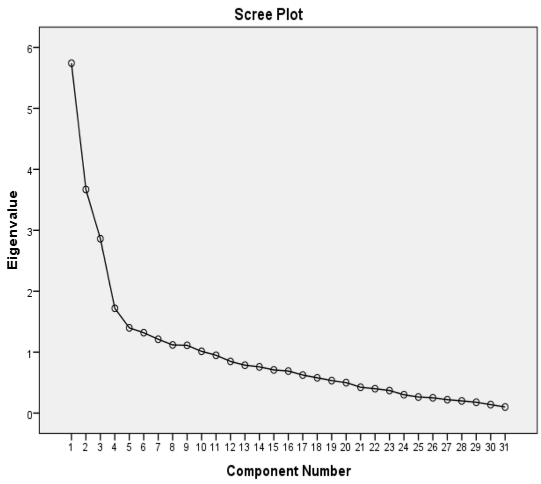


Figure 18 Scree Plot Showing Results of Factor Analysis

The ten clusters were analysed and the characteristics of the ten themes along with the survey questions they include are described in Table 31.

Theme	Theme Name	Theme Questions and Description
1	Surveillance – no consent	16b, 16d, 17.1b,17.1d Absence of consent in use of surveillance in both the university and workplace.
2	Surveillance – consent in private environments	17.2b, 17.2d , 17.3b, 17.3c, 17.3d Consenting to surveillance in the residence and virtual learning environment.
3	Surveillance – knowing and consenting	16a, 17.1a, 17.2a, 17.3a Surveillance regardless of the environment where both knowing and consenting is important.
4	Authority – copying software and accessing data	1,4,6,7,8 Presence of authority in copying software or accessing confidential data.
5	Surveillance – consent, no knowledge	16c, 17.1c, 17.2c Surveillance where there is no knowledge but consent
6	Codes of Ethics	9, 14, 15 Importance of codes of ethics and ethics programs
7	Using others computing resources	2, 3 Use of another's computing resources
8	The ICT Working Environment	10, 11, 12 Consideration of the objectives and stakeholders in the working environment.
9	Testing	5 – Importance of testing in the project environment
10	Stakeholders	13 – Importance of consultation with stakeholders

Table 31 Summary of Ten Key Themes in Opinions on the Use of Computing Resources

4.5.8.3.2 Creating Theme Scores

The principal component analysis generated Component Scores that were applied to the standardized Start survey questions variables to create a score for each theme for each participant. This was done in SPSS for the Start survey questions. However due to limitations in SPSS, applying the Component Scores for the End survey questions had to be conducted in Excel. The calculated Component scores were then transferred to SPSS. Each participant had a start and end score for each of the ten themes.

The results of the factor analysis conducted in SPSS are included in Appendix G - Factor Analysis Measuring Changes in Moral . SPSS presents the results sorted in order and in looking at the table, one can see the questions that are clustered together. These have been highlighted in grey.

Table 32 identifies the coding used in analysing moral sensitivity. "S" designates data gathered at the start of the course and "E" at the end. "n" is the Theme number identified in Table 31.

The following coding is used in analysing moral sensitivity, where "n" is the Theme number, 1 to 10:

Moral Sensitivity Measure at Start	Moral Sensitivity Measure at End	Change in Moral Sensitivity Measure	Description
FAC_n_S	FAC_n_E	Delta_FAC_n	Overall opinion on the theme identified above.

Table 32 Coding Conventions for Moral Sensitivity Analysis

4.6 SUMMARY

Moral attitude, the phenomenon being studied, is sensitive and personal and may not be articulated honestly or may be influenced by an observer. The research project is investigating the impact that an Appreciative Inquiry included in a computer ethics course has on moral attitude.

A quasi-experimental approach using quantitative methods to compare the changes in moral attitude between a Control and AI group was chosen. Two significant measurement tools, the DIT2 and the IMIS survey, were selected to measure the changes in moral judgment and moral sensitivity respectively. The DIT2 uses a series of scenarios to assess an individual's predominant approach to making moral judgments. It is closely aligned with Rest's four components that influence moral behaviour, one of the theories underpinning the research. It has high validity, is repeatable and easy to administer in the large sample group chosen for the study.

The IMIS survey assesses moral sensitivity asks participants to respond to a statement on the use of computing resources with how strongly they agree or disagree with the statement. The survey has been used several times, is repeatable and easy to administer and has results from ICT professionals in the field that will be useful for comparison and application of this study to a larger population.

The computer ethics course was developed using good pedagogy and taught to a large class of second year undergraduate students in a Canadian Business Technology Management program. Changes in moral attitude were measured. The Appreciative Inquiry was then included in a subsequent computer ethics class. The results are described in the following chapter.

CHAPTER 5 FINDINGS

5.1 INTRODUCTION

This chapter presents the findings to the research question and sub-questions 4 and 5:

> *How does an approach to teaching, namely an Appreciative Inquiry, affect the moral attitude of future Information and Communication Technology (ICT) professionals in the ethical issues that arise from the use of ICT in business?*

4. How can an Appreciative Inquiry educational intervention affect students' moral attitudes and how can such a change of attitude be measured?
5. What are the outcomes of the measures on a collective and individual basis?

The chapter is divided into four sections. To determine if there was an underlying difference in the two groups, the first section compares the starting position of the Appreciative Inquiry (AI) group to the Control group by comparing the difference in demographics, in previously taken ethics modules, their opinions on the use of computing resources and their approaches to making moral judgments.

The second section compares the end positions of the computer ethics course for the AI group to the Control group and reports on the differences in their moral sensitivity and moral judgment. The section also compares each of their positions at the end of the course to the data provided by the Center for Ethical Studies to determine if the results are similar to those of a similar educational level who have taken the DIT2.

Each of the Control and AI groups showed changes over the course. Thus the third section compares the differences in changes to determine if any of the changes are significant.

The fourth section provides comments on these Findings.

5.2 COMPARING AI AND CONTROL GROUPS AT THE START OF THE COURSE

It is important to compare the AI group with the Control group to determine any differences in the two groups that could affect the outcomes. The following section compares the group demographics: age; years of ICT work experience; previous exposure to ethics modules. It also compares the opinions of each group on the use of computing resources and their approaches to making moral judgements at the start of the computer ethics course. The approaches to moral judgement are compared to other second year university students who have taken the DIT2 through the Center for Ethical Studies. Further details on the analysis can be found in section Appendix H – Comparing Differences at Start between AI and Control.

5.2.1 Comparing the Demographics of the AI group to the Control group

Table 33 compares the demographics of the AI to the Control groups for the common demographics: gender, registered program (courses), age and ICT Work Experience at the start of each course.

Gender			*Courses*			*Age*			*ICT Work Experience*		
Sex	***Ctrl %***	***AI %***	***Program***	***Ctrl %***	***AI %***	***Age in Yrs.***	***Ctrl %***	***AI %***	***Yrs of work***	***Ctrl %***	***AI %***
Male	80.7	79.8	FT	95	99.6	<25	86.5	94.5	None	61.2	77.0
Female	19.3	20.2	PT	3.3	0.4	25-40	12.4	4.6	<1 yr	51.9	15.2
			Certificate	1.1	0.0	41-50	0.0	0.9	1-2 yrs	13.2	4.8
			Other	0.6		>50	1.1	0.0	3-4 yrs	3.3	2.2
									5-9 yrs	2.8	0
									> 9 yrs	2.2	0.8

Table 33 Demographics of Control to AI at the Start of Each Course

There was no significant difference in gender. Each group had a similar low proportion of females in the program, consistent with the demographics of the students in the School of Information Technology Management as a whole.

The AI group were slightly younger with 8% more under the age of 25, and less work experience. 15% more had no business experience. The AI group had fewer students registered in the part-time degree program (PT) and the non-degree certificate programs than in the Control group. It is anticipated that this contributed to less ICT work experience in the AI group.

In addition, the AI group had a higher percentage of students whose first language is English, 83% versus 72% for the Control group.

5.2.2 Comparing Previous Experience in Ethics

Participants were asked whether they had taken a module in computer ethics or another ethics module. Table 34 reports the results. There are significant differences ($p<.05$) in both the computer ethics modules taken and the other ethics modules taken.

Control: Previous Ethics Modules Taken			***AI: Previous Ethics Modules Taken***	
	Computer Ethics	***Other Ethics***	***Computer Ethics***	***Other Ethics***
Yes	22.3%	21.2%	13%	28.5%

Table 34 Percentage of Students Who Have Previously Taken an Ethics Module

It is evident that the AI group had taken slightly more general ethics modules but less computer ethics modules. The Control and AI groups took the same prescribed business courses except that the Control group took MGT200 Introduction to Management which was replaced by GMS200 Global Management for the AI group. The course descriptions, see (Figure 19), for the two courses are similar, only the global context has been added.

GMS 200 Introduction to Global Management

This course introduces the concepts and complexities of the contemporary business environment with an emphasis on competitiveness, quality, and the main functional areas of management: Planning, Organizing, Controlling, and Leadership. The course recognizes the global context within which managerial decisions are made. Topics include: origins of management, forms of business ownership, entrepreneurship and intrapreneurship, organizational structure, strategy, operations management, international business, *social and ethical issues*. Instruction will be provided for effective presentations and library research skills. A globally oriented management simulation may be used. (Formerly MGT 200)

Figure 19 GMS200 Course Description

It is conceivable that discussions on social and ethical issues may have assumed a more prominent position given the global rather than local context of the course and made a more significant impression on students as having taken an ethics module.

It is not clear why the AI group would have been exposed to less computer ethics as each group has taken the same prescribed courses in information technology where discussions on computer ethics might have taken place, namely:

- ITM100 Introduction to Business Systems
- ITM200 Introduction to Programming
- ITM301 IT Infrastructure
- ITM305 Systems Analysis and Design

In reviewing the course descriptions, some of the courses focus on decision making but only one, ITM100, mentions a consideration of ethics or critical thinking. The only difference that could be identified in ITM100 was that a different instructor, with less computer science and business experience, taught the first year ITM100 course to the AI group and may not have emphasized or even taught the ethics module. The ITM305 course in Systems Analysis and Design takes a user-centric rather than agent-centric approach in developing skills in Entity Relationship modelling and designing databases through the use of Use Cases. This may have an indirect effect on ethics with its focus on stakeholders. However the course content didn't change between the time the Control group took the course and the time the AI group took the course.

5.2.3 Comparing Starting Moral Judgment for AI and Control

An independent t-test was conducted to compare the starting moral judgments for the AI to the Control group. As described in section 4.5.8.2, comparisons were done on the preferences for a Personal Interest (PI), Maintaining Norms (MN), Post Conventional (PC), N2 (overall approach based on weightings for low PI and high PC), Type (overall approach to making moral judgments) and Consolidated/Transitioning. There were no significant differences identified in the starting positions of the two groups with the exception of Consolidated/Transitioning.

Table 35 shows the percentage of participants that were consolidated in their approach to making moral judgments, that is, they were Types 1, 4 or 7. Those transitioning in their approach, transitioned between a PI/MN or MN/PC approaches. The AI participants were more transitioning and less consolidated that those in the Control group.

	Control	**AI**
Transitioning	71.6%	82.8%
Consolidated	27.6%	17.2%

Table 35 Comparison of Transitioning versus Consolidated for Control to AI at Start

According to Rest et al. (2000), the DIT2 provides information processing tasks, tasks to process information and make moral judgments. The more consolidated the approach, the more the individual will be consistent in using a coherent point of view. At the start of the courses, the AI group was less consistent and less definite in following a specific approach to making moral judgments than the Control group.

The Center for Ethical Studies (CES) has a database with the results of all the DIT2 tests analysed over the years. The DIT2 Guide, sent to researchers along with the DIT2 student tests, includes analysis done by the Center on the results of the DIT2 tests by Educational Level e.g. grades 7 to 9, high school, 1st year university, etc. Only data for students whose first language is English are included. The results were compared to students at the second year university (sophomore) educational level.

The scores at the beginning of the computer ethics course, for the AI and Control group, whose first language was English, were found to be higher than the CES average in Personal Interest, similar to Maintaining Norms and less than Post conventional resulting in a lower comparable N2 score. Table 36 shows the comparison.

	PI	MN	PC	N2
Center for Ethical Studies Database	29.27	32.36	32.62	31.24
DIT2 Start – Control – English 1st language	32.99	33.12	29.8	27.58
DIT2 Start – AI – English 1st language	35.67	31.21	28.48	26.08

Table 36 Comparing DIT2 Start AI and Control to Other Second Year University Students

5.2.4 Comparing Starting Moral Sensitivity for AI and Control

An independent t-test was conducted to compare the starting moral sensitivity for the AI to the Control group. As described in section 4.5.8.3 the ten themes identified in the Factor Analysis were compared at the start of the courses for the AI and Control groups. There were no significant differences identified in the starting positions for the following themes:

- Theme 1 – Absence of consent in use of surveillance in both the university and workplace
- Theme 2 – Consenting to surveillance in the residence and virtual learning environment
- Theme 3 – Surveillance regardless of the environment where both knowing and consenting is important
- Theme 5 – Surveillance where there is no knowledge but consent
- Theme 6 – Importance of codes of ethics and ethics programs
- Theme 8 - Consideration of the objectives and stakeholders in the working environment.
- Theme 9 – Importance of testing in the project environment
- Theme 10 – Importance of consultation with stakeholders.

There were significant differences in the starting positions of Theme 4 and Theme 7.

Theme 4 represents the importance of authorization in the copying of software or the use of passwords to access data one is not authorized to access. A summary of the analysis is shown in Table 37.

Theme 4 – Copying Software and Accessing Data		
Group	*Mean*	*Standard Error*
Control – FAC_4S	.230	.093
AI – FAC_4S	-.187	.080
t(259)=3.41,p<.05		

Table 37 Comparing Theme 4 at the Start for Control and AI Groups

The AI group is significantly more supportive of the importance of there being authorization before copying software or using another's passwords to access data.

Theme 7 represents the importance of permission in using another's computing resources. A summary of the analysis is shown in Table 38.

Theme 7 – Using Others Computing Resources		
Group	***Mean***	***Standard Error***
Control – FAC_7S	.199	.090
AI – FAC_7S	-.154	.090
t(259)=2.94,p<.05		

Table 38 Comparing Theme 7 at the Start for Control and AI Groups

The AI group is significantly more supportive of the importance of permission being given before another's computing resources can be used. A summary of the analysis is included below.

More details are included in Appendix H – Comparing Differences at Start between AI and Control.

In summary, the AI Group:

- was slightly younger, with less business experience, with more students registered in the full-time degree program
- had more exposure to general ethics modules and less exposure to computer ethics modules
- was more Transitioning and less Consolidating in their approach to making moral judgments with no significant differences in other moral judgment measures
- was more supportive of the importance of authorization in copying software and accessing data one isn't authorized to view (Theme 4)
- was more supportive of the importance of permission in using another's computing resources (Theme 7).

5.3 COMPARING AI TO CONTROL GROUPS AT THE END OF THE COURSE

The Control group and the AI group each received the same computer ethics course with the only difference being the inclusion of an Appreciative Inquiry for the AI group. The following section compares the moral sensitivity and moral judgment at the end of the course for the AI and Control groups to determine the impact that the Appreciative Inquiry had. Refer to Appendix I – Compare Differences At End between AI and Control for further details on the results.

5.3.1 Comparing Ending Moral Judgment for AI and Control

An independent t-test was conducted to compare the ending moral judgments for the AI to the Control group. As described in section 4.5.8.2, comparisons were done on the preferences for a Personal Interest, Maintaining Norms, Post Conventional, N2 (overall approach based on weights for low PI and high PC), Type (overall approach to making moral judgments) and Consolidated/Transitioning. There were no significant differences identified in the ending positions of the two groups with the exception of Consolidated/Transitioning.

Table 39 shows the percentage of participants that were consolidated in their approach to making moral judgments, that is, they were Types 1, 4 or 7. The AI participants were more transitioning and less consolidated that those in the Control group.

	Control	AI
Transitioning	65.5%	80%
Consolidated	33.6%	20%

Table 39 Comparing Transitioning versus Consolidated for Control to AI at End

The more consolidated the approach, the more consistent is the approach using a coherent point of view in making moral decisions. At the end of the courses, the AI group was less consistent and less definite in following a specific approach to making moral judgments than the Control group.

Table 40 compares the end DIT2 results to students in the second year of an undergraduate degree program in The Center for Ethical Studies' (CES) database.

	PI	MN	PC	N2
Center for Ethical Studies Database	29.27	32.36	32.62	31.24
DIT2 End – Control – English 1st language	31.09	32.24	30.88	29.89
DIT2 End – AI – English 1st language	30.59	34.72	29.97	28.24

Table 40 Comparing End DIT2 AI and Control to Other Second Year University Students

Although both the AI and Control groups were similar to the CES database in a Personal Interest approach, the groups in this study were lower both in their Post Conventional approach and N2.

5.3.2 Comparing Ending Moral Sensitivity for AI and Control

An independent t-test was conducted to compare the ending moral sensitivity for the AI to the Control group. As described in section 4.5.8.3, the ten themes identified in the Factor Analysis were compared at the end of the courses for AI and Control. There were no significant differences identified in the ending positions for the following themes:

- Theme 1 – Absence of consent in use of surveillance in both the university and workplace
- Theme 2 – Consenting to surveillance in the residence and virtual learning environment
- Theme 5 – Surveillance where there is no knowledge but consent
- Theme 8 - Consideration of the objectives and stakeholders in the working environment.
- Theme 10 – The importance of consultation with stakeholders.

There were significant differences in the ending positions of Theme 3, 4, 6, 7 and 9. A summary of the analysis follows.

Theme 3 represents the importance of both knowing and consenting to the use of surveillance regardless of whether the surveillance is taking place in the workplace, the university teaching areas, residences or the virtual learning environment. A summary of the analysis is included in Table 41.

Theme 3– Surveillance – Knowing and Consenting		
Group	*Mean*	*Standard Error*
Control – FAC_3E	-.321	.118
AI – FAC_3E	-.253	.068
t(189)= -4.180,p<.05		

Table 41 Comparing Theme 7 at the End for Control and AI Groups

At the end of the course, the AI group is significantly more supportive of the importance of both knowing and consenting in the use of surveillance.

Theme 4 represents the importance of authorization in the copying of software or the use of passwords to access data one is not authorized to access. A summary of the analysis is included in Table 42.

Theme 4 – Authorization in Copying and Accessing Data		
Group	*Mean*	*Standard Error*
Control – FAC_4E	.204	.889
AI – FAC_4E	-.151	.067
t(259)=3.24,p<.05		

Table 42 Comparing Theme 4 at the End for Control and AI Groups

The AI group is significantly more supportive of the importance of there being authorization before copying software or using another's passwords to access data.

Theme 6 represents the importance of codes of ethics both in the workplace and in the ICT department and the importance of ethics awareness programs. A summary of the analysis is shown in Table 43

Theme 6 – Codes of Ethics and Ethics Programs		
Group	*Mean*	*Standard Error*
Control – FAC_6E	.232	.094
AI – FAC_6E	-.192	.071
t(259)=3.683,p<.05		

Table 43 Comparing Theme 6 at the End for Control and AI Groups

The AI group is significantly more supportive of the importance of codes of ethics and awareness programs.

Theme 7 represents the importance of permission in using another's computing resources without express permission. A summary of the analysis is included in Table 44.

Theme 7 – Using Others Computing Resources		
Group	*Mean*	*Standard Error*
Control – FAC_7E	.179	.090
AI – FAC_7E	-.138	.090
t(259)=2.60,p<.05		

Table 44 Comparing Theme 7 at the End for Control and AI Groups

The AI group is significantly more supportive of the importance of permission being given before another's computing resources can be used.

Theme 9 represents the importance of testing in the project environment. A summary of the analysis is included in Table 45

Theme 9 – Importance of Testing		
Group	*Mean*	*Standard Error*
Control – FAC_9E	.131	.092
AI – FAC_9E	-.154	.074
t(259)=2.02,p<.05		

Table 45 Comparing Theme 9 at the End for Control and AI Groups

The AI group is significantly more supportive of the importance of testing in the project environment.

In summary, the AI Group:

- was more Transitioning and less Consolidating in their approach to making moral judgments with no significant differences in other moral judgment measures
- more supportive in the importance of both knowing and consenting in the use of surveillance (Theme 3)
- more supportive of the importance of authorization in copying software and accessing data one isn't authorized to view (Theme 4)
- more supportive of the importance of codes of ethics and ethics awareness programs (Theme 6)
- more supportive of the importance of permission in using another's computing resources (Theme 7)

- more supportive of the importance of testing in the project environment (Theme 9).

Before drawing any conclusions from the above results, it is worth considering the differences in the changes between the two groups. Given that the starting positions for Theme 4 and Theme 7 were different between the two groups, the differences in the changes for those two themes may not be significant.

The following section describes the differences in changes in moral attitude for both moral sensitivity and moral judgment.

5.4 COMPARING DIFFERENCES IN CHANGES IN MORAL ATTITUDE IN AI TO CHANGES IN CONTROL

This section describes the change in moral attitudes, first for the Control group and then for the AI group over their respective computer ethics courses. The section then presents the results of the analysis of the differences in the changes in moral attitude of the two groups and whether the changes are significant. The detailed results are included in Appendix J–Measuring Change in Moral Attitude for Control Group.

5.4.1 Change in Moral Attitude During Control Group

The ethics course had an impact on the moral attitudes of future ICT professionals in the Control group in the following ways.

Change in Themes: A paired t-test between the start and end of the Control group showed significant changes in their opinions on the use of computing resources in two of the ten Themes: Theme 3 and Theme 6. There were no significant changes in the other eight themes.

Theme 3 represents the importance of knowing and consent in the use of surveillance. A summary of the analysis is included in Table 46.

Theme 3 – Importance of Knowing and Consent in Surveillance		
Group	***Mean***	***Standard Error***
Control – FAC_3E	-.321	.118
Control – FAC_3S	-.050	.099
t(115)=2.053,p<.05		

Table 46 Comparing Theme 3 Start to End for Control Group

The Control group showed less support in the importance of both knowledge and consent of individuals under surveillance at the end of the course (Theme 3).

Theme 6 represents the importance of codes of ethics and ethics awareness programs. A summary of the analysis is included in Table 47.

Theme 6 – Importance of Codes of Ethics and Awareness Programs		
Group	***Mean***	***Standard Error***
Control – FAC_6E	.232	.094
Control – FAC_6S	-.028	.086
t(115)=2.115,p<.05		

Table 47 Comparing Theme 6 Start to End for Control Group

The Control group showed less support on the importance of codes of conduct and ethics awareness programs at the end of the course.

Change in Moral Judgement: A paired t-test showed a significant increase in the average N2 value. There were no significant changes in the other moral judgment measures e.g. PI, MN and PC. The analysis is shown in Table 48.

Theme 4 – Authorization in Copying and Accessing Data		
Group	***Mean***	***Standard Error***
Control – N2_A (end)	28.627	1.441
Control – N2 (start)	25.580	1.340
t(115) = -2.129, p<.05		

Table 48 Comparing N2 at the Start and End for the Control Group

Change in Type: All of the DIT2 variables analysed are integral data except Type which is ordinal. The Wilcoxon test was used to compare the start and end Type values of participants in the same group.

There were no significant differences discovered for the change in Type. The end Type value (Mdn= 3) did not differ significantly from the start Type value (Mdn=3) in the computer ethics course, W= 1532, z= -1.941.

Figure 20 compares the Type distribution at the start of the computer ethics course to the end. There appeared to be a more pronounced overall change in Type for those consolidated or transitioning towards a Post-Conventional approach (Type = 6, 7).

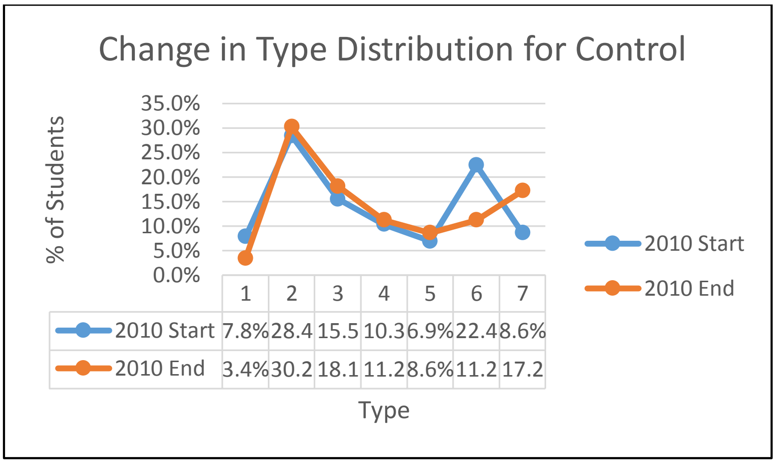


Figure 20 Change in Type Distribution from Start to End for Control Group

The next section reports the results of the analysis of the Appreciative Inquiry group.

5.4.2 Change in Moral Attitude in AI Group

The ethics course had an impact on the moral attitudes of future ICT professionals in the AI group in the following ways. The detailed results are shown in Appendix K – Measuring Change in Moral Attitude - Appreciative Inquiry.

Change in Themes: A paired t-test showed a significant change in their opinions on the use of computing resources in two of the ten Themes: Theme 3 and Theme 6. There were no significant changes in the other eight themes.

Theme 3 represents the importance of knowing and consent in the use of surveillance. A summary of the analysis is included in Table 49.

Theme 3 – Importance of Knowing and Consent in Surveillance		
Group	*Mean*	*Standard Error*
AI – FAC_3E	.254	.069
AI – FAC_3S	.032	.078
T(144) = - 2.545, p<.05		

Table 49 Comparing Theme 3 Start to End for AI Group

The AI group developed greater support on the importance of both knowledge and consent of individuals under surveillance.

Theme 6 represents the importance of codes of ethics and ethics awareness programs. A summary of the analysis is included in Table 50.

Theme 6 – Importance of Codes of Ethics and Awareness Programs		
Group	*Mean*	*Standard Error*
AI – FAC_6E	-.192	.071
AI– FAC_6S	.022	.087
t(144)= -2.204,p<.05		

Table 50 Comparing Theme 6 Start to End for Control Group

The AI group moved to a more supportive view on the importance of codes of conduct and ethics awareness programs.

Change in Moral Judgement: A paired t-test showed a significant increase in the average N2 and MN values and a significant decrease in the PI value. There were no significant changes in the PC approach. The results are summarized in Table 51.

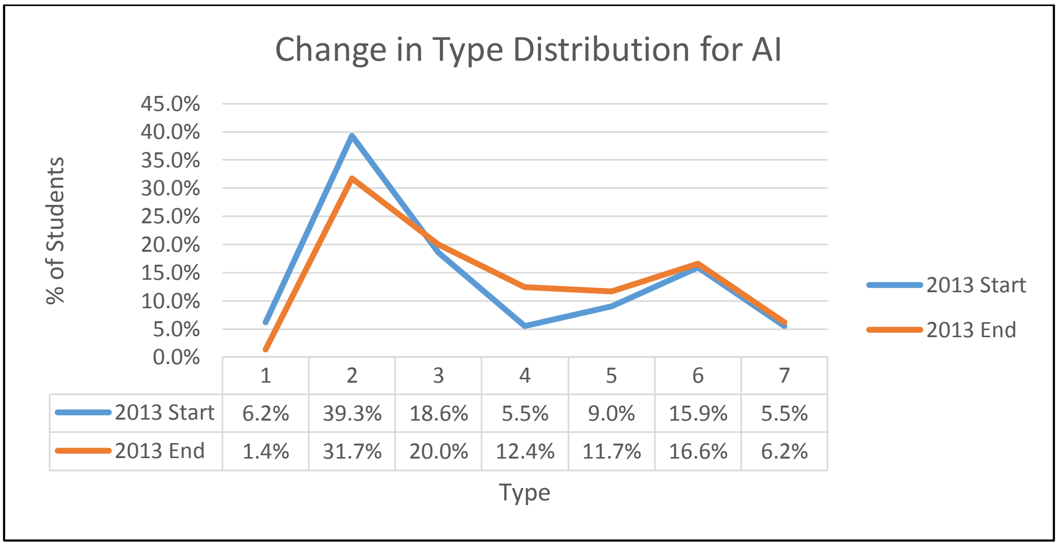
	Mean	Standard Error	T(144)	Significance
N2	25.01	1.01	-2.35	.020
N2_A	27.46	1.01		
PI	35.37	1.11	4.296	.000
PI_A	30.48	1.05		
MN	31.68	1.05	-2.725	.007
MN_A	34.87	1.02		

Table 51 Changes in N2, PI, MN

Change in Type:

The Wilcoxon Test was used to compare the start and end Type values of participants in the same group. There was a significant difference in the start and end values in Type. The end Type value (Mdn= 3) differed significantly from the start Type value (Mdn=3); W= 1842, z=-1.941.

The graph in Figure 21 shows the overall change in Type from the start of the AI group to the end. There appeared to be a more pronounced change in Type for those consolidated or transitioning towards an overall Personal Interest or Maintaining Norms perspective.



	1	2	3	4	5	6	7
2013 Start	6.2%	39.3%	18.6%	5.5%	9.0%	15.9%	5.5%
2013 End	1.4%	31.7%	20.0%	12.4%	11.7%	16.6%	6.2%

Figure 21 Change in Type Distribution from Start to End of AI

5.4.3 Comparing Difference in Changes in Moral Attitude Between the Control and AI Groups

The previous sections have shown that both the Control and AI groups saw a significant change in their views on Theme 3, the importance of consent and knowledge in surveillance and Theme 6, the importance of codes of ethics and ethics awareness programs. However, each group's changes were in opposite direction to the other groups as shown below:

- The Control group moved to less support for the importance of consent and knowledge in surveillance. The AI group moved to more support.
- The Control group moved to less support for codes of ethics and ethics programs. The AI group moved to more support.

The other eight themes showed no significant difference in the changes.

The next section tests the significance of the differences.

5.4.3.1 Comparing Difference in Changes in Moral Sensitivity Between Control and AI

To facilitate comparing the differences in changes in moral sensitivity between the two groups, SPSS was used to calculate the Delta Theme score for each of the ten Themes. As an example, Delta_Fac1 is the change in theme scores for the Theme 1 and is calculated as Delta_Fac1 = FAC1_S - FAC1_E, where "S" represents the starting value and "E" represents the value at the end of the course. This is repeated for the other nine Themes.

To determine if there was a significant difference between the change in opinions on a Theme between the two study groups, Delta_Facn values for each group were compared using the independent t-test. The differences in changes in moral attitude were significant for Themes 2, 3, and 6. Given the significant difference in the starting positions for Themes 4 and 7, the differences in changes in moral attitude for Themes 4 and 7 were not found to be significant. Following is a summary of the findings for the three themes. The detailed analysis can be found in Appendix L – Comparing Difference in Changes in Moral Attitude Between AI and Control.

Surveillance – Consent in Private Environments – Theme 2

On average there was a significant difference in the change in the AI group compared to the Control group in the use of surveillance in the university residence and the virtual learning environment, two private areas of vulnerability. A summary of the analysis is included in Table 52.

Theme 2 – Surveillance Consent in Private Environments		
Group	*Mean*	*Standard Error*
Control – Delta_FAC_2	.177	.116
AI – Delta_FAC_2	-.117	.091
t(261)=2.022,p<.05		

Table 52 Comparing Change in Theme 2 for AI to Control Groups

The AI group showed stronger support that consent is important in surveillance in these environments.

The Importance of Both Knowing and Consenting in the Use of Surveillance in the University or Work Environment – Theme 3

On average there was a significant difference in the change in the AI group compared to the Control group in their attitude to the use of Surveillance in the University or Work Environment where both consent is given and there is knowledge of the surveillance. The summary analysis is included in Table 53.

Theme 3 – Surveillance with both Knowledge and Consent		
Group	*Mean*	*Standard Error*
Control – Delta_FAC_3	-.267	.131
AI – Delta_FAC_3	.214	.086
t(261)=3.065,p<.05		

Table 53 Comparing Change in Theme 3 for AI to Control Groups

The AI group changed to a more supportive response that both knowledge and consent must be present. In fact, as shown in Theme 2 above, the AI group seems to lean towards consent, especially in the environments where one might expect privacy such as the halls of residence or the virtual learning environment.

The Importance of Codes of Ethics and Ethics Programs in the Workplace and the Profession – Theme 6

On average there was a significant difference in the change in the AI group compared to the Control group in their attitude to the importance of codes of ethics and ethics awareness programs in the workplace, profession and university. The summary analysis is included in Table 54.

Theme 6 – Codes of Ethics and Ethics Programs		
Group	*Mean*	*Standard Error*
Control – Delta_FAC_6	.259	.122
AI – Delta_FAC_6	.208	.097
t(261)=3.034,p<.05		

Table 54 Comparing Change in Theme 3 for AI to Control Groups

The AI group changed to a more supportive response.

There were no significant differences found in the other seven themes.

5.4.3.2 Comparing Difference in Change in Moral Judgement Between Control and AI

As with moral sensitivity, SPSS was used to calculate the change in Moral Judgment scores for each of the five measures. A Delta ("Δ") value was calculated for each of the DIT2 variables, for example:

$$\Delta \text{ PI} = \text{Mean of PI End} - \text{Mean of PI Start.}$$

The Year variable identifies the stage: Year = 10 is the Control group and Year=13 is the AI group. Table 55, shows the comparisons of the paired t-test between Control and AI.

Year		N	Mean	Std. Deviation	Std. Error Mean
Delta_PI	10	116	-2.4159	16.33573	1.51673
	13	145	-4.8898	13.70534	1.13817
Delta_MN	10	116	-.0736	16.17066	1.50141
	13	145	3.1986	14.13584	1.17392
Delta_PC	10	116	1.0760	14.79313	1.37351
	13	145	.7597	13.10354	1.08819
Delta_N2	10	116	3.0467	15.40945	1.43073
	13	145	2.4502	12.55392	1.04255
Delta_Type	10	116	.12	2.322	.216
	13	145	.34	2.136	.177

Course	Δ PI	Δ MN	Δ PC	Δ N2	Δ TYPE
Control	-2.46 (.114)	-.07 (.960)	+1.08 (.435)	+3.05 (.035)	+.121 (.58)
AI	-4.89 (.000)	+4.2 (.007)	+.76 (.486)	+2.45 (.020)	+.345 (.054)

Table 55 Comparing Change in DIT2 Variables for Control to AI

The table shows the changes in the N2 value for both the Control and the AI groups. Each shows an increase in N2 value for $p < .05$ (shown in parentheses). However it is interesting that the AI group showed a significant decrease in decisions using a PI approach and a significant increase in decisions using an MN approach compared to the Control group. In comparing the changes in Type between the two groups, the Appreciative Inquiry appeared to have an impact on those with a PI and MN approach. There was also a significant increase in Type for the AI group.

AI showed a greater increase in Type over Control. There was also more movement to other Transitioning Types than to Consolidated Types compared to Control. However, as Table 56 shows, the Control group moved to a more Consolidated approach to making moral judgements whereas the AI group remained highly Transitioning.

	Ctrl – Start	Ctrl - End	AI – Start	AI - End
Transitioning	71.6%	65.5%	82.8%	80%
Consolidated	27.6%	33.6%	17.2%	20%

Table 56 Comparing Transitioning versus Consolidated – Control to AI

Figure 20 and Figure 21 provided graphical views of the changes in Type in the Control and AI group. The graphs show the change in distribution by Type at the start of the computer ethics course to the distribution at the end. In the Control group, there was little change in those who had a predominantly Personal Interest or Maintaining Norms approach. There was a change, however, for those who were transitioning around a Post Conventional approach. In the AI group there was a change in two areas indicating that the course with the Appreciative Inquiry intervention had more of an impact at the PI and MN approaches.

5.4.3.3 Comparing Individual Movements in Type

Up to this point, the analysis has focused on the collective measures of the changes in the group mean, in both moral sensitivity and moral judgement. The next section considers how individual participants changed by looking at their pathways, that is, their change in Type.

Table 57 shows the changes in Type for the Control and AI groups. It compares the difference in changes between Consolidated Types and Transitioning Types. As a reminder, those who are Consolidated exhibit a predominant, consistent, coherent approach to making moral judgements such as a Personal Interest (Type 1), Maintaining Norms (Type 4) or Post Conventional (Type 7) approach. Those who are Transitioning move between two of the predominant approaches such as: PI and MN or MN and PC. A Type 2 is someone transitioning between PI and MN with a preference for Type 2. A Type 3 is someone transitioning between PI and MN with a preference for MN. The same is true for MN/PC between Types 6 and 7.

Change in Type from Start to End	Control %	AI%
Type stayed the same	31	33.8
Type increased	39	41.4
Type decreased	30	24.8
	100	100
Type changed but remained consolidated (C to C)	3	4
Type changed but remained transitioning (T to T)	29	37
Type moved from transitioning to consolidated (T to C)	20	14
Type moved from consolidated to transitioning (C to T)	17	11
Type stayed the same - consolidated	8	3.9
Type stayed the same - transitioning	23	29.9
	100	100

Table 57 Change in Type

Although in both the Control and the AI groups, one third of students didn't change in Type, a considerably lower percentage of students decreased in Type in the AI group (24.8%) compared to the Control group (30%).

The next individual-focused data to investigate is that of "pathways". A pathway defines a specific movement in Type for a participant. For example, pathway "2›4" describes a participant that moves from a Type 2 to a Type 4 during the course. The

“>” indicates the direction of movement. A “2›4” pathway also shows an individual who moved from a Transitioning to a Consolidated approach. A pathway of “4›2” is a move from Type 4 to Type 2, a move from Consolidated to Transitioning. Full details of the pathway analysis are included in Appendix L – Comparing Difference in Changes in Moral Attitude Between AI and Control . The interesting findings are shown in Table 58.

Change in Pathway	Control Group	AI Group
Stayed the Same	31%	33.8%
Went Up: • By 3 • By 4 • By 5	39% • 4.3% • 5.2% • 5.2%	41% • 6.2% (4.1% “2›5”) • 9.0% (6.2% “2›6”) • 0.7%
Went Down: • By 2	30% • 9.5% (5.2% - “4>2”)	24.8% • 6.2%
Interesting Patterns		
• 2›3 vs. 3›2	3.4% vs. 1.7%	8.3% vs. 4.8%
• 2›6 vs. 6›2	3.4% vs. 4.3%	6.9% vs. 4.8%

Table 58 Comparing Pathways Control to AI Group

The majority of pathway changes were in the 1% to 3 % range. However, there are some surprising and interesting observations from the table above.

Although each group was similar in the percentage of participants whose Type stayed the same or went up, the decrease in the Control group was 5% more than the decrease for the AI group. This may show a regression in moral judgment but it could also show a move to a more consolidated approach as evidenced in the figures reported in Table 56 that showed a 6% increase in consolidated Types.

Although both groups were similar in their overall shift up, there was a greater positive movement in the AI group for those beginning at Type 2 in moving to Type 5 and Type 6 indicating still a degree of uncertainty in their overall approach but more inclined to consider a post conventional rather than a maintaining norms approach. It is interesting to note the changes between “2›3” versus “3›2” and “2›6” versus “6›2” where this conflict appears to continue.

Considering that one of the purposes of an ethics class is to engage students to question their opinions and think outside their normal box (Desjardins & Diedrich, 2003) and that the purpose of the Appreciative Inquiry was to develop a user-centric approach, thinking of stakeholders, thinking of “the other”, then 24% of the AI group appeared to wrestle between the PI and PC approach. This is compared to the 12% who wrestled with this in the Control group. Perhaps a twelve week class is too short a time to expect a definitive change, the important thing to note here is that there was internal conflict between those two approaches.

Although the Appreciative Inquiry group showed an increase in N2 value that was less than the Control group, there was greater significant movement for those with a Personal Interest or Maintaining Norms perspective than a Post Conventional approach. A decrease in PI and increase in MN with a PC that remained unchanged would result in a lower N2.

The AI group (see Table 56) showed more uncertainty in their approach to moral judgements at the start of the course, 82.8% were transitioning rather than consolidated compared to 71.6% for the Control group. It was 80% at the end of the course, not much of a change compared to a final assessment of 65.5% for the Control group. However, whereas the Control group showed movement across the approaches, the AI group showed large shifts in the following pathways compared to the Control group:

- “2›3” versus “3›2” (8.3% vs. 4.8%)
- “2›6” versus “6›2” (6.9% vs. 4.8%).

The next section discusses the significance of the findings.

5.5 SIGNIFICANCE OF FINDINGS

The purpose of the project was to determine if an Appreciative Inquiry would aid in the moral development of future ICT professionals as evidenced by a change in moral attitude. Changes in both moral sensitivity and moral judgement, two of Rest's Four Components that influence moral development, were measured in the group that included the Appreciative Inquiry and compared to a Control group. The following results were anticipated.

5.5.1 Development of Moral Judgment

It was expected that the computer ethics course itself would result in a development in moral judgement, particularly with a strong move to Post Conventional. Post Conventional thinking, in this context, is important because it draws on ethical frameworks to aid in thinking through the decision rather than the existence of laws and norms or the benefits to self to determine the best course of action. Both groups increased in Post Conventional approach -- the Control group slightly more so, but neither change was enough to be significant at $p<.05$.

Both groups increased in overall moral judgment as evidenced by the increase in N2 and the increase in Type. However, what was surprising is that the AI group developed slightly less than the Control group, an increase of 2.5% (AI) compared to 3.1% (Control). In reviewing the graphs of change in Type, there appeared to be more change at the Post Conventional level for the Control group. It would appear that the Appreciative Inquiry made little additional impact beyond the initial impact of the computer ethics course on approaches to moral judgment.

However, there are a number of other things to consider. It is important to remember that N2 is influenced by low Personal Interest and Maintaining Norms scores and a high Post Conventional score. There was a significant difference in the decrease in the PI and the increase in the MN score for the Appreciative Inquiry group that would result in a lower N2 score.

There were many reasons for choosing an Appreciative Inquiry as an intervention. One was to develop a pride of profession in future ICT professionals in appreciating the value that ICT provides to individuals and organizations. Another was to develop the moral sensitivity and empathy between ICT professionals and their stakeholders to develop a sense of professional responsibility. McPhail (2001) refers to this as developing a sense of "the other" in his discussions on ethics and the accounting profession.

A Personal Interest approach focuses on the self and a decrease in a PI approach signals moving away from a focus on the self. The AI group move may not have been to Post Conventional but it was a significant move to Maintaining Norms.

It is also important to consider the view that ethics education should be about reflective learning, promoting conceptual change and engagement of students with the material to enable them to constitute their own learning rather than simply memorize what is told (Stoodley, 2006). This requires pushing boundaries, encouraging participants to move out of their comfort zone, their place of certainty. In reviewing the Consolidated versus Transitioning results, students in the AI group appeared to be less consistent and coherent in their decision making. In the AI group there were twice as many transitioning between the PI and PC approach than for the Control group. The same was true for PI and MN.

However in looking at the change in Type, in the Control group, it seemed that the computer ethics course engaged more with those using a Post Conventional approach than those using a predominantly Personal Interest or Maintaining Norms approach, perhaps indicating that the ethics class was lacking in broad appeal.

5.5.2 Development of Moral Sensitivity

It was expected that the computer ethics course would develop moral sensitivity and there would be a change in the opinions on the use of computing technology in the business and university environments. There were differences in five of the ten themes. The results are discussed below.

5.5.2.1 *Codes of Ethics and Ethics Awareness Programs (Theme 6)*

There was a significant change in opinions on the value of codes of ethics and ethics awareness programs. The AI and Control groups started with a high opinion on the value of codes of ethics. By the end of the course, the AI group's support increased significantly in comparison to the Control group. The AI group also had a high opinion of the value of ethics awareness programs. Both groups maintained high support for the value of codes of ethics for ICT employees. However, the AI group was able to understand its importance to the rest of the organization and maintained a high level of support for codes of ethics for other employees.

As part of the Appreciative Inquiry, students identified the value of ICT and the benefits it provides to specific stakeholders. They then considered what risk might threaten the achievement of the benefits and developed a recommendation that could be implemented. Often the recommendation could be communicated as a policy or as part of the codes of ethics for an organization. This may have influenced their view of the value of codes of ethics in the organisation.

The AI group also maintained a high level of support for the importance of ethics awareness programs. In-class discussions on the different types of ethical behaviour (moral, amoral and immoral) focused on the difference in managing amoral versus immoral behaviour. Amoral behaviour is often driven by lack of knowledge and responds to education whereas punishment is move effective with immoral behaviour. Supporting ethical awareness programs is a demonstration of increased moral sensitivity, furthering understanding of the impact one's actions can have on others.

5.5.2.2 *Surveillance (Themes 1, 2, 3 and 5)*

Students were asked to consider the importance of knowing of and consenting to the use of surveillance in several different environments:

- The employer's workplace
- The learning and teaching areas such as classrooms and labs
- The university halls of residence
- The virtual learning environment (VLE) such as Blackboard.

The AI group became more supportive of the importance that those being monitored both knew and consented to the use of surveillance, regardless of the environment. They were less supportive of surveillance in environments where one would have assumed a degree of privacy such as the halls of residence and the VLE if there was knowledge but no consent. Consent in the use of surveillance appeared to be more important to the AI group than the Control group, especially in the private environments.

Although both groups discussed The Topper Travel Agency (Spinello, 2003c, p. 118) case in class, the impact of the surveillance on the employees was more of a concern to the AI group than the Control group, especially since the employees weren't consulted on either the situation or the proposed solution. (The Topper Travel Agency presents a scenario where the president is pressured to improve profits, authorizes the use of surveillance technology to monitor employee performance. Employees feel their privacy is being invaded and become ill because of the stress.)

The AI group was stronger in creating a shareable ideal for both the employees and management, where the surveillance provides the employees with support on improving profitability by rewarding good performance rather than punishing poor performance. The in-class discussions on empathy and stakeholders with respect to the Appreciative Inquiry may have had an influence on their perception of the importance of stakeholder involvement.

There was no in-class discussion on the concept of consent and the influence it can have on the ability to implement a solution that is dependent on getting consent from the participants. Although students thought that consent was important in using surveillance, their views may have changed if they considered how getting consent can affect the timely implementation of a solution. For example, in the halls of residence, installation of video cameras in dark areas may be held up if everyone doesn't agree to their installation.

5.5.2.3 Importance of Testing (Theme 9)

Each group considered the impact of lack of testing on the results of an ICT development project in an in class discussion on the Therac-25, a Canadian made device that dispenses radiation treatments for cancer patients. The AI group's support for testing increased by 20% over the course to 83%. The Control group increased by only 10% to 75%. During in class discussions, the AI group identified more stakeholders that were impacted by the lack of testing and discussed how some of those stakeholder groups could be involved in the testing to possibly identify earlier such things as potential user error.

5.5.2.4 Authority and Copying Software and Accessing Data (Theme 4)

Although there was no significant difference in the beginning to end change between the two groups in Theme 4, it is important to note that the AI group started at a higher level of disagreement on copying software and accessing data (80% versus 70%) and this did not change over the course. It might be expected that the Control group had more room to develop their ideas than the AI group who was already had a high level, but there was no change.

The AI group had a significantly higher proportion of participants whose first language was English and may therefore have been more aware of local norms and customs. In the three years between the Control group and the AI group, there had been much discussion in the Canadian environment on amending the Copyright act to address digital content. Due to the objections of opinions expressed in social media, the new legislation was delayed. The press covered the perspectives of the various stakeholders and the AI group brought these to the in-class discussions.

In addition, in the three years, there was much discussion on the cost of software to university students. Microsoft and others, working with universities, began to provide student pricing that may have reduced the focus on acquiring illegal copies.

Both groups were highly supportive of the importance of not using unauthorized passwords to access data and saw this as akin to hacking. About 40% of the Control group maintained that it was okay, with permission, to use someone else's password. The common example cited was closing out a retail till at the end of a shift with the manager's permission. The AI group on the other hand were only 30% supportive, looking at the issue from a broader stakeholder perspective and recognizing that if they shared their password, they are still responsible for whatever happens under their account.

5.5.2.5 The Use of Others' Computing Resources (Theme 7)

There was a significant difference in the starting opinions of the two groups in whether it was okay to use computing resources that belonged to another party such as the university or the employer for profit-making and non-profit-making activities, if there were no adverse effects on the university. Although the AI group was less supportive in both the profit-making and non-profit-making activities. There was only 50% and 20% disagreement if the use was for profit making and non-profit-making respectively. The difference in the opinions was largely attributed to defining the concept of "no adverse effects". The AI group recognized that it was not always easy to determine if there were adverse effects because the effects weren't always visible. In-class discussions identified visible adverse effects as students waiting to use the labs in the computer rather than the student trying to complete a homework assignment where the Internet response time is slow as a result of intensive downloading.

5.5.2.6 The ICT Working Environment (Theme 8)

This theme focuses on an ICT professional's working environment specifically with responsibility towards stakeholders, responsibility in the overall objectives of the systems develop project and responsibility in their overall working environment. In the questions relating to the systems project's objectives and overall working environment, there was little difference. However there was a notable difference in the AI group's attitude towards stakeholders. The Control group's support of maintaining consultation with representatives of those affected by the IS development project dropped from 85 to 60% whereas the AI group maintained a strong agreement of 80%.

Again, both groups discussed a common case, The Therac-25 (Spinello, 2003, p. 161), where the AI group strongly identified that one of the key failings of the project was the lack of involvement of those stakeholders, namely the radiation technicians, in the development of a computer-driven device for delivering radiation in the treatment of cancer patients. Again, the in-class discussions on empathy and stakeholders with respect to the Appreciative Inquiry may have had an influence on their perception of the importance of stakeholder involvement.

5.5.2.7 The Importance of Stakeholder Consultation (Theme 10)

The statement "consultation with all stakeholders in an IS development project is not always possible; to keep stakeholders informed is sufficient" produced about 33% support from each group. The question proved ambiguous and it wasn't clear to students what was meant by consultation, keeping them informed and whether it was all stakeholders or stakeholder groups.

5.5.3 Summary and Next Steps

The above chapter has demonstrated that a well-designed twelve-week computer ethics course can have an impact of the moral attitude of future ICT professionals, as shown in the results from both the Control and the AI groups. In each course, there was significant development in moral judgment, as shown by the increases in the N2 and Type scores. Introducing Appreciative Inquiry had a positive effect on reducing decisions based on one's own self-interest and increasing decisions based on upholding laws and policies. Both groups were affected by discussions on authority, surveillance, the importance of ethics programs and codes of conduct and testing. Although the impact of the Appreciative Inquiry wasn't as great as anticipated, it is worthy of consideration perhaps in an alternative format.

These findings are discussed further in the following chapter also drawing on in-class observations.

CHAPTER 6 DISCUSSION AND CONCLUSIONS

6.1 INTRODUCTION

Based on the changes in moral sensitivity and moral judgment reported and discussed in the Findings chapter, Appreciative Inquiry appeared to have an impact beyond the impact of the computer ethics course, although not as great as anticipated.

Given the arguments of Leonard et al. (2004), Schulman (2005) and Rest and Narvaez (1994), it might have been expected that the Appreciative Inquiry would had a more significant impact, as measured by the DIT2 and IMIS survey. Reflecting on the quantitative results presented in the Findings chapter as well as the qualitative observations made during the courses and other data gathered from each course, eight significant questions emerged.

This chapter discusses these influencers that may have had an impact on the outcomes of the research. The chapter also includes the qualitative observations and reflections of the instructor/researcher during student interactions and draws some conclusions on the limitations of the measurement tools, the significantly larger number of Transitioning participants in the AI group and the potential of AI and Positive Psychology in computer ethics education.

This difference between the quantitative and qualitative observations raises several questions, worthy of further discussion:

1. Did the difference in starting positions of the two groups have an impact on the outcome?
2. What happened in the three year gap between the Control and AI group class delivery that may have influenced the outcome?
3. Did the instructor/researcher bring a bias to the teaching that was already in evidence for the Control Group?
4. Was the change expected in a twelve week ethics course unrealistic?
5. Is the aim to move everyone to a post-conventional approach or is a more balanced approach important for ICT professionals?

6. Did the larger percentage of transitioning participants in the AI group have an effect on the outcome?
7. Were the measurement tools suitable to measure changes in moral attitude in this context?
8. Does the participant drop-off affect the validity of the sample?

The next section begins with the first question.

6.2 CONSIDERING POSSIBLE INFLUENCES ON THE OUTCOMES

6.2.1 Difference in Starting Positions of the Two Groups

There were some differences in the starting positions of the two groups relating to both demographics and also initial assessments using the measurement tools.

With respect to the demographics at the start of the class, an examination of the findings showed no correlation between the demographics of age, business experience and type of program in which the students were enrolled and their approaches to moral judgment or their moral sensitivity at the end of the courses or with the degree of changes experienced in each. Similarly, there was no significant correlation between having previously taken a computer ethics module or a general ethics module and their changes in moral sensitivity or moral judgment.

There were also differences in the starting positions as demonstrated by the measurement tools. The AI group was:

- more Transitioning and less Consolidated in their approach to making moral judgments with no significant differences in other moral judgment measures
- more supportive of the importance of authorization in copying software and accessing data one isn't authorized to view (Theme 4)
- more supportive of the importance of permission in using another's computing resources (Theme 7).

Only two of the ten themes, from the IMIS survey (related to authority and permissions) showed significant differences in the starting positions of the two groups with the other eight being fairly similar. However it is interesting that the higher position on Theme 4, Authority, might be correlated to the increase in MN associated with the increase in the AI group.

Thus although there were some differences between the two groups, with the exception of the difference in Transitioning and Consolidated individuals, none of these would seem to have a significant impact on the findings.

6.2.2 The Three Year Gap in Time Between the Two Groups

One must not lose sight of the three year time difference between delivery of the course to the two groups. The events that happened between 2010 and 2013 may have had an impact on the AI group and affected their moral sensitivity. For example, the perception of increased risks to global security may make the AI group more accepting of the need for surveillance.

In some cases, such as in Theme 4, which focused on issues of authorization, namely copying software and accessing data one is not authorized to view, although there were no significant changes in their opinions, the AI participants started with higher support of the statement and maintained those high levels through the course. These issues were increasingly discussed in the media as incidents of data hacking and copying digital music became more prevalent. Typically the results for the AI group tended to be slightly more ethical than those for the Control group who took the course three years earlier, thus supporting the view that the increased discussion of these issues in the world around them may have had an impact on their opinions.

6.2.3 Possible Instructor/Researcher Influence on the Experimental Environment

One area worthy of further discussion is the degree to which the instructor's background might have influenced both the Control and the AI groups. While the choice of positive psychology and AI as an intervention was derived through the literature review and is well justified by that review, it is also consistent with the researcher's interests as a professional and as an instructor.

Despite having an engineering background, the instructor's industry experience is not typical of the majority of ICT professionals. In addition to her work as a programmer and systems analyst, her later career focused much more on the "soft" elements of ICT implementation (the areas often seen as the big challenges facing the typical ICT professional, often characterised by the "nerd" image). The last ten to fifteen years of her career, prior to entering academe, were almost completely focused on training, implementation and human resource management in a wide variety of client environments. Thus she is likely more comfortable with ambiguity, dealing with people's emotions and empathy and developing broader stakeholder perspectives on ICT implementation. It is possible, therefore that her pedagogical approach to delivering the course to the Control group might have included material that would be analogous to the AI intervention. However, as will be discussed later, the explicit inclusion of AI did cause significant changes in her approach to course delivery.

While this project is structured as an experiment and not as action research, it is possible that as discussed above, the background and experience of the instructor might have had some influence on the delivery of the course to the Control group.

6.2.4 **Change in a Twelve-Week Ethics Course**

Expecting to see dramatic changes in moral judgment as a result of a 12 week course may be unrealistic. Certainly Schlaefli et al (1985) reported in a meta-analysis of 55 interventions that studies shorter than three weeks do not produce significant gains on the DIT2. Bebeau (2009) suggests that 12 weeks is too short a period to measure changes in moral judgement and suggests that measuring development from the start to the end of a four year program might be more appropriate. Rest (1980) suggests that a period of two to four years is required to evaluate the effectiveness of educational programs in moral development However, this type of measurement does assume that ethical issues are addressed in other parts of the curriculum over this time period, and measuring the impact of specific elements of the program would be methodologically challenging.

Kohlberg (1984) found that moral judgement increased with age but observes that often a plateau is reached in early adulthood. Moral development then resumes in later adulthood. Thus since the majority of students are in the early twenties age range, expecting significant change in moral judgment may have been unrealistic, even disregarding the short time period.

Each group changed slightly in their overall approach to moral judgment (i.e. an increasing N2 value), but there was no significant increase in the use of a post conventional approach (i.e. an increase in PC) in the AI group. Although the Center for Ethical Studies database shows significantly more highly developed results for sophomores than those participating in this study, the participants in the other DIT2 studies were not typically students in ICT. While the database did not include computer science or engineering students, it appeared to include a much broader range of disciplines including nursing, dental, legal as well as some business students. It is possible that there might be different starting positions in these disciplines. This view is supported by the work of Loescher et al. (2005) who found that business students had a lower N2 (29.6) than other university students (35.8). Loescher et al. also found their results for business and non-business students to be consistently lower than those reported in the Center for Ethical Studies (CES) database.

Several other studies found their N2 scores to be lower than those in the CES database and suggested that there may be cultural challenges for non-Americans of the new millennium in responding to the DIT2 questions (Clarkeburn, 2002; Holland, 2011; Jagger & Strain, 2006; Wialasiri, 2001).

6.2.5 Moving ICT Professionals to a PC Approach

The literature suggests that moving to a high N2 value is the ultimate in the development of moral judgment and that increasing the use of a Post Conventional approach is important (Rest, Narvaez, Bebeau, & Thoma, 1999), but does this apply to ICT professionals.?

There are times when a maintaining norms approach is required. For example, in the *development* of ICT software, especially in a safety critical environment, it would be paramount for ICT professionals to follow the rigorous policies and standards laid down in system development methodologies to ensure that there is a good understanding of the requirements before embarking on design (Satzinger, Jackson, & Burd, 2005). It is important to follow a rigorous approach to testing in the development and execution of test scripts to ensure that the software is safe and fit for purpose. The Maintaining Norms schema seems more appropriate here. However, given the changing nature of technology where there are often no policies and laws to guide decisions, the ICT professional is then faced with making *decisions* driven by creating a sharable ideal for organizing cooperation in the use of the technology, using a Post Conventional approach. This is evident in the case of surveillance technology in the workplace where there are few laws or policies to suggest how surveillance technology should be used. The Topper Travel Agency case discussed in section 5.5.2.2, is an excellent example (Spinello, 2003a, p. 118).

The individual who can apply Post Conventional moral thinking, understands the lower schema, whereas those at a lower level, are unable to apply a higher schema. A higher PC also correlates with "reflective judgment, ego development and the ability to recall and reconstruct moral argument"(Rest, Narvaez, Bebeau, et al., 1999, p. 75) and so, it is important that ICT professionals be able to make decisions at the Post Conventional level and thus the aim to increase their N2 score.

In addition, some authors, notably, (Bailey, 2011) have noted that political orientation influences Type, with "liberals" moving towards PC and "conservatives" moving to MN. (Note: In the DIT2, students self-select their political orientation.)

However, the more important questions seems to be, what effect did the high percentage of Transitioning participants who remained Transitioning in the AI group have on the outcomes?

6.2.6 Larger Percentage of Transitioning Participants in the AI Group

As discussed in the Findings in section 5.2.1, there was a significant difference between the AI group and the Control group in the percentage of students who were Transitioning versus Consolidated. The AI group had a higher percentage of Transitioning students at the start of the class and it remained so at the end. (The significance of Transitioning versus Consolidated is discussed, in section 3.3.5.). According to Thoma & Rest (1999), during periods of transition, individuals may experience much confusion on how to interpret real-life events, such as the DIT2 scenarios. Their experience in processing conflicting information may actually undermine their use of the traditional PI, MN or PC approaches and they may use different strategies, such as responsibility and care or religious prescriptions. They may not be able to make a decision on what the protagonist should do in the DIT2 scenario and more often check the "Cannot Decide" box. The number of "Cannot Decides" are reflected in the Utilizer score provided with the DIT2 analysis.

A correlation between the Consolidated/Transitioning and the N2 scores for the AI and Control Groups at the end of the course was conducted and the results are reported in Table 59. (N2_A, Utilizer_A, Con_Trans_A are the values at the end of the course. Delta_N2 is the change in N2.)

	Utilizer_A	*Con_Trans_A*
N2_A		
Control Group	.338	.000
AI Group	.030	.000
Delta_N2		
Control Group	.894	.121
AI Group	.043	.018

Table 59 Correlation of Consolidated/Transitioning to N2

The results show a significant correlation between the change in N2 for the AI group and both the Utilizer and Consolidated/Transitioning scores at the end of the each course, suggesting that the higher Transitioning in the AI group may have had an impact on the approaches they used to making moral judgments. Thoma & Rest also suggest that the traditional process of challenging existing moral understanding in ethics education may not be as effective, especially for those Transitioning with a low

Utilizer score and alternatively would be more effective for those Consolidated with a high Utilizer score. This is significant as this may well have influenced the change in moral judgement for the Appreciative Inquiry group.

Regardless of whether an increase in PC is achieved, a key objective is to move students beyond the Personal Interest perspective. It would be interesting, in a further study, to determine the approaches to moral judgement at the beginning of the class to be able to adjust educational interventions accordingly.

6.2.7 Suitability of the Measurement Tools

It is always a challenge to maintain consistency and reliability in using a measurement tool that is administered several times in a large study environment. The IMIS Survey was a good choice in 2009 when it was selected, (see section 4.3.4.3.2). However, in assessing the findings, many of the questions assessed topics where the participants were well versed, that is, they appeared to know the appropriate answer and often their answer wasn't affected by the computer ethics course. The ICT environment often changes quickly and the tool may lag in its continued relevance. This is discussed further in section 6.4.2.

6.2.8 Participant Drop-off Rate

Almost 100% of students completed the tests at the start of the course. 70% of the Control Group and 60% of the AI group completed the tests at the end and gave their consent to participate in the study. Student were given a four mark incentive to complete the surveys. Since, in both cases, a majority of students did complete the surveys, this seemed to be a reasonable incentive. By the end of the course, students had a much clearer idea of how their grades were progressing and were facing the usual student challenges at the end of the semester, assignments and exams, thus some drop-off might be expected.

In addition, attendance at the beginning of the course was higher than attendance at the last class. No data are available on the academic standing of the students who did complete both tests, thus it is not possible to identify any biases in the sample introduced by a drop off in participation.

Note that due to a course administration issue, the actual method for giving the student credit for four marks differed slightly and may have contributed to the slightly lower participation rate for the AI group. However there is no reason to assume that there was any structural difference between the two classes. The sample sizes of 116 and 145 respectively are still quite large for pedagogical experiments.

6.3 QUALITATIVE OBSERVATIONS AND REFLECTIONS

6.3.1 Increased Participation Despite Larger Classes

The class size in the workshop for the Control group was about 40 students in each of four workshops which conveniently made 8 groups of 5. In contrast, the class size in the workshops for the AI group was about 55 in each of five workshops making 11 groups of 5. Thus a slightly greater interaction was possible between the instructor and the students in the Control group. Moorhouse (2012) examined undergraduate business school case teaching and found a widely held belief that effective case teaching is best done in classes of 20-60 and that, as classes grow larger, students can more easily “hide” and contribute less. His survey of business school faculty also found that most considered a class to become “large” as class size approached 60 students.

Despite the larger class size and students’ lack of knowledge in both business and ethics, there was a high degree of participation in the classroom for both groups, however student engagement was noticeably more intense, in the AI group, when the Appreciative Inquiry, described in section 4.5.4, was introduced. The self-directed group work where they could investigate their own use of ICT to a specific stakeholder group, seemed to empower them to identify important risks and credible recommendations.

6.3.2 Increased Awareness of Ethical Issues in the Use of Technology

The Appreciative Inquiry project allowed students to choose their own technology and stakeholder group to research. This removed the possibility of instructor bias in selecting project topics and increased student engagement, given that they were able to choose topics of interest to them. The focus was on identifying the ethical issues that could impact the stakeholder group continuing to receive the benefits. They were continually surprised at the ethical risks they encountered in their investigation. This appeared to reinforce the importance to them of ethical awareness programs as they often recognized their inability to do this on their own. In making their recommendations as part of the Appreciative Inquiry, they used better argumentation and backing to support their conclusions and recommendations. Professional standards, especially in the form of codes of conduct, were often used as backing to support their recommendation and this could have reinforced their idea of the importance of codes of conduct.

6.3.3 Other Metrics

Other metrics were collected in the initial delivery of the course as reported in section 4.3.2. They included the following criteria: pass rate; attendance; participation; engagement and student feedback. The ethics course described above has been taught in the large class format to nearly a thousand students in the four year period from Winter 2010 to Winter 2013 with the following observations:

- The class average was consistently B (75%), two grade points higher than the university class average of C+ (67%) with low course drop rates.
- Fewer than ten students over the four years failed the course, primarily due to poor attendance and failure to submit assignments (i.e. they did not participate in the key classroom activities).
- Attendance, taken in the workshops, was 85% over the semester with a drop to about 60% around weeks 7 to 9, (the period of peak assignment and mid-term exam work),

significantly higher than the 65% average typically experienced in other similar large classes at the university.

- Student engagement was high in the workshops, participating in role playing, debates and in-class discussions.

The university also provides students with an online course assessment tool where students voluntarily rate aspects of the course. When compared to other courses taught in the business school, despite the intense, complex demands of the class activities, student evaluation measures reported above average ratings of the assessments methods used, feedback provided, and being treated with fairness and respect. (Note: The vast majority of similar large classes in the school do not have workshops like this.) Student feedback also indicated an 80% approval rating on both the value of the learning experience delivered by the course and the way the course is taught to facilitate learning.

Further examination of the student feedback produced some interesting findings. As part of the online course assessment tool, students are asked to comment on the relevance of the course to their major and the degree to which they felt it was a good learning experience. Despite the fact that this course might be seen by the students as not central to their discipline, students, in both groups rated it either as equally relevant or more relevant than other courses taught within the school. Further when assessing how the course helps them to learn, it was viewed as significantly more effective than the average course within the school. When comparing these measures between the two course deliveries, both evaluations improved in the Treatment group.

6.3.4 **Student Engagement**

Before considering the impact on the moral attitude of the participants in the course, one of the most important observations was that of high levels of student engagement. Student attendance measures the percentage of time that students attend class. Student participation assesses the percentage of students that participate in the in-class discussions, in-class exercises, assignments and online discussions and the level of their participation. Student engagement is a largely qualitative measure that assesses how individuals and groups are self-directed in pursuing the research, developing good recommendations and sharing their views with the class (Carini et al., 2006). Based on my observations, the Appreciative Inquiry group had a higher level of student engagement as discussed below.

While students participated in the group project in the Control group in choosing their topic, attending the group meeting, writing the report and giving the presentation, the engagement of the AI group with Appreciative Inquiry was considerably higher and more enthusiastic. The AI group researched new uses of technology or new technologies and chose their own topic for their group-directed project. They were eager to meet one-on-one with the professor to discuss their draft thinking and get ideas. They struggled with narrowing their choice of technology sufficiently to be able to define benefits for a specific stakeholder group. This was important because their responsibility was to identify ethical issues that could affect the stakeholder achieving those benefits and develop a policy or recommendation on how to manage that ethical issue. Those with a sufficiently narrow focus were able to develop good recommendations because they had a clear idea of the stakeholder group and how they would use the technology in order to make good, relevant, implementable recommendations.

Students then presented their reports to the rest of the class with a follow up discussion that often had to be closed due to time limitations. Students were clearly and critically engaged in their class discussions following the presentations. Participation was widespread across the groups and not limited to a few speakers, as is often the case in class discussions. The Appreciative Inquiry that allowed participants to pursue their own topic and engage with their own stakeholder group seemed to foster a sense of responsibility for identifying the risks and identifying the recommendation. This was not evident in the Control group. Overall there was keen enthusiasm to explore new technologies and think creatively on how they would be used and identify the potential risks, which is the objective of the course to develop an approach to decision making that includes an ethical perspective.

.

6.4 CONCLUSIONS

6.4.1 Impact of AI Intervention

The primary research question in this study was:

> *How does an approach to teaching, namely an Appreciative Inquiry, affect the moral attitude of future Information and Communication Technology (ICT) professionals in the ethical issues that arise from the use of ICT in business?*

Two tools were used in the pre-post design to assess the changes in moral attitude in each group. The most significant of these was the DIT2 instrument which is widely used, well validated, well tested and is applicable in any environment. The second tool, the IMIS survey, was added because it was developed specifically for the ICT worker, however it does not have the level of development, use and validation of the DIT2 instrument.

The DIT2 survey demonstrated that in each of the groups there was a significant change in moral attitude from beginning to end of the course as measured by the changes in N2. The addition of the AI intervention did produce changes in results from the Control group but these changes were much more nuanced, as might be expected from a single intervention in a well-developed course. While there was no significant difference between the changes in the N2 values, the AI group had a much more significant move from PI to MN. Interestingly, while the Control group moved to a more Consolidated position, the AI group remained Transitioning.

While the research methodology followed in this project is primarily quantitative, as has been discussed earlier in this chapter, since I am both the researcher and the instructor, it was useful to augment the statistical findings with my observations. The AI group appeared significantly more engaged with the ethical issues and were capable of more reasoned argumentation and in-class discussion of the specific issues in the case studies they selected.

Thus, combining the positive, albeit limited, statistical support for the impact of the AI intervention with my personal observations, it would be reasonable to argue, with some caution, that an Appreciative Inquiry does indeed have an impact on the young professionals' moral attitude. It is important to recognize that moral attitude may or may not be translated into more moral behaviour, but that is a question for another study.

This discussion on the two instruments used does raise some further questions and these will be discussed in the next section.

6.4.2 Limitations of the Quantitative Tools Used

The DIT2 tool is well rooted in the moral development literature and has been widely used to evaluate the approaches to moral judgements of specific populations. (Bailey (2011) reports that "about 500 researchers use the DIT/DIT2 every year and have done so at a steady pace for the last 15 years.) It provides a snapshot of a population's positions or attitudes and allows comparisons with other populations. It has been less widely used in a pre-post environment to determine the changes in a given population's attitudes following some form of intervention. It is certainly possible that it is not as well positioned to assess the degree of change to a population's attitudes over a short period of time (M. Bebeau & Monson, 2009; Rest, 1980; Schlaefli et al., 1985).

In addition, while many authors use the overall measure of N2 to assess a population's position it might be interesting to investigate further, the implications of Transitions between Types as a guide to the development and improvement of moral judgment. Yeap (1999) discusses this issue as the concept of "pathways" (see section 5.4.3.3) – how people evolve or move from one Type to another. He observed that it was interesting that students followed different pathways even though they were given the same treatment.

Further, from the perspective of an ethics professor, the use of the DIT2 at the beginning of an ethics course offers significant potential value. It provides the instructor with a better understanding of the student's starting point and their predominant influence on how they make moral judgements. It can also be used as the foundation for a class discussion on approaches to moral judgment based on their own situation, an excellent and practical beginning to an ethics course. Indeed, Mayhew et al. (2005) found that taking the DIT2 three or more times produces positive changes in N2.

In contrast, the IMIS survey proved to be less useful. Analysis and interpretation of its results were more challenging and there is limited guidance on how it might be used and applied, especially in a pre-post study. Indeed, this thesis might prove useful to others considering its use. In addition, because many of the questions are topic specific, in a fast changing field, some of the questions, may no longer be appropriate. In retrospect, it would also be important to address some of the other ethical issues in the use of technology. Examples would be questions that address the importance of assessing the:

- Understanding the strengths of humans and computers and determining whether the ICT is the right solution for the problem.
- Importance of understanding business processes and the contingency planning needed to ensure that should the ICT fail, there is knowledge on how to do things manually.
- Understanding of the ethical issues that can be imbedded in complex business rules and the ability to anticipate harmful outcomes
- Understanding of the importance of current policies to provide guidance on the new uses of technologies.

Its use of a Likert scale with an underlying assumption that higher is better, is also problematic. It is difficult to include complex questions, such as the above, in a Likert scale statement, such as the IMIS survey questions, which are often quite general. In assessing moral sensitivity, it is important to develop the connections or empathy with the stakeholder and this is difficult to do using a simple Likert scale assessed statement. It might be helpful to use the approach taken in the DIT2 instrument and provide an ICT-based scenario with several statements to which participants can respond. In this way, the participant is engaging with a specific stakeholder in a specific ICT related situation and then is asked for their opinion on something that is relevant to that situation. Based on the results of the survey, focus groups or structured interviews could then be used to explore specific responses in more detail.

Thus, an ICT ethics educator or researcher may find this tool of some use but should consider carefully the context in which it is being used and how it might need to be modified to meet their specific needs.

Finally, a key element of the Positive Psychology approach is the concept of empathy (Cooperrider et al., 2005; Hoffman, 2000; Schulman, 2005) and this is not addressed directly in either of the instruments used. Zhou (2003) suggests that there are other measurement tools that could be used that would focus more directly on empathy such as Pictures-Stories Measures where students could be asked to write their responses to a picture/story combination of an ethical situation in the use of ICT. The picture/story combinations used at the start could be repeated for the post-test or a new one selected, providing the same structure and process is followed in each case. By using a specific pre-defined marking rubric, changes in moral sensitivity could be assessed providing more insights than simple answers using a Likert scale.

The psychology discipline may offer some further guidance for future research in ethics education. Psychologists have given considerable attention to examination of empathy and its potential to influence behaviour and interaction with other people. Thus, future work in both course delivery and evaluation might usefully draw on empathy research and measurement in other fields, such as the work of (Zhou et al., 2003).

The next section considers the potential of Positive Psychology in future work.

6.4.3 AI and Positive Psychology are Worthy of Further Investigation

The foundation of this research project was a belief that an approach to ethics education that moved from a negative rule-based, enforcement approach to a "pride of profession" and empathy for stakeholders could be beneficial. The field of Positive

Psychology centres on this belief and Appreciative Inquiry is widely used as an intervention in positive organizational change (Cooperrider et al., 2008). Its use in education is much more limited, hence the significance of this project.

Current views on effective university education emphasise that students learn more when they participate actively in the process of learning rather than sitting passively in lectures (Grunert, Cohen, & Cohen, 2008; Prince, 2006). Stanford University (2016) suggests to instructors: "Incorporate active learning strategies into every component of your course design. For example, encouraging short partner discussions during lectures (i.e., think-pair-share), adding problem- or case-based research projects to the curriculum, and incorporating time for small-group critical analysis exercises during seminars are all great ways to actively engage students in learning."

Frequently, at least in business schools, this is done through the use of case studies. Sometimes students are asked to conduct their own external investigations on a specific topic. However, while proponents of case teaching argue that there is no "right answer", Burgoyne & Mumford (2001)in their analysis of case teaching, point out, that a case often starts with the instructor's view of what should be learned not the learners' actual problems and, despite what the instructor says, there is too often perceived to be a "right answer". Appreciative Inquiry, at least as it was used in this study, combines both of these approaches. It provides some of the structure of a case study in a group with the opportunity for the students to choose the topic of interest. It provides an argumentation framework that can be learned quickly and used by student teams in analysis, preparation, presentation and ensuing class debate, without the gravitation towards a "right" answer frequently experienced in a business case study.

While the preceding argument applies to any classroom situation, Appreciative Inquiry has particular benefits when used in applied ethics education. Its focus on situation, stakeholder and the development of empathy takes the student well beyond the rule-based approach criticised in this thesis.

Positive Psychology offers additional potential interventions worthy of consideration in future study such as the development of emotional intelligence. Salovey et al. (2004) suggest that emotions facilitate thought and that educational interventions have been used to develop "social and emotional learning" to aid in social problem solving, which could be linked to ethics. They suggest the use of two tools that can be used to measure the development of emotional intelligence, the Multifactor Emotional Intelligence scale and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Salovey, Caruso, & Mayer, 2003).

Most often ethics courses draw on faculty from philosophy, law or the applied discipline (e.g. business, computer science, engineering). Given the above discussion, it would be useful to include the contributions of psychologists to the discussions and course development.

6.4.4 The Potential Benefits of a Well-Structured Applied Ethics Course

While not addressed as a specific research question, this study does provide useful insights into effective applied ethics education. As reported in the literature review, despite the good intentions of regulators and educators to incorporate ethics education into their curricula, the actual results have been varied and often not as successful as had been hoped. This project demonstrates that a well-developed ethics course, drawing on the published studies of best practices in the field, does have an impact on the moral attitudes of students. While not a conclusive argument in the embedded versus discrete course debate, it goes a significant way to answering those critics who believe dedicated ethics courses not to be effective.

In this context, it is critical to emphasise that course delivery for both the Control group and the AI group were based on the principles of active and experiential learning rather than classroom lecture and assignment/quiz. Despite the large scale of the classes involved, the combination of large lecture and medium-sized workshops (with 40 to 55 students in each) still allowed for very active individual and group participation. It was possible to deliver this course using a single instructor supported by one teaching assistant. Thus it may help both those instructors dealing with large classes and those fortunate to work with smaller groups, who wish to design a successful ethics course.

The next and last chapter builds on the findings and discussions to demonstrate that the research question has been answered, provide recommended courses of action, describe contribution of this research project and its limitations and identify areas of potential future work.

CHAPTER 7 RECOMMENDATIONS. CONTRIBUTIONS AND LIMITATIONS

7.1 INTRODUCTION

Based on the preceding chapters, the review of the literature, Research Methodology, Findings and Discussion and Conclusions, this chapter summarises the answer to the research question based on the research undertaken in this study. This is followed by a number of recommendations that arise out of the research project. The chapter concludes with the contributions to the body of knowledge and suggestions for future research.

The next section revisits the research question and sub-questions and demonstrates briefly how each of them has been answered.

7.2 ANSWERING THE RESEARCH QUESTION

The specific research question and each of the five sub-questions were answered as discussed below.

Research Question:

> *How does an approach to teaching, namely an Appreciative Inquiry, affect the moral attitude of future Information and Communication Technology (ICT) professionals in the ethical issues that arise from the use of ICT in business?*

Research Sub-Questions:

1. *What are the ethical issues that arise in the use of ICT in business?*
2. *What approaches exist that are used in the teaching of ethics?*
3. *How might these best be employed in educating future ICT professionals?*
4. *How can an Appreciative Inquiry educational intervention affect students' moral attitudes and how can such a change of attitude be measured?*
5. *What are the outcomes of the measures on a collective and individual basis?*

7.2.1 The Ethical Issues That Arise in the Use of ICT

The first research sub-question was answered through a review of the literature that identified six key ethical issues in the use of ICT (see section 2.2.2.3), summarized below:

1. Many business processes have been automated that should the ICT fail, there is little knowledge on how to return to manual processes
2. Often ICT is treated as a “black box” and the business rules are so complex that it is difficult to anticipate their possible unethical outcomes
3. New technologies or new uses of existing technologies, such as the wireless and the Internet, arrive so fast that there are often no guidelines on how to use them effectively
4. Digitized content is difficult to protect both from theft and from alteration
5. ICT developers are often so far removed from the end product and end user that it is difficult to recognize and hence minimize risks
6. A lack of discussion on whether ICT is the right solution for the problem.

These issues are largely unaddressed by typical course approaches and textbooks commonly used in ethics education. Two especially interesting issues came to light, “is technology the right solution for the problem we are facing?” (Adam, 2001) and “are there ethical issues in the complex business rules included in some ICT?” (Tavani, 2011, p. 273). ICT professionals have a vested interest in the implementation of ICT solutions and it is important they be aware of the unintended harm, not to mention the unethical waste of company funds, that could occur without proper due diligence in considering alternative manual solutions that would have been more effective.

The second issue was equally surprising, the importance of ensuring that users understand the business rules that are programmed into computer applications. The business rules are hidden; they are not always available in a procedure manual and yet can have unintended consequences for stakeholders affected by the computer system.

7.2.2 Approaches Used in the Teaching of Ethics

A review of the literature identified a set of best practices used in the teaching of ethics (see section 3.2.4). Before developing the computer ethics class, the literature on moral behaviour (see section 3.3), moral philosophy (see section 3.4) and influencers are moral learning (see section 3.5) were also reviewed. The computer ethics dialogue includes discussions from both the computer science research community as well as moral philosophers. What is surprising is that given the desire to change behaviour, there aren't more psychologists participating in the computer ethics dialogue, as there are in other professional education, to introduce discussions on emotion, empathy and stakeholder relationships, moral courage and ego-strength. As a result, the moral behaviour literature, with specific focus on positive psychology was revisited in preparing for the Appreciative Inquiry intervention. The findings from this literature review are summarized in section 3.3.6 and support the justification for this research project.

7.2.3 Educating Future ICT Professionals

The literature on how to structure a computer ethics course is summarized in section 3.6.1, including a focus on developing ethical decision making, good argumentation and an understanding of stakeholders and their perspective, along with developing skills in each of the Four Components in Rest's model. (For details on the computer ethics education course design and the Course Design Model, see section 4.4.5 and for course implementation see section 4.5.3.)

What was most insightful was the importance of emotion in the decision making process as emotion is predominantly the first response before logical reasoning (see section 3.2.3.2.) and yet many computer ethics instructors shy away from discussions on empathy and developing empathetic relationships with stakeholders, both key to fostering moral sensitivity towards stakeholders. There is a stronger focus on what should be done when things go wrong.

7.2.4 The Impact of Appreciative Inquiry on Moral Attitude and Its Measurement

Rest suggests that Four Components are needed to affect moral behaviour. Based on other studies (M. Bebeau, 1993; Clarkeburn, 2002; Jagger & Strain, 2006; Staehr & Byrne, 2003b), two of the components, moral sensitivity and moral judgement, were chosen as measures of moral attitude and measured over a semester long course in ethics. Two established quantitative measurement tools, the IMIS survey and DIT2 were chosen as measures. The tools showed good repeatability and ability to measure change as tested in the pilot (see section 4.5.7). However, although the results showed differences between the AI group and the Control group (see section 5.5), the measures weren't as effective as hoped. The three year difference between the Control and AI groups and the changes in the global dialogue on ICT, likely made the AI group more aware of many of the issues and the IMIS survey appeared to be outdated in the questions asked. The changes in the AI group opinions weren't as great as for the Control group. The use of the Likert scale to measure changes in opinions on complex issues was limiting in understanding the thinking behind the answers. Had time permitted, a mixed-methods approach with follow up interviews or focus groups may provide additional insight.

The DIT2 may not have been as effective in measuring the changes in the AI group as they were more Transitioning from the beginning and remained so at the end of the course. As discussed in section 6.2.6, there is a view in the literature that students in Transition often become confused and unsettled and sometimes don't follow the schema described by Rest. This is something that would warrant further study.

7.2.5 The Outcomes of Measures

The outcomes of the measures are presented in the Findings Chapter with the significance of the findings presented in section 5.5. These outcomes are discussed further in the Discussions and Conclusions chapter which considers eight conditions that could have affected the outcomes (see section 7). Additional observations and reflections on the outcomes are included in section 6.3.

It was expected that the AI Group would experience a greater change in moral attitude than the Control Group, but, surprisingly, this was not the case overall. The AI Group started with and maintained opinions that were more ethical, especially in areas where authority or permission was required, such as copying software or using computing resources that belonged to another, or the importance of consent in surveillance and were more supportive of ethics programs and codes of ethics both for ICT professionals and employees in general, but there was little difference in other themes.

This appeared to be consistent with their change in moral judgment. The AI group moved to a more maintaining norms perspective relying on policies and laws and authorization in making decisions than did the Control group, which also influenced their overall N2 score.

7.2.6 Answering the Overall Research Question

The Appreciative Inquiry had an impact on the moral attitude of future ICT professionals in moving their approach to making decisions from a personal approach, based on rewards and punishments to one that relies on policies, laws and authority. This is supported by the results of moral judgment tests, where there was a significant decrease in the use of a personal interest approach and a significant increase in the maintaining norms approach in comparison to the Control group. This is also supported by the results of the moral sensitivity tests where participants showed a significant increase in the preference for authority in their opinions on the use of computing resources.

However, the difference in the starting positions of the groups, the greater proportions of those in Transition and the three year time difference, may have had an impact on the results – an area worthy of future study.

Based on the findings from the research conducted to answer the research questions, the next section provides some recommendations.

7.3 RECOMMENDATIONS

Having researched the approaches that are used in teaching ethics, how these might best be employed in educating future ICT professionals and investigated how an Appreciative Inquiry affected the moral attitude of future ICT professionals, the following recommendations are provided to universities, professional associations and the business community engaged in professional ethics education.

The first section provides recommendations intended for those planning and delivering applied computer ethics education, in formal institutions. The second section suggests how these learning could be applied in other professional ethics education.

7.3.1 Approaches in Educating Future ICT Professionals

First, in considering the adoption and development of computer ethics courses:

- ICT Management, Computer Science and Engineering programs should include specific ICT ethics education. This should include content, provided by the professional associations in the related disciplines, on the importance of the profession, the professional responsibilities to stakeholders and the principles and mechanisms that support "doing it right, right from the start" to engender a pride of profession (sections 2.2.2.3, 2.3.3, 2.4.1, 6.3.4)

- Although ICT Ethics should be integrated across the curriculum, the core delivery should be provided in a separate course that focuses not only on raising moral sensitivity in identifying the ethical issues that can arise in using ICT in a specific situation, but also applies moral philosophy in an ICT context (sections 3.5.1, 3.6.1,6.2.2)

- Given that a cognitive approach focusing on legal, regulatory and codes of conduct approaches does not of itself produce changes in moral attitude, include an affective approach that develops an empathy with stakeholders to whom the professional is professionally responsible (sections 2.2.1,6.3.3, 3.5.3)

- The nature of technology is that it is ever changing and the issues today are not the issues of tomorrow. Include the development of repeatable skills rather than focusing solely on identifying the right answer to specific current problems (section 3.5.4). Skills such as the development of moral judgment through a decision making process and the development of moral character and motivation through critical thinking and argumentation are skills repeatable in many different contexts (section 3.4.3)

- Two of the aims of computer ethics education are to change perceptions and to change behaviour. Include psychology expertise to complement a philosophy and a discipline specific expertise more often provided in the course development (see section 6.4.3)

- Often computer ethics courses are taught by instructors, more comfortable with a cognitive approach. They should consider the use of an Appreciative Inquiry where students choose the aspect of technology that is of interest to them and specifically look at how it benefits a stakeholder group, understanding the value of the technology and empathizing with stakeholders in considering how they are impacted when the technology fails.

The next section discusses the possible future use of the model developed during the research project as the foundation of the course design of the computer ethics course. The model is based on Blooms Revised Taxonomy (Anderson et al., 2001) and the work of Kidwell et al. (2011). Not only does it provide an effective, concise method to communicate the course design but it also highlights the commonalities between computer ethics education and the education of other business professionals.

7.3.2 **Using a Revised Course Design Model in Professional Ethics Education Generally**

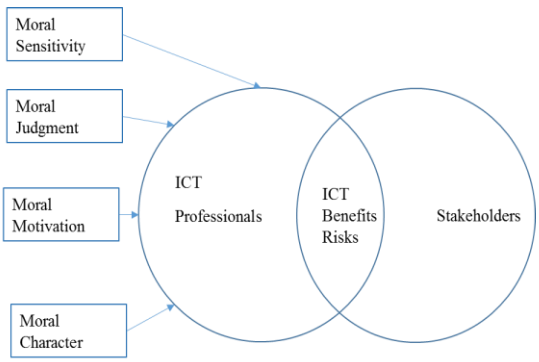
Chapters 2 and 3 provide significant discussion about unethical behaviour in business and how it needs to be addressed. Governments, organisations, professional associations and educational institutions are all concerned with how to address potential unethical behaviour. However authorities at all levels seem unwilling to require significant interventions, see sections 3.2.1 and 3.2.2. Guidelines are often provided without specific requirements as to how they should be accomplished.

The section suggests that the course design model could be effective in the ethics education of other business professionals.

7.3.3 **A Revised Course Design Model**

The Course Design Model, presented as Table 20 in Chapter 3, with some improvements, may be of assistance to those bodies mentioned above.

In reviewing the relationship between ICT professionals and their stakeholders, previously shown in Figure 13, it became apparent that this relationship model can be applied to other professionals. Professionals, such as accountants, lawyers, engineers, human resources and the medical profession provide products and/or services to stakeholders and that the model can be updated as shown in Figure 22. As a result of teaching the computer ethics class and conducting this research, it became apparent that the overlap between the professional and stakeholder is much greater as we move to a more user-centric rather than agent-centric approach (Stoodley, Bruce, & Edwards, 2010). The Product or Service overlap is thus shown as much greater in Figure 22, as the stakeholder assumes a larger role in the ethical use of the product or service, still guided by the professional.



Original Figure 13 Relationship Between ICT Professionals and Their Stakeholders

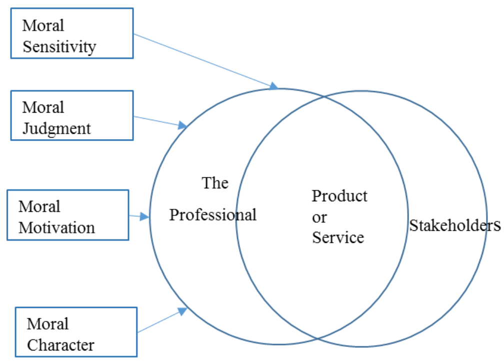


Figure 22 Relationship Between Professionals and Their Stakeholders

The revised model, in Table 60, proposes that there are three knowledge areas that are related to the profession or the job function. The first one is to understand the ethical issues that can arise in the products or services being delivered; the second area is understanding the responsibilities of the individual in that professional role; and the third is the understanding of the stakeholders and their roles and responsibilities. It then identifies developing two skills to make good decisions and justify one's recommended course of action.

Blooms Level/ Content	***Service Provided***	***Stakeholders***	***The Professional***	***Ethical Decision Making***	***Argumentation***
6 Create	A recommendation on how to address the ethical issues	Create a common perspective	Create a policy	Develop a recommendation	Present the argument
5 Evaluate	The ethical issues that arise in a specific use of the service	How to develop a common perspective	Policy vacuums	Evaluate Alternatives	Evaluate objections and develop rebuttal
4 Analyse	What can affect those benefits continuing?	How perspectives are different for each stakeholder	Impact of issues	Analyse the situation and develop alternatives	Analyse the audience for the argument
3 Apply	Service to stakeholders to realize benefits	Consequences of a situation to impact on stakeholders	Apply causes of ethical issues to new technologies	Apply to a case and gather the facts	Develop an argument and identify backings
2 Understand	The capabilities of the service, what it can and cannot do	The professional's responsibilities to stakeholders	Causes of ethical issues that arise in the profession	The Decision Making Process	Backings: ethical frameworks, professional standards, duties, policies
1 Remember	What is service the professional provides?	What is a stakeholder?	Evolution and importance of the profession	The role of emotion and cognition in decision making	What is an argument
Blooms Level/ Content	***Service Provided***	***Stakeholders***	***The Professional***	***Ethical Decision Making***	***Argumentation***

Table 60 Professional Ethics Course – Course Design Model

7.4 THE CONTRIBUTIONS OF THIS RESEARCH

The key contribution from this study is the demonstration of the potential value that a Positive Psychology approach provides to computer ethics education. This study found that a Positive Psychology based approach, contrasts to the more common rule-based frameworks used in ethical education, improves student participation and satisfaction and can influence their moral attitudes. More specifically, the use of Appreciative Inquiry, a well-respected Positive Psychology approach, has an impact on the moral attitudes of the students, in particular those with a high Personal Interest (the least desirable) approach.

The study also contributes to the body of knowledge on professional ethics education with the development of the Course Model on which the computer ethics course was based, that provides a structure for ethics courses in a variety of environments, not just ICT. The course structure, delivery methods and Positive Psychology perspective affect learning outcomes across most elements of Blooms Revised taxonomy and, significantly, at all levels.

Finally, from a methodology perspective, while both the DIT2 and the IMIS Survey were useful instruments to provide quantitative pre- post evaluations of changes in student's moral attitude, the work also highlighted significant limitations in the IMIS survey because of the evolution of technology use and instrument design. Thus those considering the adoption of this tool in the future, may wish to consider updating the technology-specific elements of the tool. In addition, it would be useful if the stakeholder perspective could be added to the tool.

7.5 LIMITATIONS AND FUTURE RESEARCH

As is the case with all student completed surveys, there is the challenge of ensuring that students take the survey seriously and answer honestly and sincerely. The research methodology, including the methods of administration and the embedding of the surveys within the course content, including the grading system, were efforts to mediate this issue. Expectations were set at the beginning and reinforced throughout the course that the honest completion of the surveys was more important than a providing a specific answer. The DIT2, answered honestly provides valuable insights to the student on their approach to making moral judgements and how their approach changed over the course.

As was discussed in the contribution section, there were some issues related to the currency of the IMIS Survey that might have had some effects on student's responses between the beginning and end of the study because of the evolution of ICT.

While the study was able to demonstrate reasonable achievement against the planned learning outcomes and changes in moral attitude, there are challenges in establishing the degree of change possible in a twelve week course as compared to a longer time period.

The study tested the application of a Positive Psychology perspective and the use of one tool, that of Appreciative Inquiry. It would have been useful to be able to test the impact of other positive psychology interventions, such as the picture-scenario discussed in section 6.4.2 or emotional intelligence discussed in section 6.4.3.

Based on the above discussion, there are three relevant areas for potential future work. These are:

- Ethics Course Development and Delivery
    - Adopting the course approach, course structure and tools in other areas of ethics education, for example, in general business or in engineering or computer science with the appropriate evaluation.
    - Expanding the evolution of the impact of Positive Psychology by testing the use of additional interventions beyond that of Appreciate Inquiry.
    - Investigation of ways that interventions might have more substantive impacts on all of the elements of moral attitude.
    - Determining how the findings from this study can be extended beyond the university environment to the professional world, in ICT and beyond.
    - Extending the research beyond a primarily quantitative approach to a more substantive qualitative investigation to determine additional insights that could be gained from one of more mixed methods.

- Refining the IMIS Survey to make it more relevant for the current situation would be valuable to many researchers in the field.

- Finally, looking beyond formal education, the learnings from this applied ethics course could be insightful to organisations at large and those responsible for influencing the ethical behaviour of employees or members of a profession. They should consider:

    - Developing the need to focus on responsibility to a broad range of stakeholders and develop an empathy that contributes to pride of profession

    - Recognizing that ethical decision-making needs to develop an empathetic connection with stakeholders and a sense of professional responsibility to move beyond the personal interest perspective

    - Including a positive psychology approach that fosters pride of profession by focusing on the benefits that business and ICT provide to business and society at large

    - The application of Appreciative Inquiry and other Positive Psychology techniques to foster pride of profession, empathy towards stakeholders and develop a sense of professional responsibility. This should also focus on the positive and the good work that can be done as opposed to focusing on the ways those in business fail to perform as they should

    - Given the potential influence on university and college curriculum, industry groups, professions and accreditors should consider incorporating positive psychology elements in their curriculum guidance for universities and colleges.

7.6 FINAL REFLECTIONS

I have arrived at this doctoral dissertation, late in my career and during a transition from consulting to academe. A large part of my consulting career was in ICT implementation both in project management and corporate education and as a visiting instructor at several universities and colleges.

Ethics and morality have been part of my daily life, both as a consultant, teacher, mother and as an active elder in the Presbyterian Church in Canada. However, it was not until I faced the challenge of both developing and evaluating a large scale business and ICT ethics course that I realized how much it was possible to learn about applied ethics and the formal evaluation of course delivery.

I learned that ethics concerns in business continue and that an ongoing focus on the misdemeanours in both business and ICT is not necessarily the best way to foster pride of profession in a new generation of future ICT professionals. In post-project reviews, I was always aware of the importance of spending time on "what went right" in the project before looking at "what went wrong" or "how could we improve for next time". Post-project reviewers with lots to contribute to the latter, were often challenged to focus on the former and it was from this that I first learned the importance of teaching a focus on the positive. Positive psychology, especially in the area of medicine has provided great insights on the value of considering strengths, benefits, well-being, "what went right" and the motivation that a positive focus provides.

I learned that ethics education needs an affective and social aspect as well as a cognitive aspect and that emotional responses need to be both recognized and utilized in developing both a sense of professional responsibility towards stakeholders as well as a motivator to right social wrongs. Initially I would disregard emotional responses to case analyses until I realized that emotions are often the first response and that understanding the emotional reaction is a key learning not to be missed.

However, given that there is significant investment in time and money in business ethics education, it is important to demonstrate its value. It is a challenge to identify and justify appropriate learning outcomes and then to articulate them in a way that they can be measured to demonstrate successful achievement. In this context, I learned about the rigours of research and whereas in consulting, the consultant is the expert, or so the client hopes in considering the cost of the engagement, in academe the researcher builds new ideas in the context of the body of knowledge. To contribute new knowledge, the researcher needs to demonstrate a rigorous, repeatable, defensible process to support the outcomes. I have also discovered the value of expanding the participants at the computer ethics discussion table beyond the technologists and the philosophers to include the psychologists and the consideration of going further to other disciplines.

I have just moved from a large Canadian publicly funded, urban university, with large classes, to a small, private, liberal arts college in the northern USA. I will have the luxury of applying this new found knowledge in a small class environment.

CHAPTER 8 REFERENCES

3TU Center for Ethics and Technology. (2014). Retrieved from http://ethicsandtechnology.eu/

AACSB. (2013). AACSB Learning and Teaching Standards 9. Retrieved August 3, 2014, from http://www.aacsb.edu/accreditation/standards/2013-business/learning-and-teaching/standard9.aspx

AACSB International. (2004). *Ethics and Education in Business Schools*. St. Louis, MO: AACSB The Association to Advance Collegiate Schools of Business.

ABET Board of Directors. (2013a). ETAC Criteria for ABET Accreditation. Retrieved August 3, 2014, from http://www.abet.org/etac-criteria-2014-2015/

ABET Board of Directors. (2013b, October). ABET Criteria for Accrediting Computing Programs 2014/2015. Retrieved August 3, 2014, from http://www.abet.org/uploadedFiles/Accreditation/Accreditation_Process/Accreditation_Documents/Current/C001%2014-15%20CAC%20Criteria%2010-26-13.pdf

ACBSP. (2011). *Standards and Criteria for Demonstrating Excellence Baccalaurelate/Graduate Degree Schools and Programs*. Overland Park, KS: ACBSP.

Ackoff, R. L. (1989). From Data to Wisdom. *Journal of Applied Systems*, *16*, 3-9

ACM. (2013, August 11). ACM. Retrieved from www.acm.org

ACM. (n.d.). ACM Code of Professional Ethics. Retrieved from http://www.acm.org/about/acm-policies-procedures/#CE

ACS. (2013, August 11). Australian Computer Society - About Us. Retrieved from http://www.acs.org.au

Adam, A. (2001). Computer Ethics in a Different Voice. *Information and Organization*, *11*, 235–261.

Adkins, C. (2011). Integrating Emotion in Teaching Business Ethics-Educational Implications From Cognitive Neuroscience and Social Psychology. In R. Sims & W. Sauser, Jr (Eds.), *Experiences in Teaching Business Ethics* (pp. 123–142). Charlotte, North Carolina: Information Age Publishing Inc.

AITP. (2013, August 11). AITP Code of Ethics. Retrieved from http://c.ymcdn.com/sites/www.aitp.org/resource/resmgr/forms/code_of_ethics.pdf

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, New Jersey: Prentice Hall.

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., & Pintrich, P. R. (2001). *A Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York, N.Y.: Longman.

Andrew C. Wicks, Freeman, R. E., Werhane, P. H., & Martin, K. E. (2010). *Business Ethics: A Managerial Approach*. Boston, MA: Prentice Hall.

APA. (2014, July). About APA. The American Psychological Association. Retrieved from http://www.apa.org/support/about/apa/psychology.aspx#answer

Argandoña, A. (2003). The New Economy: Ethical Issues. *Journal of Business Ethics*, *44*(1), 3–22.

Armstrong, M. B. (1993). Ethics and Professionalism in Accounting Education: A Sample Course. *Journal of Accounting Education*, *11*, 77–92.

Aspinwall, L. G., & Staudinger, U. M. (Eds.). (2003). *A Psychology of Human Strengths*. Washington, D.C.: American Psychological Association.

Australian Institute of Computer Ethics (AiCE). (2014). Retrieved from http://auscomputerethics.com/

Authers, J. (2014, June 22). Who will teach responsibility in a buck-passing world? *Financial Times*. Retrieved from http://www.ft.com/intl/cms/s/2/7c1da688-f2eb-11e3-a3f8-00144feabdc0.html#axzz3UgUGTmGo

Bailey, C. D. (2011). Does the Defining Issues Test Measure Ethical Judgement Ability or Political Opinion? *The Journal of Social Psychology*, *151*(3), 314–330.

Baltzan, P., Detlor, B., & Welsh, C. (2012). *Business Driven Information Systems* (3rd Canadian). United States: McGraw-Hill.

Banerjee, D., Cronan, T. P., & Jones, T. W. (1998). Modeling IT Ethics: A Study in Situational Ethics. *MIS Quarterly*, *22*(1), 31–60.

Basse, S. (2008). *A Gift of Fire, Social, Legal and Ethical Issues for Computing and the Internet* (3rd ed.). Upper Saddle River, New Jersey: Prentice Hall.

Bauman, Z. (1993). *Modernity and the Holocaust*. Oxford, England: Blackwell Publishing.

BBC News. (2013, May 10). Cybercriminals "drained ATMs" in $45m world bank heist. *BBC News*. London, England. Retrieved from www.bbc.co.uk/news/world-us-canada-22470299

BCS. (2013, August 11). BCS Qualifications, Training and Careers. Retrieved July 10, 2013, from www.bcs.org

Bebeau, M. (1993). Designing an Outcome-Based Ethics Curriculum for Professional Education: Strategies and Evidence of Effectiveness. *Journal of Moral Education*, *22*(3), 313–127.

Bebeau, M. (1994). Influencing the Moral Dimensions of Dental Practice. In J. Rest & D. Narvaez (Eds.), *Moral Development in the Professions: Psychology and Applied Ethics* (pp. 121–146). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.

Bebeau, M. (2002). The Defining Issues Test and the Four Component Model: contributions to professional education. *Journal of Moral Education*, *31*(3), 271-295

Bebeau, M. (2009, December). Evidence-based Character Development. Unpublished.

Bebeau, M., & Thoma, S. J. (2003). *Guide for the DIT2*. Minnesota: University of Minnesota.

Bebeau, M., & Monson, V. (2009, December). Professional Identify Formation and Transformation across the Life Span. Unpublished.

Beynon-Davies, P. (2002). *Information Systems An Introduction to Informatics in Organizations*. Bath, UK: Bath Press.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook 1: Cognitive Domain*. New York: David McKay.

BPS. (2014, July 27). About BPS. The British Psychological Society. Retrieved from http://www.bps.org.uk/

Bradbury, S. (2014, April 7). New weapon for small businesses: data mining. *Financial Post*. Retrieved from http://business.financialpost.com/2014/04/07/how-small-businesses-can-find-success-in-their-data/

Brinkman, B., & F. Sanders, A. (2013). *Ethics in a Computing Culture*. Boston, MA: Cengage Learning.

Bryman, A. (1989). *Research Methods and Organizatoin Studies*. London, England: Routledge.

Buchanan, E. A., & Henderson, K. A. (2009). *Case Studies in Library and Information Science Ethics*. Jefferson, NC: McFarland.

Burgoyne, J., & Mumford, A. (2001). *Learning from the Case Method*. Cranfield, UK: Cranfield: European Case Clearing House.

Burrell, G., & Morgan, G. (1979). *Sociological Paradigms and Organizational Analysis*. London, England: Sage Publications.

Bynum, T. (2006a). Ethical Decision-Making and Case Analysis in Computer Ethics. In T. Bynum & S. Rogerson (Eds.), *Computer Ethics and Professional Responsibility* (Second). UK: Blackwell Publishing.

Bynum, T. (2006b). *Flourishing Ethics. *Ethics and Information Technology*, *8*, 157–173.

Bynum, T. (2008, October 23). Computer and Information Ethics (pp. 1–37). Retrieved from http://plato.stanford.edu/entries/ethics-computer/

Bynum, T., & Rogerson, S. (Eds.). (2006). *Computer Ethics and Professional Responsibility*. Oxford, England: Blackwell Publishing.

Bynum, T. (2001). Computer ethics: Its birth and its future. *Ethics and Information Technology*, *3*(2), 109–112.

Cameron, K. S., Dutton, J. E., & Quinn, R. E. (Eds.). (2003). *Positive Organizational Scholarship: Foundations of a New Discipline*. San Francisco, CA: Berrett-Koehler.

Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student Engagement and Student Learning: Testing the Linkages. *Researh in Higher Education*, *47*(1), 1–32.

Carroll, A.B.(1987). In Search of the Moral Manager. *Business Horizons*, (March/April). 7-15

Carroll, A.B. (1999). Corporate Social Responsibility: Evolution of a Definitional Construct. *Business and Society*, *28*(3), 268–295.

Carroll, A. B. (2005). An Ethical Education. *BizEd*, *January/February*, 36–40.

Carroll, A. B., & Buchholtz, A. (2011). Assessing Ethics Education in a Business, Government and Society Course Context. In D. L. Swanson & D. G. Fisher (Eds.), *Toward Assessing Business Ethics Education* (pp. 263–276). Charlotte, North Carolina: Information Age Publishing Inc.

Centre for Computing and Social Responsibility. (2014). De Montfort University Leicester. Retrieved from www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.dmu.ac.uk%2Fresearch%2Fresearch-faculties-and-institutes%2Ftechnology%2Fcentre-for-computing-and-social-responsibility%2Fccsr-home.aspx&ei=cJUtVOHDLuiH8QHot4HYCA&usg=AFQjCNGos5EJuFRJlzi6LGW6vmxdeRFoVA&bvm=bv.76477589,d.b2U

CEPIS. (2009). The European Network of Informatics Professionals. Council of European Professional Informatics Societies, Brussels.

CGI. (n.d.). CGI code of Ethics and Governance. Retrieved from http://www.cgi.com/en/corporate-social-responsibility/ethics-and-governance

Chang, F.-Y. (1994). School Teachers' Moral Reasoning. In J. Rest & D. Narvaez (Eds.), *Moral Development in the Professions: Psychology and Applied Ethics* (pp. 71–84). Hillsdale, NJ: Lawrence Erlbaum Associates.

Checkland, P. B. (1999). *Systems Thinking Systems Practice*. Chichester: Wiley.

CIPS. (2010a). *Code of Ethics and Professional Conduct*. Canadian Information Processing Society. Retrieved from www.cips.ca

CIPS. (2013, August 11). Canadian Information Processing Society - About Us. Retrieved from www.cips.ca

CIPS and CSAC. (2011). Accreditation Criteria for Computer Science, Software Engineering and Interdisciplinary Programs. Computer Science Accreditation Council.

CIPS and ISTAC. (n.d.). Accreditation Criteria for Bachelor of Computing/Information Technology/Systems/Applied Degree Type Programs. CIPS. Retrieved from http://www.cips.ca/sites/default/files/CST2011_0.pdf

CIPS, & CCICT. (2013). Accreditation Criteria for Business Technology Management Programs. Business Technology Management Accreditation Council. Retrieved from http://www.cips.ca/sites/default/files/BTMAC_Criteria.pdf

Clarkeburn, H. (2002). Impact of an Ethics Programme in a Life Sciences Curriculum. *Teaching in Higher Education*, *7*(1), 65–79.

CMC. (2013a, August 8). CMC-Canada Code of Ethics. Retrieved August 8, 2013, from http://www.cmc-canada.ca/CMC_Designation/CodeofConduct.cfm

Coe, R., Aloisi, C., Higgins, S., & Major, L. E. (2014). What makes great teaching: a review of the underpinning research. Presented at the Summit on What makes great teaching?, Washington, D.C.: Centre for Evaluation and Monitoring, Durham University.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research Methods in Education* (Seventh). London, England: Routledge.

Colby, A., & Sullivan, W. M. (2008). Ethics Teaching in Undergraduate Engineering. *Education Journal of Engineering Education*, *97*(3), 327–338.

Conklin, T. A. (2009). Creating Classrooms of Preference: An Exercise in Appreciative Inquiry. *Journal of Management Education33*, *33*(6).

Cooperrider, D. L., Avital, M., & Stavros, J. M. (2008). *Appreciative Inquiry Handbook: For Leaders of Change*. San Francisco, CA: Berrett-Koehler.

Cooperrider, D. L., & Srivastva, S. (1987). Appreciative Inquiry in Organizational Life. *Research in Organizational Change and Development*, *1*, 129–169.

Cooperrider, D. L., Whitney, D., & Stravos, J. (2005). *Appreciative Inquiry Handbook*. Brunswick, OH: Crown Custom Publishing Inc.

Crane, A., Matten, D., & Spence, L. J. (2008). *Corporate Social Responsibility Reading and Cases in a Global Context*. New York: Routledge.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Los Angeles, CA: Sage Publications.

Crotty, M. (1998). *The Foundation of Social Research: Meaning and Perspective in the Research Process*. London, England: Sage.

Cui, C., & Lauricella, T. (2011, May 5). Mini “Crashes” Hit Commodity Trade. *The Wall Street Journal*. Retrieved from http://online.wsj.com/news/articles/SB10001424052748704322804576303522623515478?mg=reno64-wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052748704322804576303522623515478.html

Damasio, A. R. (2003). *Looking for Spinoza.* New York, N.Y.: G.P. Putnam and Sons.

Dark, M., & Winstead, J. (2005). Using educational theory and moral psychology to inform the teaching of ethics in computing (pp. 27–31). Presented at the 2nd Annual Conference on Information Security Curriculum, Kennesaw, Goergia: ACM Press, New York.

Davenport, T., & Prusak, L. (1998). *Working Knowledge : How Organizations Manage What They Know.* Boston. Retrieved from Harvard Business School Press.

David. (2011, September 29). What is the role of business in society? Retrieved July 15, 2014, from http://pwc.blogs.com/corporatereporting/2011/09/what-is-the-role-of-business-in-society.html

De George, R. T. (1982). What is the American Business Value System? *Journal of Business Ethics*, *1*(4), 267–275.

Denscombe, M. (2003). *The Good Research Guide for Small Scale Research Projects* (Second). Maidenhead, UK: Open University Press.

Derks, D., & Bakker, A. B. (2010). The Impact of E-mail Communication on Organizational Life. *Journal of Psychosocial Research on Cyberspace: Cyberpsychology*, *1*(1). Retrieved from http://www.cyberpsychology.eu/view.php?cisloclanku=2010052401

Desjardins, J. R., & Diedrich, E. (2003). Learning What it Really costs: Teaching Business Ethics with Life-Cycle Case Studies. *Journal of Business Ethics*, *48*(1), 33–42.

di Stefano, T. F. (2005, August 19). WorldCom's Failure: Why Did it Happen? *E-Commerce Times*. Retrieved from http://www.ecommercetimes.com/story/45542.html

Ditto, P. H., Graham, J., Haidt, J., Iyer, R., Koleva, S., & Nosek, B. A. (2011). Mapping the Moral Domain. *Journal of Personality and Social Psychology*, *101*(2), 366–385.

Duckett, L. J., & Ryden, M. B. (1994). Education for Ethical Nursing Practice. In J. R. Rest & D. Narvaez (Eds.), *Moral Development in the Professions: Psychology and Applied Ethics* (pp. 51–69). Hilsdale, NJ: Lawrence Erlbaum Associates Inc.

Elliot, J. (1998). *Action Research for Educational Change*. Milton Keynes, England: Open University Press.

Engineering Council. (2014). *The Accreditation of Higher Education Programmes: UK Standard for Professional Engineering Competence* (Third Edition). London: Engineering Council.

European Commission. (2012, November). EU Skills Panorama Analytical Highlight: Information and Communications Technologies (ICT) sector. Retrieved from http://euskillspanorama.cedefop.europa.eu/docs/AnalyticalHighlights/ICT_Sector_en.pdf

Fairmount Minerals. (2005). Fairmount Minerals - Appreciative Inquiry Sustainability Summit. Retrieved from http://media.mindgrabmedia.com/fairmount/minerals/fairmount%20minerals.html

Ferrell, O. C., Fraedrich, J., & Ferrell, L. (2008). *Business Ethics. Ethical Decision Making and Cases* (Seventh Edition). Boston: Houghton Mifflin.

Field, A. (2009). *Discovering Statistics Using SPSS* (Third). London, England: Sage Publications.

Financial Services Authority. (2012, June). FSA Code of Conduct. Retrieved from http://www.fsa.gov.uk/pubs/staff/code_conduct.pdf

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.

Flick, C. (2013). Informed Consent in Information Technology; Improving end user license agreements. In J. Weckert & R. Lucas (Eds.), *Professionalis in the Information and Communications Technology Industry* (pp. 3–127). Australian National University E-Press.

Franks, R. A., & Spalding, Jr., A. D. (2013). Business Ethics As An Accreditation Requirement: A Knowledge Mapping Approach. *Business Education and Accreditation*, *5*(1), 17–30.

Fredrickson, B. (2003). Positive Emotions and Upward Spirals in Organizations. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive Organizational Scholarship: Foundations of A New Discipline* (First, pp. 163–175). San Francisco, CA: Berrett-Koehler Publishers Inc.

Freeman, R. E., Rusconi, G., Signori, S., & Strudler, A. (2012). Stakeholder Theory(ies): Ethical Ideas and Management Action. *J Bus Ethics*, (109), 1–2.

Friedman, B., & Hendry, D. (2009). Value Sensitive Design. Retrieved September 14, 2014, from www.vsdesign.org

Friedman, M. (2007). The Social Responsibility of Business is to Maximize its Profits. In *Corporate Ethics and Corporate Governance* (pp. 173–178). Berlin, Germany: Springer.

Gable, S. L., & Haidt, J. (2005). What (and why) is Positive Psychology? *Review of General Psychology*, *9*, 103–110.

Geist, M. (2010). The Trouble with the Anti-Counterfeiting Trade Agreement (ACTA). *SAIS Review*, *XXX*(2), 137–147.

Gentile, M. C., & Samuelson, J. F. (2005). Keynote Address to the AACSB International Deans Conference, February 10,2003: The State of Affirs for Management Education and Social Responsibility. *Academy of Management Learning & Education*, *4*(4), 496–505.

Gergen, K. J. (1999). Global Organisation and the Potential for Ethical Inspiratio*n*. In (D. L. Cooperrider & J. E. Dutton, Eds.). *Organizational Dimensions of Global Change*, Thousand Oaks, CA: Sage.

Gert, B. (2005). *Morality: Its Nature and Justification* (Revised). New York: Open University Press.

Gert, B. (2007). *Common Morality: Deciding What to Do*. New York: Oxford University Press.

Giacalone, R. A., Jurkiewica, C. L., & Dunn, C. (Eds.). (2005). *Positive Psychology in Business Ethics and Corporate Responsibility*. USA: Information Age Publishing Inc.

Gibbs, J. C., Basinger, K. S., & Grime, R. L. (2003). Moral Judgement Maturity: From Clinical to Standard Measures. In S. Lopez & C. R. Snyder (Eds.), *Positive Psychological Assessment. A Handbook of Models and Measures* (pp. 361–373). Washington, D.C.: American Psychological Association.

Gies, E. (2012, January 20). Is This Apple's Nike Moment? Retrieved from http://www.forbes.com/sites/ericagies/2012/01/20/is-this-apples-nike-moment/

Gilligan, C. (1982). *In a different voice*. Cambridge, MA: Harvard University Press.

Goodman, M. (2012). *Radical Openness* [Conference Speaker]. Edinburgh, Scotland.

Gotterbarn, D. (2001). Informatics and Professional Responsibility. *Science and Engineering Ethics*, *7*(2), 107–118.

Gotterbarn, D. (2006). Informatics and Professional Responsibility. In T. Bynum & S. Rogerson (Eds.), *Computer Ethics and Professional Responsibility* (Second). UK: Blackwell Publishing, 107-118

Gotterbarn, D. (2008). "Once more unto the Breach": Professional Responsibility and Computer Ethics" A Response to: "A Critiqueof Positive Responsibility in Computing. *Science and Engineering Ethics*, *14*, 235–239.

Gotterbarn, D. (2009, July). The Software Engineering Code of Conduct.

Gotterbarn, D., Clear, T., Gray, W., & Houliston, B. (2006). Developing Software in a Bicultural Context: The Role of a SoDIS Inspection. *International Journal of Technology and Human Interaction*, *2*(2), 1–21.

Government of Canada's Sectoral Initiatives Program. (2014). *The Information and Communications Technology Council (ICTC)*. Canada: Government of Canada.

Government of Ontario. (2014, July). Laws of Government of Ontario. Retrieved from http://www.e-laws.gov.on.ca

Grant, C. (2008). Is it Possible to Engage Undergraduate IT Management Students in a Compulsory Course in Ethical Issues in IT? Presented at the ISECON 2008 Phoenix, AZ.

Grant, C. (2009a). Can Positive Psychology Provide Some Direction in Encouraging Ethical Behaviour in the Use of ICT? Presented at the European Conference on Information Management, Gotteburg, Sweden.

Grant, C. (2009b). Successful Engagement of Undergraduate Information Technology Management Students in a Compulsory Course in Ethical Issues in IT in a Large Class Environment. *Information Systems Education Journal*, *Summer*, 3-16

Grant, C. (2010). Impact of Compulsory Ethics Education on the Moral Judgement of Information and Communication Technology Management Students. Presented at the ETHICOMP 2010, Barcelona.

Grant, C., & Chadwick, L. (2010). Influencing the Ethical Awareness of Young ICT Professionals. Presented at the ETHICOMP 2010, Barcelona.

Grant, C., & Grant, K. (2014a). Improving Moral Behaviour In Business – The Potential Of Positive Psychology. Presented at the Human Capital International Conference, Chongquing, China.

Grant, C., & Grant, K. (2014b). Improving The Ethical Awareness And Behaviour Of Business ICT Professionals -- An Educational Intervention. Presented at the 5th World Business Ethics Forum, Macau.

Grant, K. (2012). *The Discipline of Knowledge Management: Lessons from the KM Strategies of Professional Services Firms*. Henley Business School, University of Reading, Henley, UK.

Grant, K., & Babin, R. (2007). Factors Impacting the Supply and Demand of IT Workers in Canada and the US. *Information Systems Education Journal*, *4*, 1–19.

Greene, J. D., Nystrom, L. E., Engell, A. D., Darley, J. M., & Cohen, J. D. (2004). The neural bases of cognitive conflict and control in moral judgment. *Neuron*, *44*(2), 389–400.

Greenstein, T. (1976). Behavior Change through Value Self-Confrontation: A Field Experiment. *Journal of Personality and Social Psychology*, *34*, 254–262.

Greenwald, T. (2011, October 25). Building A Cutting-Edge Business? Don't Ignore Policy, Law and Ethics. *Forbes Magazine*. Retrieved from www.forbes.com

Grill, A. (2011, March). Best practice for social media in a crisis. Case study: Vodafone UK. Retrieved from http://londoncalling.co/2011/03/best-practice-for-social-media-in-a-crisis-case-study-vodafone-uk/

Groarke, L. (2011). *Moral Reasoning: Rediscovering the Ethical Tradition*. Oxford, England: Oxford University Press.

Grunert, J., Cohen, B. J., & Cohen, M. (2008). *The Course Syllabus: A Learning-Centered Approach* (Second). San Francisco: Jossey-Bass.

Guba, E. G. (1990). The Alternative Paradigm Dialogue. In E. G. Guba (Ed.), *The Paradigm Dialogue* (pp. 7–66). Newbury Park, CA: Sage.

Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic Controversies, Contradictions and Emerging Confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Safe Handbook of Qualitative Research* (Third, pp. 191–215). Thousand Oaks, CA: Sage.

Haidt, J. (2001). The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment. *Psychological Review*, *108*, 814–834.

Haidt, J. (2003). Elevation and the Positive Psychology of Morality. In *Flourishing Positive psychology and the life well lived* (pp. 275–289).

Haines, R., & Leonard, L. N. K. (2005). Individual Characteristics and Ethical Decision-Making in an IT Context. *Industrial Management and Data Systems*, *107*(1), 5–20.

Handelsman, M. M., Knapp, S., & Gotlieb, M. (2002). Positive Ethics. In C. R. Snyder & S. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 731–744). Oxford, England: Oxford University Press.

Harris, A. L., Lang, M., Yates, D., & Kruck, S. E. (2011). Incorporating Ethics and Social Responsibility in IS Education. *Journal of Information Systems Education*, *22*(3), 183.

Hartley, M. (2009). From Culture to Politics, Napster's Impact is Still Felt Today [Newspaper]. Retrieved from http://www.theglobeandmail.com/technology/digital-culture/thank-you-napster/article1371912/?page=all

Harvard University. (2014). Medical Ethics and Professionalism. Retrieved from http://medethics.med.harvard.edu/education/ma750/

Head, T. C. (2006). Appreciative Inquiry in the Graduate Classrooms: Making Group Dynamics a Practical Topic to Address. *Organization Development Journal*, *24*(2), 83

Held, B. S. (2004). The Negative Side of Positive Psychology. *Journal of Humanistic Psychology*, *44*, 9–46.

Herkert, J. R. (2002). Continuing and Emerging Issues in Engineering Ethics Education. *The Bridge National Academ of Engineering Ethics Education*, *32*(3). Retrieved from https://www.nae.edu/Publications/Bridge/EngineeringEthics7377/ContinuingandEmergingIssuesinEngineeringEthicsEducation.aspx

Hoffman, M. L. (2000). Introduction. In *Empathy and Moral Development: Implications for Caring and Justice*. New York: Cambridge University Press.

Holland, L. (2011). Do Higher Education Computing Degree Courses Develop the Level of Moral Judgement Required from a Profession? *Journal of Information, Communication & Ethics in Society*, *9*(2), 116–126.

Honderich, T. (2005). *Oxford Companion to Philosophy*. Oxford: Oxford University Press.

Huff, C. (2006). Unintentional Power in the Design of Computing Systems. In T. Bynum & S. Rogerson (Eds.), *Computer Ethics and Professional Responsibiity* (Second, pp. 98–106). Oxford: Blackwell Publishing.

Huff, C., Barnard, L., & Frey, W. (2008). Good Computing: a Pedagogically Focused Model of Virtue in the Practice of Computing (part 1). *Journal of Information, Communication and Ethics in Society*, *6*(3), 246–278.

Hurlburt, H. (2010, November 30). Why Wikileaks Is Bad for Progressive Foreign Policy. *New Republic*. Retrieved from http://www.newrepublic.com/blog/jonathan-cohn/79483/wikileaks-round-iii-will-it-matter-much

Hurley, M. C. (2005). Bill C-38: The Civil Marriage Act [Government]. Retrieved from http://www.parl.gc.ca/About/Parliament/LegislativeSummaries/bills_ls.asp?ls=c38&Parl=38&Ses=1

IAESP. (2006). Approaches to the Development and Maintenance of Professional Values, Ethics and Attitudes in Accounting Education Programs. International Federation of Accountants, New York.

Indianna University. (2015). Kelley School of Business - Department of Business Law and Ethics. Retrieved September 10, 2015, from http://kelley.iu.edu/buslaw/

Information Technology Infrastructure Library (ITIL). (2014, September 1). Retrieved from http://www.itil-officialsite.com/

Institute of Chartered Accountants of Ontario. (2012, September). Rules of Professional Conduct. Retrieved from http://www.icao.on.ca/Resources/Membershandbook/1011page2635.pdf

Jagger, S. (2011). Moral Judgment in Computing Undergraduates. *Journal of Information, Communication & Ethics in Society*, *9*(1), 20–33.

Jagger, S., & Strain, J. (2006). Assessing students ethical development in computing with the defining issues test challenges to be addressed. *Information Communications and Ethics in Society*, *4*, 181–190.

Johnson, D. (2001). *Computer Ethics* (third). Upper Saddle River, NJ: Prentice Hall.

Johnson, D., Martin, D., Dunlop, C., Maner, W., Gotterbarn, D., White, G., & Shade, L. (1994). Who should teach computer ethics and computers and society. *ACM SIGCAS Computers and Society*, *24*(2), 6–13.

Jones, W. D. (2006). Adding Ethics to Engineering Education. *IEEE LEOS Newsletter*, *20*(2). Retrieved from http://photonicssociety.org/newsletters/apr06/ethics.html

Josephson, M. (2012, October 7). The Legacy of Johnson & Johnson and James Burke - An Extraordinary Leader. Retrieved from http://josephsoninstitute.org/business/blog/2012/10/the-legacy-of-johnson-johnson-and-james-burke-an-extraordinary-leader/

Kanamori, T., & Motohashi, K. (2006). Centralization or Decentralization of Decision Rights? Impact on IT Performance of Firms. Retrieved from http://www.rieti.go.jp/jp/publications/dp/06e032.pdf?origin=publication_detail

Kaufman, B. (1999). Emotional arousal as a source of vounded rationality. *Journal of Economic Behaviour and Organization*, *38*, 135–144.

Kay, R. (2002). Software Development Life cycle. *Computerworld*. Retrieved from http://www.computerworld.com/article/2576450/app-development/system-development-life-cycle.html

Kidwell, L. A., Fisher, D. G., Braun, R. L., & Swanson, D. L. (2011). Core Knowledge Learning Objectives for Accounting Ethics Education Based on Bloom's Taxonomy. In D. L. Swanson & D. G. Fisher (Eds.), *Toward Assessing Business Ethics Education* (pp. 307–333). Charlotte, North Carolina: Information Age Publishing Inc.

Kingstone, S. (2006, May). Great Expectations: Self-Service Success Can Happen. *YANKEE GROUP*. Retrieved from http://www.ianbrooks.com/useful-ideas/articles_whitepapers/Great%20expectations.pdf

Kirby, H. M. (2013). The Fundamental Problem of Regulating Technology. In J. Weckert & R. Lucas (Eds.), *Professionalism in the Information and Communication Technology Industry* (pp. 11–40). Canberra, Australia: Australian National University EPress.

Knight, G., & Greenberg, J. (2002). Promotionalism and Subpolitics: Nike and Its Labor Critics, Management Communication Quarterly, *15*(4). Retrieved from http://mcq.sagepub.com/content/15/4/541

Kohlberg, L. (1969). Stage and Sequence: The Cognitive-Developmental Approach to Socialization. In D. Goslin (Ed.), *Handbook of Socialization Theory and Research* (pp. 347–397). Chicago: Rand McNally and Company.

Kohlberg, L. (1984). *The Psychology of Moral Development. The Nature and Validity of Moral Stages*. San Francisco, CA: Harper & Row.

Laudon, K. C., & Laudon, J. P. (2013). *Management Information Systems: Managing the Digital Firm* (Canadian). Toronto, Canada: Pearson.

LeDoux, J. A. (2003). *The Synaptic Self*. New York, N.Y: Macmillan.

Lehman, L., Kasoff, W., Koch, P., & Federman, D. (2004). A survey of medical ethics education at U.S. and Canadian medical schools. *Academic Medicine*, *79*(7), 682–9.

Leonard, L. N. K., Cronan, T. P., & Kreie, J. (2004). What Influences IT Ethical Behavior Intentions - Planned Behavior, Reasoned Action, Perceived Importance, or Individual Characteristics? *Information Management*, *42*, 143–158.

Levin, A. (2007). Is workplace surveillance legal in Canada? *International Journal of Information Security*, *6*, 313-321

Lilley, S., Gumbus, A., & S. Grodzinsky, F. (2010). What Matters to Non-Experts about Property and Privacy Rights? In M. Arias-Oliva, T. Bynum, S. Rogerson, & T. Torres-Coronas (Eds.) (pp. 375–382). Presented at the The Eleventh ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technology, Tarragona, Spain: urv.

Lind, G. (1999). An Introduction to the Moral Judgement Test (MJT): Psychology of Morality and Democaracy and Education. Retrieved from http://www.uni-konstanz.de/FuF/SozWiss/fg-psy/ag-moral/pdf/Lind-1999_MJT-Introduction-E.pdf

Linley, P. A., & Joseph, S. (Eds.). (2006). *Positive Psychology in Practice*. Hoboken, N.J.: John Wiley & Sons, Inc.

Linley, P. A., Joseph, S., Harrington, S., & Wood, A. M. (2006). Positive Psychology: Past, Present, and (possible) Future. *Journal of Positive Psychology*, *1*(1), 3–16.

Locke, E. A. (2006). Business Ethics: A Way Out of the Morass. *Academy of Management Learning & Education*, *5*(3), 324–332.

Loescher, K. J., Hughes, R. W., Cavico, F., Mirabella, J., & Pellet, P. F. (2005). The Impact of an "Ethics Accross the Curriculum" Initiative on the Cognitive Moral Developement of Business School Undergraduates. *Teaching Ethics*, *Spring*, 31–72.

Lopez, S., & Snyder, C. R. (Eds.). (2004). *Positive Psychological Assessment: A Handbook of Models and Measures*. Washington, D.C.: American Psychological Association.

Lustgarten, A. (2012, November 15). BP Agrees to Plead Guilty to Crimes in Gulf Oil Spill. *Business Ethics, The Magazine of Corporate Responsibility*. Retrieved from http://business-ethics.com/2012/11/15/1958-bp-agrees-to-plead-guilty-to-crimes-in-gulf-oil-spill/

MacDonald, C. (2013, January 14). Nortel executives not guilty, but not clean either. *Canadian Business*. Retrieved from http://www.canadianbusiness.com/companies-and-industries/nortel-execs-not-guilty-but-not-clean-either/

Macks, J. (2013, September 26). $11 Billion Fine? Just a Cost of Doing Business for JPMorgan: Ritholtz. Retrieved from http://finance.yahoo.com/blogs/breakout/11-billion-fine-just-cost-doing-business-jpmorgan-175948500.html

Maclagan, P. (2003). Varieties of Moral Issue Dilemma: A Framework for the Analysis of Case Material in Business Ethics Education. *Journal of Business Ethics*, *48*(1), 21–32.

Maner, W. (1996). Unique Ethical Problems in Information Technology. *Science and Engineering Ethics*, *2*(2), 137–154.

Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review*, *50*(4), 370–396.

Maslow, A. H. (1954). *Motivation and Personality*. New York: Harper.

McPhail, K. (1999). The Threat of Ethical Accountants: An Application of Foucault's Concept of Ethics to Accounting Education and Some Thoughts on Ethically Educating for the Other. *Critical Perspectives on Accounting*, *10*, 833–866.

McPhail, K. (2001). The Other Objective of Ethics Education: Re-humanising the Accounting Profession - A Study of Ethics Education in Law, Engineering, Medicine and Accountancy. *Journal of Business Ethics*, *34*, 279–298.

Middleton, C. A. (2007). Illusions of Balance and Control in an Always-on Environment: a Case Study of BlackBerry Users. *Journal of Media & Cultural Studies*, *21*(2), 165-178

Miligram, S. (1974). *Obedience to Authority: An Experimental View*. London: Tavistock Publications.

Mills, M. J., Fleck, C. R., & Kozikowski, A. (2013). Positive Psychology at Work: A Conceptual Review, State-of-Practice Assessment, and a Look Ahead. *The Journal of Positive Psychology*, *8*(2), 153–164.

Miniwatts, Marketing Group. (2014, July 19). World Internet Users and Population Stats. Retrieved from http://www.internetworldstats.com/stats.htm

Mintzberg, H. (1983). The Case for Corporate Social Responsibility. *Journal of Business Strategy*, *4*(2), 3–15.

Moor, J. H. (1985). What is Computer Ethics? *Metaphilosophy*, *16*(4), 266–275.

Moor, J. H. (1996). Unique Ethical Problems in Information Technology. *Science and Engineering Ethics*, *2*(2), 266–175.

Moor, J. H. (1999). Just Consequentialism and Computing. *Ethics and Information Technology*, *1*, 61–65.

Moor, J. H. (2006). Reason, Relativity and Responsibility in Computer Ethics. In T. Bynum & S. Rogerson (Eds.), *Computer Ethics and Professional Responsibility* (Second, pp. 40–54). Oxford, England: Blackwell Publishing.

Moorhouse, M. (2012, Summer). *Strategies for Effective Case Method Teaching in Large Size Undergraduate Business Classes* (MBA Thesis). Ryerson University, Toronto, Canada.

Nathoo, Z. (2008). Internet Phone Company Investigates Failed 911 Call [News Channel]. Retrieved from http://www.cbc.ca/news/canada/calgary/internet-phone-company-investigates-failed-911-dispatch-1.694529

Neville, M. G. (2008). Using Appreciative Inquiry and Dialogical Learning to Explore Dominant Paradigms. *Journal of Management Education*, *32*, 100–117.

Noffke, S. E., & Somekh, B. (Eds.). (2009). *Sage Handbook of Educational Action Research*. Sage Publications.

Oates, B. J. (2006). *Researching Information Systems and Computing*. London, England: Sage Publications.

O'Boyle, E. J. (2002). An Ethical Decision-Making Process for Computing Professionals. *Ethics and Information Technology*, *4*, 267–277.

O'Connor, S. (2013, May 15). The Responsibility Of Business Schools In Training Ethical Leaders. *Forbes Magazine*. Retrieved from http://www.forbes.com/sites/shawnoconnor/2013/05/15/the-responsibility-of-business-schools-in-training-ethical-leaders-2/

Olson, S. (2011). Too Bad for Kant: Lessons of Experience With the Three Questions Foundational to Teaching Business Ethics. In *Experiences in Teaching Business Ethics* (pp. 297–312). USA: IAP-Information Age Publishing.

Orlikowski, W. J., & Baroudi, J. J. (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research*, *2*(1), 1–28.

Oxford English Dictionary. (2016). *Oxford English Dictionary*. Oxford University Press. Retrieved from www.oed.com

Pagnamemta, R. (2013, April 30). Primark pledges cash aid to factory victims. *The Times*. Retrieved from http://www.thetimes.co.uk/tto/news/world/asia/article3751950.ece

Paradice, D. B., & Dejoie, R. M. (1991). Ethical Decision-Making Processes of Information Systems Workers. *Journal of Business Ethics*, *10*(1), 1–21.

Parker, A. (2014, July 27). BA passengers await bags a week after Heathrow system failure. *The Financial Times*. Retrieved from http://www.ft.com/intl/cms/s/0/09b339c6-038c-11e4-817f-00144feab7de.html#axzz38gubFdoF

Peace, A. G. (2011). Using Debates to Teach Information Ethics. *Journal of Information Systems Education*, *22*(3), 233.

Penn, W. Y., & Collier, B. D. (1985). Current research in moral development as a decision support system. *Journal of Business Ethics*, *4*(2), 131–136.

Peterson, C. (2006). *A Primer in Positive Psychology*. New York: Oxford University Press.

Piaget, J. (1932). *The Moral Judgement of the Child*. London, England: Kegan Paul.

Plumlee, G. L., Barrett, T. G., & Pearson, L. C. (2014). An Examination of Business Ethics Curriculum in AACSB-Accredited Business Schools. *Journal of Business Ethics Education*, *11*, 129–155.

PMI. (2007). Project Management Institute Code of Ethics and Professional Conduct. Retrieved November 6, 2009, from http://www.pmi.org/About-Us/Ethics/~/media/PDF/Ethics/ap_pmicodeofethics.ashx

Ponemon, L. (1993). Can Ethics be Taught in Accounting? *Journal of Accounting Education*, *11*, 185–209.

Price, J. N., & Valli, L. (2005). Preservice Teachers Becoming Agents of change, Pedalogical Implications for Action Research. *Journal of Teacher Education*, *56*(1), 57–72.

Prince, R. H. (2006). Teaching Engineering Ethics using Role-Playing in a Culturally Diverse Student Group. *Science and Engineering Ethics*, *12*(2), 321–326.

Pring, R. (2004). *Philosophy of Educational Research* (Second). London, England: Continuum.

Prior, M., Fairweather, N. B., & Rogerson, S. (2000). *Is IT Ethical? 2000 ETHICOMP Survey of Professional Practice* (IMIS).

Prior, M., Fairweather, N. B., Rogerson, S., & Dave, K. (2004). *Is IT Ethical? 2004 ETHICOMP Survey of Professional Practice* (IMIS).

Prior, M., Fairweather, N. B., Rogerson, S., & Freeman, J. (2002). *Is IT Ethical? 2002 ETHICOMP Survey of Professional Practice* (IMIS).

Prior, M., Fairweather, N. B., Rogerson, S., & Hawash, M. (2006). *Is IT Ethical? 2006 ETHICOMP Survey of Professional Practice* (IMIS).

Prior, M., Fairweather, N. B., Rogerson, S., & West, D. (2010). *Is IT Ethical? ETHICOMP Survey of Professional Practice. 2010 Report* (IMIS).

Prior, M., & Leigh, M. (2010). My University, My Facilities: Exploring Student Attitudes to Ethical Usage. In M. Arias-Oliva, T. Bynum, S. Rogerson, & T. Torres-Coronas (Eds.) (p. 427). Presented at the The Eleventh ETHICOMP International Conference on the Social and Ethical Impacts of Information and Communication Technology, Tarragona, Spain: urv.

Prior, M., Rogerson, S., Fairweather, N. B., Butler, L., & Dixon, S. (1998). *Is IT Ethical? 1998 ETHICOMP Survey of Professional Practice* (IMIS).

Railway Safety Act, RSC 1985, c 32 (4th Supp). (2014, July). Retrieved from http://canlii.ca/t/527qg

Reason, P., & Bradbury, H. (Eds.). (2001). *Handbook of Action Research: participative inquiry and practice*. Sage Publications.

Rest, J. (1974). The Hierarchical Nature of Moral Judgment: A Study of Patterns of Comprehension and Preference of Moral Stages. *Journal of Personality*, *41*, 86–109.

Rest, J. (1979). *The impact of higher education on moral judgement developmnet*. Minneapolis, Minn.: University of Minnesota Press.

Rest, J. (1980). The Defining Issues Test: a Survey of Research Results. In L. Kuhmerker, M. Mentokowski, & V. L. Ericson (Eds.), *Evaluating Moral Development and Evaluating Educational Programs that Have a Values Dimension* (pp. 113–120). Schnectady, NY: Character Research Press.

Rest, J. (1994). Background: Theory and Research. In J. Rest & D. Narvaez (Eds.), *Moral Development in the Professions: Psychology and Applied Ethics* (pp. 1–26). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.

Rest, J., Edwards, L., & Thoma, S. (1997). Designing and Validating a Measure of Moral Judgment: Stage Preferance and Stage Consistency Approaches. *Journal of Educational Psychology*, *89*(1), 5–28.

Rest, J., & Narvaez, D. (1994). *Moral Development in the Professions*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Rest, J., Narvaez, D., Bebeau, M., & Thoma, S. (1999). *Postconventional Moral Thinking*. New York, N.Y.: Psychology Press.

Rest, J., Narvaez, D., Thoma, S., & Bebeau, M. (1999). DIT2: Devising and Testing a Revised Instrument of Moral Judgment. *Journal of Educational Psychology*, *91*(4), 644–659.

Rest, J., Narvaez, D., Thoma, S., & Bebeau, M. (2000). A Neo-Kohlbergian Approach to Morality Research. *Journal of Moral Education*, *29*(4), 381–395.

Rest, J., Thoma, S., Narvaez, D., & Bebeau, M. (1997). Alchemy and Beyond: Indexing the Defining Issues Test. *Journal of Educational Psychology*, *89*(3), 498–507.

Reynolds, G. (2007). *Ethics in Information Technology*. Boston: Thomson.

Reynolds, G. (2009). *Ethics in Information Technology* (Third Edition). Boston: Cengage Learning.

Reynolds, G. (2012). *Ethics in Information Technology* (Fourth Edition). Boston: Cengage Learning.

Ridge, J. (2013). The Maturing of a Profession. In J. Weckert & R. Lucas (Eds.), *Professionalism in the Information and Communication Technology Industry* (pp. 45–48). Canberra, Australia: Australian National University EPress.

Riemenschneider, C. K., Leonard, L. N. K., & Manly, T. S. (2011). Students' Ethical Decision Making in an Information Technology Context: A Theory of Planned Behavior Approach. *Journal of Information Systems Education*, *22*(3), 203.

Rigoni, D. P., & Lamagdeleine, D. R. (1998). Computer Majors' Education as Moral Enterprise: a Durkheimian analysis. *Journal of Moral Education*, *27*(4), 489–503.

Rokeach, M. (1973). The Nature of Human Values (Vol 438), New York: Free Press

Rothkopf, D. (2014, June 1). Smartphones, Dumb Laws: Time to Catch up With Technology. *Canberra Times*. Canberra, Australia. Retrieved from http://www.canberratimes.com.au/comment/smartphones-dumb-laws-time-to-catch-up-with-technology-20130531-2nhi1.html

Rowland, W. (2013, July 10). The Lac-Mégantic Rail Disaster is a Corporate Crime. *Huffington Post*. Canada. Retrieved from http://www.huffingtonpost.ca/wade-rowland/lacmegantic-corporate-crime_b_3574080.html

Ryerson University. (2014). Ted Rogers School of Information Technology Management. Retrieved from www.ryerson.ca/itm

Salmon, F. (2009). Recipe for Disaster: TheFormula That Killed Wall Street. *Wired Magazine*, *17*(3). Retrieved from http://www.wired.com/techbiz/it/magazine/17-03/wp_quant?currentPage=all

Salovey, P., Caruso, D., & Mayer, J. D. (2003). Measuring Emotional Intelligence as a Set of Abilities With the Mayer-Salovey-Caruso Emotional Intelligence Test. In

Positive Psychology Assessment (pp. 251–265). Washington, D.C.: American Psychological Association.

Salovey, P., Caruso, D., & Mayer, J. D. (2004). Emotional Intelligence in Practice. In P. A. Linley & S. Joseph (Eds.), *Positive Psychology in Practice* (pp. 447–463). Hoboken, N.J.: Wiley.

Salta, E. N. (Ed.). (n.d.). The Prisoner's Dilemma. In *The Stanford Encyclopaedia of Philosophy* (Summer 2014). Stanford, CA: The Metaphysics Research Lab. Retrieved from http://plato.stanford.edu

San Martin, T. (2008). *Empowering Students to Enhance Pedagogy: An Appreciative Inquiry Case Study of Alternative high School Students' High Point Learning Experiences* (Doctor of Education). Wichita State University, Kansas, US.

Satzinger, J. W., Jackson, R. B., & Burd, S. D. (2005). *Object-Oriented Analysis & Design with the Unified Process*. Boston, MA: Cengage Learning.

Schlaefli, A., Rest, J., & Thoma, S. (1985). Does moral education improve moral judgment? A meta-analysis of interventions studies using the Defining Issues Test. *Review of Educational Research*, *55*(3).

School of Medicine, University of Missouri. (n.d.). Ethics and the Law. Retrieved from http://ethics.missouri.edu/Ethics-Law.aspx

Schulman, M. (2005). How We Become Moral: The Sources of Moral Motivation. In C. R. Snyder & S. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 499–512). New York: Oxford University Press.

Seglin, J. L. (2001, June 17). THE RIGHT THING; A Blame Game Hurts Both Ford and Firestone. *The New York Times*. New York. Retrieved from http://www.nytimes.com/2001/06/17/business/the-right-thing-a-blame-game-hurts-both-ford-and-firestone.html

Seligman, M. E. P. (2005). Positive Psychology, Positive Prevention, and Positive Therapy. In C. R. Snyder & S. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 3–9). New York: Oxford University Press.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive Psychology: An Introduction. *American Psychologist*, *55*(1), 5–14.

Sexty, R. (2008). *Canadian Business and Society Ethics 7 Responsibilities* (Fist Edition). Canada: McGraw-Hill Ryerson.

Shaw, P. (1997). Intervening in the Shadow System of Organisations: Consulting from a Complexity Perspective. *Journal of Organisational Change Management*, *10*, 235–250.

Sheldon, K. M., & King, L. (2001). Why Positive Psychology is Necessary. *American Psychologist*, *56*(3).

Shinder, D. (2010, December 2). Smartphone enterprise security risks and best practices. *TechRepublic US*. Retrieved from http://www.techrepublic.com/blog/smartphones/smartphone-enterprise-security-risks-and-best-practices/

Sidman, M. (1989). *Coercion and its Fallout*. Boston: Authors Cooperative.

Silverstein, K. (2013, May 14). Enron, Ethics, And Today's Corporate Values. *Forbes Business*. Retrieved from http://www.forbes.com/sites/kensilverstein/2013/05/14/enron-ethics-and-todays-corporate-values/

Simmons, A. (2014). In Defense of the Moral Significance of Empathy. *Ethic Theory Moral Practice*, *17*, 97–111.

Smith, P. (n.d.). Scanning the Supermarket Barcode, from Punch Cards to Vanity Branding A History of the Supermarket Barcode. *Good Magazine*. Retrieved from http://magazine.good.is/articles/a-history-of-the-supermarket-barcode

Software Engineering Institute. (2016). Carnegie Mellon University. Retrieved from http://www.sei.cmu.edu/

Sossin, L. (2011, an). Legal Ethics 101. Retrieved from http://deansblog.osgoode.yorku.ca/2011/01/legal-ethics-101/

Spinello, R. (2003a). Case 5.5 The Topper Travel Agency. In *Case Studies in Information Technology Ethics* (Second). Upper Saddle River, NJ: Prentice Hall.

Spinello, R. (2003b). *Case Studies Information Technology Ethics*. Upper Saddle River, NJ: Prentice Hall.

Staehr, L. J., & Byrne, G. J. (2003). Using the Defining Issues Test for Evaluating Computer Ethics Teaching. *IEEE Transactions on Education*, *46*(2), 229–234.

Stahl, B. C. (2004). *Responsible Management of Information Systems*. London, England: Idea Group Publishing.

Stair, R., & Reynolds, G. (2008). *Principles of Information Systems* (8th ed.). Canada: Thomson Course Technology.

Stewart, N. (2009). *Ethics: An Introduction to Moral Philosophy*. Cambridge, UK: Polity Press.

Stoodley, I. (2006, November 3). *IT Professionals' Experience of Ethics and its Implications for IT Education*. Queensland University of Technology, 7-64

Stoodley, I., Bruce, C., & Edwards, S. (2010). Expanding ethical vistas of IT professionals. *Information Systems Frontiers*, *12*, 379–387.

Stowell, F. (2013). The Appreciative Inquiry Method - A Suitable Candidate for Action Research? *System Research and Behavioral Science*, (30), 15–30.

Stowell, F. A., & West, D. (1991). The Appreciative Inquiry Method. In M. C. Jackson, G. J. Mansell, R. L. Flood, R. B. Blackham, & S. V. E. Probert (Eds.), *System Thinking in Europe* (pp. 493–497). USA: Springer.

Tavani, H. T. (2011). *Ethics & Technology* (Third). Hoboken, N.J.: John Wiley & Sons, Inc.

Tavani, Herman T. (2007). *Ethics & Technology* (2nd ed.). Hoboken, N.J.: John wiley & Sons, Inc.

The 1807 Act and its Effects: The Abolition of Slavery Project. (2009). Retrieved from http://abolition.e2bn.org/slavery_113.html

The Center for Ethics in Science and technology. (2014). Retrieved from http://www.ethicscenter.net/

The Research Center on Computing & Society. (2014). Retrieved from http://ares.southernct.edu/organizations/rccs/category/home/

Thoma, S. J., & Rest, J. (1999). The Relationship Between Moral Decision Making and Patterns of Consolidation and Transition in Moral Judgment Development. *Developmental Psychology*, *35*(3), 323.

Thurston, R. (2012). The Technology Threat to Work/Life Balance. *American BarAssociation*, *29*(5). Retrieved from http://www.americanbar.org/publications/gp_solo/2012/september_october/technology_threat_work_life_balance.html

Tice, C. (2012). How Restaurants Are Using Technology to Deliver Better Customer Service. *Forbes Magazine*. Retrieved from http://www.forbes.com/sites/caroltice/2012/12/07/how-restaurants-are-using-technology-to-deliver-better-customer-service/

Toulmin, S., Rieke, R., & Janik, A. (1984). *An Introduction To Reasoning* (Second). New York: Collier Macmillan Publishers.

Trevino, L. K., & Nelson, K. A. (2011). *Managing Business Ethics. Straight Talk about How to Do it Right* (Fifth). Hoboken, N.J.: John Wiley & Sons, Inc.

Trochim, W. M. K. (2001). *The Research Methods Knowledge Base* (Second). Cinncinati, OH: Atomic Dog Publishing.

Turner, N., Barling, J., & Zacharatos, A. (2002). Positive Psychology at Work. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 715–728). USA: Oxford University Press.

University of Massachusetts. (2009). Case Study: Bhopal Plant Disaster, International Dimensions of Ethics Education Case Study Series. Retrieved from http://works.bepress.com/mj_peterson/4/

University of Pennsylvania. (2015). Wharton School of Business - Legal Studies and Business Ethics Department. Retrieved September 10, 2015, from https://lgst.wharton.upenn.edu/

University of St. Thomas - Ethics and Business Law Department. (2015, September 9). Retrieved from http://www.stthomas.edu/business/academic-departments/listing/ethics/

van Vuuren, L. J., & Crous, F. (2005). Utilizing Appreciative Inquiry (AI) in Creating Shared Meaning of Ethics in Organizations. *Journal of Business Ethics*, *57*, 399–412.

Vickers, G. (1968). Science and the Appreciative System. In *Value Systems and Social Process*. Middlesex, England: Pelican Books.

Webb, S. (2014, June 24). 3D Printing Disruption And The Rise Of Mass Customisation. Retrieved from http://click-accenture.com/3d-printing-disruption-and-rise-of-mass-customisation/#.U87cXbHoxu1

Weckert, J., & Adeney, D. (2013). ICT is not a Profession: So What? In J. Weckert & R. Lucas (Eds.), *Professionalism in the Information and Communication Technology Industry* (p. 395-108). Canberra, Australia: Australian National University EPress.

Weckert, J., & Lucas, R. (2013). *Professionalism in the Information and Communication Technology Industry*. Canberra, Australia: Australian National University EPress.

Weick, K. E. (2001). *Making Sense of the Organisation*. Oxford: Blackwell.

Weinhardt, C., Anandasivam, D. I. W. ., Blau, B., Borissov, D. I. N., Meinl, D. M. T., Michalk, D. I. W. ., & Stößer, J. (2009). Cloud Computing – A Classification, Business Models, and Research Directions. *Business & Information Systems Engineering*, *1*(5), 391–399.

Wialasiri, J. S. (2001). Moral reasoning capactity of management students and pratitioners: An empirical study in Australia. *Journal of Managerial Psychology*, *16*, 614–634.

Witzel, M. (2013, April 29). Maple Leaf Food’s response to a crisis. *Financial Times*. Retrieved from http://www.ft.com/cms/s/0/8c8d3668-adb5-11e2-82b8-00144feabdc0.html#axzz37wQvEs4Z

Xiang, H., & Zhu, Y. (2011). The Ethics Issues of Nuclear Energy: Hard Lessons Learned from Chernobyl and Fukushima. *Online Journal of Health Ethics*, *7*(2), 1–11.

Yeap, C. H. (1999). *An analysis of the effects of moral educatin interventions on the development of moral cognition* (Doctor of Philosophy). University of Minnesota, Minneapolis, Minn.

Yin, R. K. (2003). *Case Study Research: Design and Methods* (3rd ed., Vol. 5). London, England: Sage Publications.

Zayko, T. (2013, June 7). The Strategic Implications of Tellers Selling. *Banking Strategies Magazine Articles Online*. Retrieved from http://www.bai.org/bankingstrategies/Marketing-and-Sales/Sales/The-Strategic-Implications-of-Tellers-Selling

Zhou, Q., Valiente, C., & Eisenberg, N. (2003). Empathy and Its Measurement. In S. Lopez & C. R. Snyder (Eds.), *Positive Psychological Assessment. A Handbook of Models and Measures* (pp. 269–284). Washington, D.C.: American Psychological Association.

APPENDICES

APPENDIX A – COURSE SYLLABUS COMPUTER ETHICS COURSE

RYERSON UNIVERSITY

Ted Rogers School of Information Technology Management

COURSE OF STUDY
2010 - 2011

(C)ITM 407 – Information Technology, Ethics and Society

1.0 PREREQUISITE

The prerequisite for this course is ITM100. Antirequisites are ITM734, PHL307. Students who do not have the prerequisite will be dropped from the course.

2.0 INSTRUCTOR INFORMATION (details will be provided in the first class)

2.1 Name:
2.2 Office Phone Number:
2.3 E-mail address:
2.4 Faculty/course web site(s):
2.5 Office Location & Consultation hours:

- Your instructor is available for personal consultation during scheduled consultation hours which are posted on their office door or on the course Blackboard site. However, you are advised to make an appointment by e-mail or by telephone before coming to ensure that the professor is not unavoidably absent.

2.6 E-mail Usage & Limits:

- Your instructor will inform you about his/her policy on responding to e-mails.

3.0 CALENDAR COURSE DESCRIPTION

This course provides an overview of some of the social implications of new information technologies for society and the global community. Topics will include:

1. ICT global trade, the Internet and disintegration of production and global redistribution of labour
2. Cyber crime and identity theft
3. Cyber addiction e.g. pornography and gambling
4. Political movements and cyber terrorism, the Internet, democracy, free speech and free access
5. ICT and global social and economic development.

4.0 COURSE OVERVIEW

The main purpose of the course is to provide future business leaders and IT professionals with practical information and approaches to ethical questions and professional practice as they would likely encounter in the modern corporation. Students will gain a better understanding about such topics as the relevance of ethical approaches and governance in the workplace, ethical issues arising out of the Internet in a global community, and frameworks and philosophies that influence our personal ethical framework. Students will have an opportunity to apply and demonstrate their knowledge through in-class debates, personal assessment of ethical questions and case studies.

5.0 COURSE OBJECTIVES – LEARNING OUTCOMES

The course has specific learning outcomes for the student that will be measured through the evaluation process described in section 6.0. Following the course, the successful student will be able to:

6. Describe the role that ethics plays both in the workplace and society at large and be able to apply an ethical framework and techniques as part of the business decision making process
7. Understand multiple frameworks and philosophies that can be applied in the ethical decision making process
8. Articulate the current ethical issues arising from the use of ICT in the global environment and some techniques in addressing them
9. Demonstrate an effective ethical approach to supporting community learning both in your group, your section and the overall ITM407 class
10. Apply critical thinking to identify ethical issues, the impact of alternative courses of action and be able to defend your decision in a clearly articulated oral or written form.

6.0 EVALUATION

The most important aspect of course evaluation is that students demonstrate thoughtful mastery of the material presented in the course. Ethics is best explored through engagement and thinking about the issue critically and in relation to one's own background, biases, morality and perspective. Class attendance and participation is essential to achieving success in the course. Formal assessment focuses primarily on an individual demonstrating a critical, thoughtful analysis of the issues presented by the instructor in a variety of formats. Your final grade for this course is therefore composed of the individual mark received for each of the following course components:

Method	*Learning Outcomes*	*Due Week*	*Weight %*
Reflection Blog	1,5	12	10%
Individual Weekly In-class Assignment	1,2,3,4,5	5*x4%	20%
Group Assignments • Filling a Policy Vacuum	1,3,4,5	9 - 12	20%
Mid-Term Exam	1	7	20%
Final Exam	1,2,5	14	30%
Total			100%

*There will be 6 individual assignments. Detailed descriptions of the evaluation requirements will be posted on Blackboard. The assignments will be assigned during the class and due by the end of the class. **Only the top 5 scores will be counted towards the final grade**

NOTE: In addition, in order to pass this course, students must pass the final examination.

7.0 POSTING OF GRADES

- All grades on assignments or tests will be posted or made available through the return of their work. Grades on final exams will be posted; however, please note that as there may be other considerations in the determination of final grades, final official course grades (i.e. A,B,C, etc.) will not be posted or disclosed by the professor, but must come to students from the Registrar's office.
- If grades are posted in hard copy, they will be posted numerically sorted by student identification number after at least the first two digits have been removed.
- Some graded work will be returned to students prior to the last date to drop a course without academic penalty.

8.0 TOPICS – SEQUENCE & SCHEDULE

Module	**Topic**
Module 1	**New Technology Raises Policy Vacuums - Computers are no Different** **Unique character of computers** **Identifying the policy vacuum** **Amoral rather than immoral behaviour** **How to recognize potential harm and how to manage it?** **Making and defending good decisions**
Module 2	**Making and Defending Good Decisions in our Business and Professional Lives** **ICT and Professional Responsibility** **Understanding the workplace**

	Understanding the global perspective **Managing Software Development Projects**
	MIDTERM
Module 3	**New technologies bring ethical issues. Some examples of what will be explored:** **Cybercrime and Identity Theft; Privacy vs. Access to Information** **Software design/development; Intellectual Property;** **Censorship vs. Freedom of Expression** **Cyber addiction such as gaming and gambling** **Accessibility and the Digital Divide**
Module 4	**Ethical Issues: Impact of IT and Quality of Life**
	Final Exam

9.0 TEACHING METHODS

The course is structured as a one hour lecture and a two hour workshop. The one hour lecture, making use of films, guest lecturers and simulations, combines the sections together to provide the concepts that will be applied in the following workshop.

This course is designed to be highly interactive and as such each section has an individual 2 hour workshop. Its success depends on us mutually creating an environment where substantial learning can occur. As a result, the instructor will incorporate many different types of activities in the tutorial: lecture, discussions, critical analysis, reflection, and argument/debate. None of this is intended to offend any student: however, the course is designed to challenge the way we all think, reflect and act and as such, students may find it personally challenging to disclose and justify their beliefs in relation to a formal philosophical perspective on ethical conduct that may be substantially different from religious, moral, legal or other codes they are presently more familiar with.

10.0 TEXTS & OTHER READING MATERIALS

ISBN: 1-85554-845-3. There may be additional reading material assigned at the discretion of the instructor. Notification of these materials will be posted in Blackboard.

11.0 OTHER COURSE, DEPARTMENTAL, AND UNIVERSITY POLICIES

- For more information regarding course management and departmental policies, please consult the '**Appendix to the Course Outline**' which is posted on the Ted Rogers School of ITM website, www.ryerson.ca/itm/Coursepdf/appendix.pdf. This appendix covers the following topics:
  11.1 Academic Integrity
  11.1.1 Highlights of the Student Code of Academic Conduct

- 11.1.2 Non-academic Conduct Policy
- 11.1.3 Turnitin.com
- 11.1.4 Important on-campus resources

11.2 Examinations and Tests
- 11.2.1 Highlights from the Examination Policy
- 11.2.2 Make-up Tests and Examinations

11.3 Variations Within a Course
11.4 Attendance and Class Participation
11.5 Late Assignments
11.6 Ryerson Medical Certificate
11.7 Academic Accommodations for Students with Disabilities
11.8 Religious, Aboriginal or Spiritual Observance
11.9 Request for Accommodation
11.10 Student Email Policy
11.11 Academic Grading Policy
11.12 Students Rights
11.13 Requests for Academic Consideration

APPENDIX B - ASSESSING LEARNING OUTCOMES

Learning Outcome	***How addressed***	***Assessment Done***
Describe the role that ethics plays both in the workplace and society at large and be able to apply an ethical framework and techniques as part of the business decision making process	Understand an ethical decision making framework and use it to analyse situations encountered in the workplace and society at large.	Provide a case in the final exam to assess the ability to apply the ethical decision making framework.
Understand multiple frameworks and philosophies that can be applied in the ethical decision making process	Understand the ethical frameworks and philosophies and use them as one form of backing in supporting an argument on how to resolve an ethical issue.	Assess the case on the final exam on the ability to support an argument using one of the ethical philosophies as backing.
Articulate the current ethical issues arising from the use of ICT in the global environment and some techniques in addressing them.	Discuss ethical issues in the use of ICT and identify techniques on how to address them.	Assess the case on the final exam on the ability to apply techniques to reduce the ethical issues that arise in the use of an aspect of ICT.
Demonstrate an effective ethical approach to supporting community learning both in your group, your section and the overall ITM407 class	Be open and respectful to others in in-class discussions and group assignments.	Observe the participation of students in the class and online in their open and respectful approach to the learning environment and provide feedback.
Apply critical thinking to identify ethical issues, the impact of alternative courses of action and be able to defend your decision in a clearly articulated oral or written form.	Analyse a case, identify the ethical issue, consider the consequences of the action and use argumentation to support the recommendation on what should be done.	Assess the case on the final exam on the ability to identify three different alternatives that would address the ethical issue in the case.

APPENDIX C – GROUP PROJECT DESCRIPTION - CONTROL GROUP

ITM 407 Group Assignment
Winter 2010
Ethical Issues: Policy, Simulation or Debate
(20% of final grade)

An Overview

The purpose of this exercise is to investigate further a specific ethical issue identified in the surveys conducted in week 2. Groups will investigate an issue in one of three ways:

1. From a policy vacuum perspective, develop a policy to fill the vacuum
2. From a moral judgment perspective, engage in a debate to investigate both sides of an issue
3. From a moral character perspective, engage in a simulation to identify the challenges and obstacles that one often has to overcome in behaving ethically.

Form a group of 4 to 5 members. Each group will choose a policy, a debate topic or a simulation case and notify the instructor of their choice. Only one group can do one topic. The topics will be allocated on a first come, first served basis.

Each group will research their topic, submit a report and present their findings to the class as a policy presentation, a debate or simulation.

Students who are not part of a group by week 7's workshop will be assigned a group by the instructor.

The approach is as follows:

> Week 7: Choose your topic. Define your group code of conduct. Divide up the work and document in your Group Project Plan. Start the research.
> Week 8: Submit the Group Code of Conduct and the Group Project Plan.
> Saturday midnight following week 9's workshop: Report is due.
> Weeks 10 and 11: Present the policy or debate your position or participate in your simulation.
> Week 12 submit your group member evaluation.

The Report is 5 to 8 pages of about 1500 words. It is a business report and should have headers/footers, title page, table of contents and references using APA format. It should be double spaced with 1 inch margins, using Times New Roman 11 font and organized in reasonable sized paragraphs with suitable headings. It should include an introduction and conclusion.

Marking Scheme

1. Group code of conduct and project plan – 4 marks (see Managing a Group Project handout)
2. The Report – 12 marks
3. Presentation – 4 marks

   Total – 20 marks

The presentations will be evaluated by the groups not participating to determine the best overall presentation.

APPENDIX D- DEFINING ISSUES TEST 2 MEASUREMENT TOOL

DIT-2

Defining Issues Test

Version 3.1

University of Minnesota

University of Alabama

Center for the Study of Ethical Development

Instructions

This questionnaire is concerned with how you define the issues in a social problem. Several stories about social problems will be described. After each story, there will be a list of questions. The questions that follow each story represent different issues that might be raised by the problem. In other words, the questions / issues raise different ways of judging what is important in making a decision about the social problem. You will be asked to rate and rank the questions in terms of how important each one seems to you.

This questionnaire is in two parts: one part contains the **INSTRUCTIONS** (this part) and the stories presenting the social problems; the other part contains the questions (issues) and the **ANSWER SHEET** on which to write your responses.

Here is an example of the task:

Presidential Election

Imagine that you are about to vote for a candidate for the Presidency of the United States. Imagine that before you vote, you are given several questions, and asked which issue is the most important to you in making up your mind about which candidate to vote for. In this example, 5 items are given. On a rating scale of 1 to 5 (1=Great, 2=Much, 3=Some, 4=Little, 5=No) please rate the importance of the item (issue) by filling in with a pencil one of the bubbles on the answer sheet by each item.

Assume that you thought that item #1 (below) was of great importance, item #2 had some importance, item #3 had no importance, item #4 had much importance, and item #5 had much importance. Then you would fill in the bubbles on the answer sheet as shown below.

GREAT	MUCH	SOME	LITTLE	NO	**Rate the following 12 issues in terms of importance (1-5)**
●	②	③	④	⑤	1. Financially are you personally better off now than you were four years ago?
①	②	●	④	⑤	2. Does one candidate have a superior moral character?
①	②	③	④	●	3. Which candidate stands the tallest?
①	●	③	④	⑤	4. Which candidate would make the best world leader?
①	●	③	④	⑤	5. Which candidate has the best ideas for our country's internal problems, like crime and health care?

Further, the questionnaire will ask you to rank the questions in terms of importance. In the space below, the numbers 1 through 12, represent the item number. From top to bottom, you are asked to fill in the bubble that represents the item in first importance (of those given you to choose from), then second most important, third most important, and fourth most important. Please indicate your top four choices. You might fill out this part, as follows:

Rank which issue is the most important (item number).

Most important item	●②③④⑤⑥⑦⑧⑨⑩⑪⑫	Third most important	①②③●⑤⑥⑦⑧⑨⑩⑪⑫
Second most important	①②③④●⑥⑦⑧⑨⑩⑪⑫	Fourth most important	①●③④⑤⑥⑦⑧⑨⑩⑪⑫

Note that some of the items may seem irrelevant to you (as in item #3*)* or not make sense to you—in that case, **rate** the item as "No" importance and do not **rank** the item. Note that in the stories that follow, there will be 12 items for each story, not five. Please make sure to consider all 12 items (questions) that are printed after each story.

In addition you will be asked to state your preference for what action to take in the story. After the story, you will be asked to indicate the action you favor on a three-point scale (1 = strongly favor some action, 2 = can't decide, 3 = strongly oppose that action).

In short, read the story from this booklet, and then fill out your answers on the answer sheet. Please use a #2 pencil. If you change your mind about a response, erase the pencil mark cleanly and enter your new response.

[Notice the second part of this questionnaire, the Answer Sheet. The Identification Number at the top of the answer sheet may already be filled in when you receive your materials. If not, you will receive instructions about how to fill in the number. If you have questions about the procedure, please ask now.

Please turn now to the Answer Sheet.]

Famine— (Story #1)

The small village in northern India has experienced shortages of food before, but this year's famine is worse than ever. Some families are even trying to feed themselves by making soup from tree bark. Mustaq Singh's family is near starvation. He has heard that a rich man in his village has supplies of food stored away and is hoarding food while its price goes higher so that he can sell the food later at a huge profit. Mustaq is desperate and thinks about stealing some food from the rich man's warehouse. The small amount of food that he needs for his family probably wouldn't even be missed.

[If at any time you would like to reread a story or the instructions, feel free to do so. Now turn to the Answer Sheet, go to the 12 issues and rate and rank them in terms of how important each issue seems to you.]

Reporter— (Story #2)

Molly Dayton has been a news reporter for the *Gazette* newspaper for over a decade. Almost by accident, she learned that one of the candidates for Lieutenant Governor for her state, Grover Thompson, had been arrested for shop-lifting 20 years earlier. Reporter Dayton found out that early in his life, Candidate Thompson had undergone a confused period and done things he later regretted, actions which would be very out-of-character now. His shop-lifting had been a minor offense and charges had been dropped by the department store. Thompson has not only straightened himself out since then, but built a distinguished record in helping many people and in leading constructive community projects. Now, Reporter Dayton regards Thompson as the best candidate in the field and likely to go on to important leadership positions in the state. Reporter Dayton wonders whether or not she should write the story about Thompson's earlier troubles because in the upcoming close and heated election, she fears that such a news story could wreck Thompson's chance to win.

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

School Board— (Story #3)

Mr. Grant has been elected to the School Board District 190 and was chosen to be Chairman. The district is bitterly divided over the closing of one of the high schools. One of the high schools has to be closed for financial reasons, but there is no agreement over which school to close. During his election to the school board, Mr. Grant had proposed a series of "Open Meetings" in which members of the community could voice their opinions. He hoped that dialogue would make the community realize the necessity of closing one high school. Also he hoped that through open discussion, the difficulty of the decision would be appreciated, and that the community would ultimately support the school board decision. The first Open Meeting was a disaster. Passionate speeches dominated the microphones and threatened violence. The meeting barely closed without fist-fights. Later in the week, school board members received threatening phone calls. Mr. Grant wonders if he ought to call off the next Open Meeting.

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

Cancer— (Story #4)

Mrs. Bennett is 62 years old, and in the last phases of colon cancer. She is in terrible pain and asks the doctor to give her more pain-killer medicine. The doctor has given her the maximum safe dose already and is reluctant to increase the dosage because it would probably hasten her death. In a clear and rational mental state, Mrs. Bennett says that she realizes this; but she wants to end her suffering even if it means ending her life. Should the doctor give her an increased dosage?

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

Demonstration — (Story #5)

Political and economic instability in a South American country prompted the President of the United States to send troops to "police" the area. Students at many campuses in the U.S.A. have protested that the United States is using its military might for economic advantage. There is widespread suspicion that big oil multinational companies are pressuring the President to safeguard a cheap oil supply even if it means loss of life. Students at one campus took to the streets, in demonstrations, tying up traffic and stopping regular business in the town. The president of the university demanded that the students stop their illegal demonstrations. Students then took over the college's administration building, completely paralyzing the college. Are the students right to demonstrate in these ways?

[Now turn to the Answer Sheet, go to the 12 issues for this story, rate and rank them in terms of how important each issue seems to you.]

DIT-2 Answer Sheet

IDENTIFICATION NUMBER

University of Minnesota

Please read story #1 in the INSTRUCTIONS booklet.

Famine -- (Story #1)

What should Mustaq Singh do? Do you favor the action of taking the food? (Mark one.)

① Should take the food ② Can't decide ③ Should not take the food

GREAT MUCH SOME LITTLE NO — *Rate the following 12 issues in terms of importance (1-5)*

1. Is Mustaq Singh courageous enough to risk getting caught for stealing?
2. Isn't it only natural for a loving father to care so much for his family that he would steal?
3. Shouldn't the community's laws be upheld?
4. Does Mustaq Singh know a good recipe for preparing soup from tree bark?
5. Does the rich man have any legal right to store food when other people are starving?
6. Is the motive of Mustaq Singh to steal for himself or to steal for his family?
7. What values are going to be the basis for social cooperation?
8. Is the epitome of eating reconcilable with the culpability of stealing?
9. Does the rich man deserve to be robbed for being so greedy?
10. Isn't private property an institution to enable the rich to exploit the poor?
11. Would stealing bring about more total good for everybody concerned or wouldn't it?
12. Are laws getting in the way of the most basic claim of any member of a society?

Rank which issue is the most important (item number).

Most important item ①–⑫ Third most important ①–⑫
Second most important ①–⑫ Fourth most important ①–⑫

Now please return to the Instructions booklet for the next story.

Reporter -- (Story #2)

Do you favor the action of reporting the story? (Mark one.)

① Should report the story ② Can't decide ③ Should not report the story

GREAT MUCH SOME LITTLE NO — *Rate the following 12 issues in terms of importance (1-5)*

1. Doesn't the public have a right to know all the facts about all the candidates for office?
2. Would publishing the story help Reporter Dayton's reputation for investigative reporting?
3. If Dayton doesn't publish the story wouldn't another reporter get the story anyway and get the credit for investigative reporting?
4. Since voting is such a joke anyway, does it make any difference what reporter Dayton does?
5. Hasn't Thompson shown in the past 20 years that he is a better person than his earlier days as a shop-lifter?
6. What would best serve society?
7. If the story is true, how can it be wrong to report it?
8. How could reporter Dayton be so cruel and heartless as to report the damaging story about candidate Thompson?
9. Does the right of "habeas corpus" apply in this case?
10. Would the election process be more fair with or without reporting the story?
11. Should reporter Dayton treat all candidates for office in the same way by reporting everything she learns about them, good and bad?
12. Isn't it a reporter's duty to report all the news regardless of the circumstances?

Rank which issue is the most important (item number).

Most important item ①–⑫ Third most important ①–⑫
Second most important ①–⑫ Fourth most important ①–⑫

Now please return to the Instructions booklet for the next story.

PLEASE DO NOT WRITE IN THIS AREA

1040147

SCANTRON Mark Reflex® MM73897-4:32

School Board -- (Story #3)

Do you favor calling off the next Open Meeting?

① Should call off the next open meeting ② Can't decide ③ Should have the next open meeting

GREAT MUCH SOME LITTLE NO

Rate the following 12 issues in terms of importance (1-5)

①②③④⑤ **1. Is Mr. Grant required by law to have Open Meetings on major school board decisions?**
①②③④⑤ **2. Would Mr. Grant be breaking his election campaign promises to the community by discontinuing the Open Meetings?**
①②③④⑤ **3. Would the community be even angrier with Mr. Grant if he stopped the Open Meetings?**
①②③④⑤ **4. Would the change in plans prevent scientific assessment?**
①②③④⑤ **5. If the school board is threatened, does the chairman have the legal authority to protect the Board by making decisions in closed meetings?**
①②③④⑤ **6. Would the community regard Mr. Grant as a coward if he stopped the open meetings?**
①②③④⑤ **7. Does Mr. Grant have another procedure in mind for ensuring that divergent views are heard?**
①②③④⑤ **8. Does Mr. Grant have the authority to expel troublemakers from the meetings or prevent them from making long speeches?**
①②③④⑤ **9. Are some people deliberately undermining the school board process by playing some sort of power game?**
①②③④⑤ **10. What effect would stopping the discussion have on the community's ability to handle controversial issues in the future?**
①②③④⑤ **11. Is the trouble coming from only a few hotheads, and is the community in general really fair-minded and democratic?**
①②③④⑤ **12. What is the likelihood that a good decision could be made without open discussion from the community?**

Rank which issue is the most important (item number).

Most important item ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Third most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫
Second most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Fourth most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫

Now please return to the Instructions booklet for the next story.

Cancer -- (Story #4)

Do you favor the action of giving more medicine?

① Should give Mrs. Bennett an increased dosage to make her die ② Can't decide ③ Should not give her an increased dosage

GREAT MUCH SOME LITTLE NO

Rate the following 12 issues in terms of importance (1-5)

①②③④⑤ **1. Isn't the doctor obligated by the same laws as everybody else if giving an overdose would be the same as killing her?**
①②③④⑤ **2. Wouldn't society be better off without so many laws about what doctors can and cannot do?**
①②③④⑤ **3. If Mrs. Bennett dies, would the doctor be legally responsible for malpractice?**
①②③④⑤ **4. Does the family of Mrs. Bennett agree that she should get more painkiller medicine?**
①②③④⑤ **5. Is the painkiller medicine an active heliotropic drug?**
①②③④⑤ **6. Does the state have the right to force continued existence on those who don't want to live?**
①②③④⑤ **7. Is helping to end another's life ever a responsible act of cooperation?**
①②③④⑤ **8. Would the doctor show more sympathy for Mrs. Bennett by giving the medicine or not?**
①②③④⑤ **9. Wouldn't the doctor feel guilty from giving Mrs. Bennett so much drug that she died?**
①②③④⑤ **10. Should only God decide when a person's life should end?**
①②③④⑤ **11. Shouldn't society protect everyone against being killed?**
①②③④⑤ **12. Where should society draw the line between protecting life and allowing someone to die if the person wants to?**

Rank which issue is the most important (item number).

Most important item ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Third most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫
Second most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Fourth most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫

Now please return to the Instructions booklet for the next story.

PLEASE DO NOT WRITE IN THIS AREA

Demonstration -- (Story #5)

Do you favor the action of demonstrating in this way?

① Should continue demonstrating in these ways ② Can't decide ③ Should not continue demonstrating in these ways

GREAT MUCH SOME LITTLE NO

Rate the following 12 issues in terms of importance (1-5)

①②③④⑤ **1. Do the students have any right to take over property that doesn't belong to them?**
①②③④⑤ **2. Do the students realize that they might be arrested and fined, and even expelled from school?**
①②③④⑤ **3. Are the students serious about their cause or are they doing it just for fun?**
①②③④⑤ **4. If the university president is soft on students this time, will it lead to more disorder?**
①②③④⑤ **5. Will the public blame all students for the actions of a few student demonstrators?**
①②③④⑤ **6. Are the authorities to blame by giving in to the greed of the multinational oil companies?**
①②③④⑤ **7. Why should a few people like Presidents and business leaders have more power than ordinary people?**
①②③④⑤ **8. Does this student demonstration bring about more or less good in the long run to all people?**
①②③④⑤ **9. Can the students justify their civil disobedience?**
①②③④⑤ **10. Shouldn't the authorities be respected by students?**
①②③④⑤ **11. Is taking over a building consistent with principles of justice?**
①②③④⑤ **12. Isn't it everyone's duty to obey the law, whether one likes it or not?**

Rank which issue is the most important (item number).

Most important item ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Third most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫
Second most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Fourth most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫

Please provide the following information about yourself:

1. Age in years:

⓪⓪
①①
②②
③③
④④
⑤⑤
⑥⑥
⑦⑦
⑧⑧
⑨⑨

2. Sex (mark one): ◯ Male ◯ Female

3. Level of Education (mark highest level of formal education attained, if you are currently working at that level [e.g., Freshman in college] or if you have completed that level [e.g., if you finished your Freshman year but have gone on no further].)

◯ Grade 1 to 6
◯ Grade 7, 8, 9
◯ Grade 10, 11, 12
◯ Vocational/technical school (without a bachelor's degree) (e.g., Auto mechanic, beauty school, real estate, secretary, 2-year nursing program).
◯ Junior college (e.g., 2-year college, community college, Associate Arts degree)
◯ Freshman in college in bachelor degree program.
◯ Sophomore in college in bachelor degree program.
◯ Junior in college in bachelor degree program.
◯ Senior in college in bachelor degree program.
◯ Professional degree (Practitioner degree beyond bachelor's degree) (e.g., M.D., M.B.A., Bachelor of Divinity, D.D.S. in Dentistry, J.D. in law, Masters of Arts in teaching, Masters of Education [in teaching], Doctor of Psychology, Nursing degree along with 4-year Bachelor's degree)
◯ Masters degree (in academic graduate school)
◯ Doctoral degree (in academic graduate school, e.g., Ph.D. or Ed.D.)
◯ Other Formal Education. (Please describe: ______________________________)

4. In terms of your political views, how would you characterize yourself (mark one)?

◯ Very Liberal
◯ Somewhat Liberal
◯ Neither Liberal nor Conservative
◯ Somewhat Conservative
◯ Very Conservative

5. Are you a citizen of the U.S.A.?

◯ Yes ◯ No

6. Is English your primary language?

◯ Yes ◯ No

Thank You.

PLEASE DO NOT WRITE IN THIS AREA

Dilemma #6

Do you favor the action?

① Strongly Favor ② Favor ③ Slightly Favor ④ Neutral ⑤ Slightly Disfavor ⑥ Disfavor ⑦ Strongly Disfavor

GREAT MUCH SOME LITTLE NO *Rate the following 12 issues in terms of importance (1-5)*

①②③④⑤ 1.
①②③④⑤ 2.
①②③④⑤ 3.
①②③④⑤ 4.
①②③④⑤ 5.
①②③④⑤ 6.
①②③④⑤ 7.
①②③④⑤ 8.
①②③④⑤ 9.
①②③④⑤ 10.
①②③④⑤ 11.
①②③④⑤ 12.

Rank which issue is the most important (item number).

Most important item ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Third most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫
Second most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Fourth most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫

Dilemma #7

Do you favor the action?

① Strongly Favor ② Favor ③ Slightly Favor ④ Neutral ⑤ Slightly Disfavor ⑥ Disfavor ⑦ Strongly Disfavor

GREAT MUCH SOME LITTLE NO *Rate the following 12 issues in terms of importance (1-5)*

①②③④⑤ 1.
①②③④⑤ 2.
①②③④⑤ 3.
①②③④⑤ 4.
①②③④⑤ 5.
①②③④⑤ 6.
①②③④⑤ 7.
①②③④⑤ 8.
①②③④⑤ 9.
①②③④⑤ 10.
①②③④⑤ 11.
①②③④⑤ 12.

Rank which issue is the most important (item number).

Most important item ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Third most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫
Second most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫ Fourth most important ①②③④⑤⑥⑦⑧⑨⑩⑪⑫

PLEASE DO NOT WRITE IN THIS AREA

1040147

APPENDIX E – IMIS SURVEY ON COMPUTER ETHICS OPINIONS MEASUREMENT TOOL

Survey of Computer Ethics Opinions

ID Number_______________

To kick off the computer ethics course, it's important to understand the opinions of the members of our profession and the reasons for their opinions. There are no right or wrong answers to the survey; it is purely your opinion so answer as honestly as you can. This survey will be administered twice: once at the beginning and again at the end. This is a compulsory part of the course and 4 marks are awarded simply for completion of both parts, not on any particular score. To gain participant marks, the survey must be completed in the first and twelfth week of the course.

Candace Grant, Ted Rogers School of Information Technology Management

Please circle the answer which represents the extent to which you agree or disagree with each statement:

If a question does not apply to you, please leave it and go on to the next one

1. It is acceptable for me to make unauthorised copies of commercial software to use for my University work.	strongly disagree	disagree	indifferent	agree	strongly agree
2. It is acceptable to use the University's computing facilities for my own profit-making activities if this has no adverse affect on the University.	strongly disagree	disagree	indifferent	agree	strongly agree
3. It is acceptable to use the University's computing facilities for my own *non*-profit-making activities if this has no adverse affect on the University.	strongly disagree	disagree	indifferent	agree	strongly agree
4. If an organization has purchased/developed software for use in the office, it is acceptable for their employees to make unauthorised copies of this software for use at home.	strongly disagree	disagree	indifferent	agree	strongly agree
5. If a project is significantly behind schedule or over budget, it is acceptable to cut down on testing effort.	strongly disagree	disagree	indifferent	agree	strongly agree
6. It is acceptable for me to use other peoples' access codes/passwords *with* their permission to access data I am not authorised to see.	strongly disagree	disagree	indifferent	agree	strongly agree
7. It is acceptable for me to use other peoples' access codes/passwords *without* their permission to access data I am not authorised to see.	Strongly disagree	disagree	indifferent	agree	strongly agree
8. It is acceptable for me to make unauthorised copies of commercial software for my own private use.	strongly disagree	disagree	indifferent	agree	strongly agree

Please circle the answer which represents the extent to which you agree or disagree with each statement:

If a question does not apply to you, please leave it and go on to the next one.

9. Organizations, including universities, should develop and administer an ethics awareness programme for all employees/students.

strongly disagree	disagree	indifferent	agree	strongly agree

10. In an IS development project, ongoing consultation with representatives of all those affected by it should occur throughout the information systems development life cycle.

strongly disagree	disagree	indifferent	agree	strongly agree

11. So long as a systems development project provides me with an interesting challenge, I do not care about its overall objectives or purpose.

strongly disagree	disagree	indifferent	agree	strongly agree

12. Consideration of the overall working environment is not part of the IS professional's responsibility.

strongly disagree	disagree	indifferent	agree	strongly agree

13. Consultation with all stakeholders in an information systems development project is not always possible; to keep stakeholders informed is sufficient.

strongly disagree	disagree	indifferent	agree	strongly agree

14. I think that all organizations should require IS/IT employees to abide by a code of professional ethics.

strongly disagree	disagree	indifferent	agree	strongly agree

15. I think that all organizations should require all employees to abide by a code of professional ethics.

strongly disagree	disagree	indifferent	agree	strongly agree

16. Employers are entitled to use electronic surveillance to monitor employees' performance in the workplace:

(a) *with* their consent & *with* their knowledge

(b) *without* their consent & *with* their knowledge

(c) *with* their consent & *without* their knowledge

(d) *without* their consent & *without* their knowledge.

(a)	strongly disagree	disagree	indiffer ent	agree	strongly agree
(b)	strongly disagree	disagree	indiffer ent	agree	strongly agree
(c)	strongly disagree	disagree	indiffer ent	agree	strongly agree
(d)	strongly disagree	disagree	indiffer ent	agree	strongly agree

Please circle the answer which represents the extent to which you agree or disagree with each statement:

If a question does not apply to you, please leave it and go on to the next on

17. Ryerson University is entitled to use electronic surveillance to monitor:

17.1 Students' use of university IT resources from learning and teaching areas (e.g. labs, library):

(a) *with* their consent & *with* their knowledge

(b) *without* their consent & *with* their knowledge

(c) *with* their consent & *without* their knowledge

(d) *without* their consent & *without* their knowledge.

(a)	strongly disagree	disagree	indifferent	agree	strongly agree
(b)	strongly disagree	disagree	indifferent	agree	strongly agree
(c)	strongly disagree	disagree	indifferent	agree	strongly agree
(d)	strongly disagree	disagree	indifferent	agree	strongly agree

17.2 Students' use of university IT resources from university residences:

(a) *with* their consent & *with* their knowledge

(b) *without* their consent & *with* their knowledge

(c) *with* their consent & *without* their knowledge

(d) *without* their consent & *without* their knowledge.

(a)	strongly disagree	disagree	indifferent	agree	strongly agree
(b)	strongly disagree	disagree	indifferent	agree	strongly agree
(c)	strongly disagree	disagree	indifferent	agree	strongly agree
(d)	strongly disagree	disagree	indifferent	agree	strongly agree

17.3 My learning activities when I log into the VLE (Blackboard):

(a) *with* my consent & *with* my knowledge

(b) *without* my consent & *with* my knowledge

(c) *with* my consent & *without* my knowledge

(d) *without* my consent & *without* my knowledge.

(a)	strongly disagree	disagree	indifferent	agree	strongly agree
(b)	strongly disagree	disagree	indifferent	agree	strongly agree
(c)	strongly disagree	disagree	indifferent	agree	strongly agree
(d)	strongly disagree	disagree	indifferent	agree	strongly agree

18. Does Ryerson University have a policy concerning the use of computing resources by students?

(a) Software (e.g. game playing)

(b) Printers and other peripherals

(c) Email

(d) Internet

(e) Other (please specify)

(a)	Formal, written policy	Informal policy	No policy	Don't know
(b)	Formal, written policy	Informal policy	No policy	Don't know
(c)	Formal, written policy	Informal policy	No policy	Don't know
(d)	Formal, written policy	Informal policy	No policy	Don't know
(e)	Formal, written policy	Informal policy	No policy	Don't know

19. Each week I access social networking sites for about:

Up to 1 hour	☐	16-20 hours	☐
1-5 hours	☐	Over 20 hours	☐
6-10 hours	☐	I don't use them	☐
11-15 hours	☐		

20. I use social networking sites for career advice.

strongly disagree	disagree	don't know	agree	strongly agree

21. I use/will use social networking sites to look for a job.

strongly disagree	disagree	don't know	agree	strongly agree

Finally, some questions about you to provide us with a profile of respondents. Please tick the appropriate box.

Course
- BComm ITM Degree Program - full time ☐
- BComm ITM Degree Program – part time ☐
- Certificate Please specify: ________________ ☐
- Other Please specify: ________________ ☐

IT Work Experience:

None	☐	Under 1 year	☐
1-2 years	☐	3 – 4 years	☐
5 – 9 years	☐	More than 9 years	☐

Gender: Male ☐ Female☐

Age: Under 25 ☐ 25-40 ☐ 41-50 ☐ Over 50 ☐

Marital Status: Single ☐ Divorced ☐ Widowed ☐ Married ☐

Do you have Children: Yes ☐ No ☐

Pets?: Yes ☐ No ☐

Do you have a strong religious affiliation?

Yes ☐ Please specify if you wish____________________

No ☐

Have you taken part in: a computer ethics module/course? ☐

any other ethics module/course? ☐

Thank you for taking the time to fill in this questionnaire.

APPENDIX F – PILOT TEST OF MEASUREMENT TOOLS

1. Pilot Group – Change in opinions on the use of computing resources N=16

Q #	Questions	Survey 1							Survey 2							Change						
		% Disagree	% Indifferent	% Agree					% Disagree	% Indifferent	% Agree					% Disagree	% Indifferent	% Agree				
Q1	It is acceptable for me to make unauthorized copies of commercial software to use for my university work.	50%	17%	33%					72%	6%	22%					-22%	11%	11%				
Q2	It is acceptable to use the University's computing facilities for my own profit-making activities if this has no adverse affect on the University.	56%	11%	33%					67%	0%	33%					-11%	11%	0%				
Q3	It is acceptable to use the University's computing facilities for my own non-profit making activities if this has no adverse affect on the University.	39%	6%	56%					28%	17%	56%					11%	-11%	0%				
Q4	If an organization has purchased/developed software for use in the office, it is acceptable for their employees to make unauthorised copies of this software for use at home.	67%	22%	11%					94%	6%	0%					-28%	17%	11%				
Q5	If a project is significantly behind schedule or over budget, it is acceptable to cut down on testing effort.	83%	6%	11%					83%	11%	6%					0%	-6%	6%				
Q6	It is acceptable for me to use other peoples' access codes/passwords with their permission to access data I am not authorised to see.	61%	17%	22%					56%	22%	22%					6%	-6%	0%				
Q7	It is acceptable for me to use other peoples' codes/passwords without their permission to access data I am not authorised to see.	100%	0%	0%					100%	0%	0%					0%	0%	0%				
Q8	It is acceptable for me to make unauthorised copies of commercial software for my own private use.	50%	17%	33%					39%	33%	28%					11%	-17%	6%				
Q9	Organizations, including universities, should develop and administer an ethics awareness programme for all employees/students.	6%	6%	89%					6%	6%	89%					0%	0%	0%				
Q10	In an IS development project, ongoing consultation with representatives of all those affected by it should occur throughout the information system development life cycle.	0%	11%	89%					0%	17%	83%					0%	-6%	6%				
Q11	So long as a system development project provides me with an interesting challenge. I do not care about its overall objectives or purpose.	67%	17%	17%					56%	44%	0%					11%	-28%	17%				
Q12	Consideration of the overall working environment is not part of the IS professional's responsibility.	82%	6%	12%					89%	11%	0%					-7%	-5%	12%				
Q13	Consultation with all stakeholders in an information system development project is not always possible; to keep stakeholders informed is sufficient.	44%	11%	44%					28%	6%	67%					17%	6%	-22%				
Q14	I think that all organizations should require IS/IT employees to abide by a code of professional ethics.	0%	0%	100%					0%	0%	100%					0%	0%	0%				
Q15	I think that all organizations should require all employees to abide by a code of professional ethics.	0%	0%	100%					0%	0%	100%					0%	0%	0%				
Q16	Employers are entitles to use electronic surveillance to monitor employees' performance in the workplace:	0%	0%	0%					0%	0%	0%					0%	0%	0%				
(a)	with their consent & with their knowledge	11%	6%	83%					22%	0%	78%					-11%	6%	6%				
(b)	without their consent & with their knowledge	78%	17%	6%					67%	11%	22%					11%	6%	-17%				
(c)	with their consent & without their knowledge	78%	6%	17%					56%	0%	44%					22%	6%	-28%				
(d)	without their consent and without their knowledge	89%	6%	6%					100%	0%	0%					-11%	6%	6%				
Q17	Ryerson University is entitled to use electronic surveillance to monitor																					
17.1	Students' use of university IT resources from learning and teaching areas (e.g. labs, library):																					
(a)	with their consent & with their knowledge	11%	0%	89%					11%	6%	83%					0%	-6%	6%				
(b)	without their consent & with their knowledge	65%	18%	18%					44%	17%	39%					20%	1%	-21%				
(c)	with their consent & without their knowledge	65%	18%	18%					61%	22%	17%					4%	-5%	1%				
(d)	without their consent and without their knowledge	94%	6%	0%					94%	0%	6%					0%	6%	-6%				
17.2	Students' use of university IT resources from university residences:																					
(a)	with their consent & with their knowledge	22%	6%	72%					17%	11%	72%					6%	-6%	0%				
(b)	without their consent & with their knowledge	76%	6%	18%					50%	22%	28%					26%	-16%	-10%				
(c)	with their consent & without their knowledge	71%	18%	12%					56%	28%	17%					15%	-10%	-5%				
(d)	without their consent and without their knowledge	94%	6%	0%					94%	0%	6%					0%	6%	-6%				
17.3	My learning activities when I log into the VLE (Blackboard)	0%	0%	0%																		
(a)	with their consent & with their knowledge	17%	6%	78%					33%	0%	67%					-17%	6%	11%				
(b)	without their consent & with their knowledge	65%	18%	18%					67%	11%	22%					-2%	7%	-5%				
(c)	with their consent & without their knowledge	65%	18%	18%					72%	22%	6%					-8%	-5%	12%				
(d)	without their consent and without their knowledge	100%	0%	0%					94%	0%	6%					6%	0%	-6%				
Q18	Does Ryerson University have a policy concerning the use of computing resources by students?	Formal, written policy	Informal Policy	No Policy	Don't know				Formal, written policy	Informal Policy	No Policy	Don't know				Formal, written policy	Informal Policy	No Policy	Don't know			
(a)	Software (e.g. game playing)	50%	17%	0%	33%				72%	11%	0%	17%				-22%	6%	0%	17%			
(b)	Printers and other peripherals	47%	29%	0%	24%				67%	22%	0%	11%				-20%	7%	0%	12%			
(c)	Email	53%	18%	6%	24%				67%	11%	0%	22%				-14%	7%	6%	1%			
(d)	Internet	59%	18%	6%	18%				89%	11%	0%	0%				-30%	7%	6%	18%			
(e)	Other (please specify)	19%	6%	0%	69%				33%	17%	0%	50%				-15%	-10%	0%	19%			
Q19	Each week I access social networking sites for about: (in hours)	Up to 1	1 to 5	6 to 10	11 to 15	16 to 20	20 +	None	Up to 1	1 to 5	6 to 10	11 to 15	16 to 20	20 +	None	Up to 1	1 to 5	6 to 10	11 to 15	16 to 20	20 +	None
		28%	28%	22%	0%	6%	0%	0%	50%	17%	17%	0%	6%	0%	0%	-22%	11%	6%	0%	0%	0%	0%
Q20	I use social networking sites for career advice.	44%	22%	33%					35%	6%	59%					9%	16%	-25%				
Q21	I use/will use social networking sites to look for a job.	28%	22%	50%					22%	28%	50%					6%	-6%	0%				

2. **Pilot Group - Change in opinions ICT work experience versus no ICT work experience – N=16**

		Change NWE							Change WE							Difference						
Q #	Questions	%Disagree	% Indifferent	% Agree					%Disagree	% Indifferent	% Agree					%Disagree	% Indifferent	% Agree				
Q1	It is acceptable for me to make unauthorized copies of commercial software to use for my university work.	-43%	14%	29%					-9%	9%	0%					-34%	5%	29%				
Q2	It is acceptable to use the University's computing facilities for my own profit-making activities if this has no adverse affect on the University.	-14%	29%	-14%					-9%	0%	9%					-5%	29%	-23%				
Q3	It is acceptable to use the University's computing facilities for my own non-profit making activities if this has no adverse affect on the University.	14%	0%	-14%					9%	-18%	9%					5%	18%	-23%				
Q4	If an organization has purchased/developed software for use in the office, it is acceptable for their employees to make unauthorised copies of this software for use at home.	-43%	14%	29%					-18%	18%	0%					-25%	-4%	29%				
Q5	If a project is significantly behind schedule or over budget, it is acceptable to cut down on testing effort.	-14%	0%	14%					9%	-9%	0%					-23%	9%	14%				
Q6	It is acceptable for me to use other peoples' access codes/passwords with their permission to access data I am not authorised to see.	0%	0%	0%					9%	-9%	0%					-9%	9%	0%				
Q7	It is acceptable for me to use other peoples' codes/passwords without their permission to access data I am not authorised to see.	0%	0%	0%					0%	0%	0%					0%	0%	0%				
Q8	It is acceptable for me to make unauthorised copies of commercial software for my own	-14%	-29%	43%					27%	-9%	-18%					-42%	-19%	61%				
Q9	Organizations, including universities, should develop and administer an ethics awareness programme for all employees/students.	14%	0%	-14%					-9%	0%	9%					23%	0%	-23%				
Q10	In an IS development project, ongoing consultation with representatives of all those affected by it should occur throughout the information system development life cycle.	0%	0%	0%					0%	-9%	9%					0%	9%	-9%				
Q11	So long as a system development project provides me with an interesting challenge. I do not care about its overall objectives or purpose.	0%	-14%	14%					18%	-36%	18%					-18%	22%	-4%				
Q12	Consideration of the overall working environment is not part of the IS professional's	-14%	0%	14%					-2%	-8%	10%					-12%	8%	4%				
Q13	Consultation with all stakeholders in an information system development project is not always possible; to keep stakeholders informed is sufficient.	14%	0%	-14%					18%	9%	-27%					-4%	-9%	13%				
Q14	I think that all organizations should require IS/IT employees to abide by a code of	0%	0%	0%					0%	0%	0%					0%	0%	0%				
Q15	I think that all organizations should require all employees to abide by a code of professional	0%	0%	0%					0%	0%	0%					0%	0%	0%				
Q16	Employers are entitles to use electronic surveillance to monitor employees' performance in the workplace:	0%	0%	0%					0%	0%	0%					0%	0%	0%				
(a)	with their consent & with their knowledge	0%	14%	-14%					-18%	0%	18%					18%	14%	-32%				
(b)	without their consent & with their knowledge	43%	-14%	-29%					-9%	18%	-9%					52%	-32%	-19%				
(c)	with their consent & without their knowledge	57%	14%	-71%					0%	0%	0%					57%	14%	-71%				
(d)	without their consent and without their knowledge	-14%	14%	0%					-9%	0%	9%					-5%	14%	-9%				
Q17	Ryerson University is entitled to use electronic surveillance to monitor																					
17.1	Students' use of university IT resources from learning and teaching areas (e.g. labs, library):																					
(a)	with their consent & with their knowledge	0%	0%	0%					0%	-9%	9%					0%	9%	-9%				
(b)	without their consent & with their knowledge	0%	29%	-29%					35%	-18%	-16%					-35%	47%	-12%				
(c)	with their consent & without their knowledge	14%	0%	-14%					-4%	-8%	12%					18%	8%	-26%				
(d)	without their consent and without their knowledge	-14%	14%	0%					9%	0%	-9%					-23%	14%	9%				
17.2	Students' use of university IT resources from university residences:																					
(a)	with their consent & with their knowledge	29%	0%	-29%					-9%	-9%	18%					38%	9%	-47%				
(b)	without their consent & with their knowledge	29%	0%	-29%					25%	-27%	2%					3%	27%	-30%				
(c)	with their consent & without their knowledge	57%	-29%	-29%					-12%	1%	11%					69%	-29%	-39%				
(d)	without their consent and without their knowledge	-14%	14%	0%					9%	0%	-9%					-23%	14%	9%				
17.3	My learning activities when I log into the VLE (Blackboard)																					
(a)	with their consent & with their knowledge	-14%	14%	0%					-18%	0%	18%					4%	14%	-18%				
(b)	without their consent & with their knowledge	-14%	29%	-14%					7%	-9%	2%					-22%	38%	-16%				
(c)	with their consent & without their knowledge	14%	-29%	14%					-22%	11%	11%					36%	-39%	3%				
(d)	without their consent and without their knowledge	0%	0%	0%					9%	0%	-9%					-9%	0%	9%				
Q18	Does Ryerson University have a policy concerning the use of computing resources by students?	Formal, written policy	Informal Policy	No Policy	Don't know				Formal, written policy	Informal Policy	No Policy	Don't know				Formal, written policy	Informal Policy	No Policy	Don't know			
(a)	Software (e.g. game playing)	-29%	0%	0%	29%				-18%	9%	0%	9%				-10%	-9%	0%	19%			
(b)	Printers and other peripherals	-14%	0%	0%	14%				-24%	13%	0%	11%				9%	-13%	0%	3%			
(c)	Email	0%	0%	14%	-14%				-23%	11%	0%	12%				23%	-11%	14%	-26%			
(d)	Internet	-29%	0%	14%	14%				-31%	11%	0%	20%				2%	-11%	14%	-6%			
(e)	Other (please specify)	-6%	-26%	0%	31%				-18%	0%	0%	18%				12%	-26%	0%	14%			
Q19	Each week I access social networking sites for about: (in hours)	Up to 1	1 to 5	6 to 10	11 to 15	16 to 20	20 +	None	Up to 1	1 to 5	6 to 10	11 to 15	16 to 20	20 +	None	Up to 1	1 to 5	6 to 10	11 to 15	16 to 20	20 +	None
		0%	0%	0%	0%	0%	0%	0%	-36%	18%	9%	0%	0%	0%	9%	36%	-18%	-9%	0%	0%	0%	-9%
Q20	I use social networking sites for career advice.	43%	0%	-43%					-13%	27%	-15%					56%	-27%	-28%				
Q21	I use/will use social networking sites to look for a job.	0%	0%	0%					9%	-9%	0%					-9%	9%	0%				
	Courses	FT	PT	Cret	Other																	
		33%	61%	6%	0%																	
	IT Work Experience (in yrs)	None	Under 1	1 to 2	2 to 5	5 to 10	10 to 15	15 +														
		39%	17%	17%	11%	11%	6%	0%														
	Gender	Male	Female																			
		83%	17%																			
	Age	Under 25	25 - 40	41-50	Over 50																	
		59%	41%	0%	0%																	
		Yes	No																			
	Computer Ethics	22%	78%																			
	Ethics Module	17%	83%																			

3. Pilot Group - Change in approaches to making moral judgment

Comparison of Students Who Completed Both DIT2 Tests																		
ID	Start of Course						End of Course						Change					
	PI	MN	PC	N2	Type		PI	MN	PC	N2	Type		PI	MN	PC	N2	Type	
1	32	34	16	25.14	3		32	38	22	30.38	2		0	4	6	5.24	-1	
2	50	38	12	8.47	2		34	18	28	31.63	2		-16	-20	16	23.16	0	
3	20	50	26	16.72	5		28	30	34	34.14	6		8	-20	8	17.42	1	
4	16	46	28	25.31	5		20	50	24	29.82	5		4	4	-4	4.51	0	
5	36	46	12	17.03	3		30	48	4	3.98	3		-6	2	-8	-13.05	0	
6	18	42	38	33.15	5		20	52	18	22.88	3		2	10	-20	-10.27	-2	
7	14	40	38	40.5	5		10	28	62	62.42	7		-4	-12	24	21.92	2	
8	24	38	26	18.19	5		12	48	32	16.63	5		-12	10	6	-1.56	0	
9	18	30	46	51.95	7		10	30	50	57.77	7		-8	0	4	5.82	0	
10	28	30	38	31.81	6		50	30	12	7.67	2		22	0	-26	-24.14	-4	
11	44	46	4	-1.16	4		16	48	36	39.38	5		-28	2	32	40.54	1	
12	46	52	2	-2.3	4		43.75	39.58	6.25	1.19	2		-2.25	-12.42	4.25	3.49	-2	
13	26	32	40	40.31	6		18	38	44	50.17	7		-8	6	4	9.86	1	
14	20	10	70	64.07	7		22	6	64	64.13	7		2	-4	-6	0.06	0	
Average	24.7	36	31.2	32.3	4.5		28	38	28	26.4	4.8		-3.3	-2.2	2.9	5.9	-0.3	
Total													-46.3	-30.4	-40.3	83	-4	

APPENDIX G - FACTOR ANALYSIS MEASURING CHANGES IN MORAL SENSITIVITY

1. Factor Analysis: Rotated Component Matrix Moral Sensitivity

	Component									
	1	2	3	4	5	6	7	8	9	10
Zscore: #16b	.807									
Zscore: #17.1b	.765									
Zscore: #17.1d	.675									
Zscore: #16d	.633									
Zscore: #17.3b		.762								
Zscore: #17.3d		.724								
Zscore: #17.3c		.642			.554					
Zscore: #17.2b		.573								
Zscore: #17.2d		.568								
Zscore: #17.1a			.857							
Zscore: #17.3a			.759							
Zscore: #16a			.724							
Zscore: #17.2a			.660							
Zscore: #4				.718						
Zscore: #6				.703						
Zscore: #1				.671						
Zscore: #8				.605						
Zscore: #7				.602						
Zscore: #17.1c					.709					
Zscore: #16c					.697					
Zscore: #17.2c					.660					
Zscore: #14						.853				
Zscore: #15						.829				
Zscore: #9										
Zscore: #2							.807			
Zscore: #3							.782			
Zscore: #12								.725		
Zscore: #11								.635		
Zscore: #10										
Zscore: #5									.853	
Zscore: #13										.845

	Component									
	1	2	3	4	5	6	7	8	9	10
Zscore: #16b	.807	.154	.078	-.053	.086	.002	.044	.091	-.035	.093
Zscore: #17.1b	.765	.308	.190	.031	.043	.027	-.001	.045	-.006	-.042
Zscore: #17.1d	.675	.249	-.154	-.023	.275	.049	-.120	-.120	.105	-.085
Zscore: #16d	.633	.098	-.241	.092	.249	.088	-.107	-.065	.010	-.009
Zscore: #17.3b	.343	.762	.155	.061	-.034	-.075	.030	.108	-.191	.047
Zscore: #17.3d	.291	.724	-.183	.057	.160	-.026	-.077	.008	.107	.102
Zscore: #17.3c	.035	.642	.137	.057	.554	-.152	.010	.066	-.005	.131
Zscore: #17.2b	.472	.573	.165	-.087	.091	.124	.003	.025	-.037	-.247
Zscore: #17.2d	.446	.568	-.204	-.135	.185	.040	-.052	-.005	.176	-.135
Zscore: #17.1a	.059	-.098	.857	.081	.023	-.115	-.043	.011	-.047	.030
Zscore: #17.3a	-.102	.261	.759	.057	.129	.063	-.033	-.028	-.027	.039
Zscore: #16a	.112	-.187	.724	-.008	.073	-.060	.103	.008	.037	.056
Zscore: #17.2a	-.118	.208	.660	-.135	.251	.113	-.034	-.160	-.059	-.245
Zscore: #4	.009	.094	.003	.718	-.186	.164	.220	-.008	-.053	.061
Zscore: #6	-.008	-.132	.075	.703	.130	.079	-.001	.151	.081	-.081
Zscore: #1	.039	.040	.042	.671	-.095	.098	.388	-.041	-.130	-.142
Zscore: #8	-.051	.071	-.011	.605	-.058	.140	.401	-.105	-.048	-.265
Zscore: #7	-.082	.007	-.091	.602	.172	.068	-.109	.122	.398	.214
Zscore: #17.1c	.431	.141	.233	-.011	.709	-.062	-.025	-.013	-.020	-.009
Zscore: #16c	.489	.009	.153	.006	.697	-.046	.125	.037	-.094	.062
Zscore: #17.2c	.206	.415	.199	-.143	.660	.055	.032	.050	.014	-.209
Zscore: #14	.064	-.073	.071	.076	-.020	.853	.141	.058	.116	.000
Zscore: #15	-.019	.064	-.094	.190	.001	.829	-.020	.013	.091	.057
Zscore: #9	.146	-.044	-.042	.390	-.158	.464	.030	.128	-.214	.094
Zscore: #2	.042	-.039	-.026	.194	.012	.087	.807	.146	.036	.103
Zscore: #3	-.126	-.030	.025	.183	.067	-.030	.782	-.020	.034	.015
Zscore: #12	-.107	.128	-.170	-.039	.124	.153	.086	.725	-.046	-.026
Zscore: #11	.125	.055	.137	.177	-.156	-.098	.115	.635	.349	-.083
Zscore: #10	.068	-.105	-.038	.143	.044	.411	-.173	.444	-.170	-.131
Zscore: #5	.031	-.011	-.050	-.011	-.061	.084	.049	.033	.853	-.047
Zscore: #13	-.028	.028	.014	-.110	-.029	.071	.075	-.119	-.043	.845

2. Factor Analysis: Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.314	10.691	10.691
2	2.784	8.980	19.670
3	2.741	8.841	28.511
4	2.617	8.441	36.953
5	2.201	7.101	44.053
6	2.019	6.513	50.566
7	1.784	5.754	56.320
8	1.309	4.222	60.542
9	1.249	4.029	64.571
10	1.150	3.710	68.282

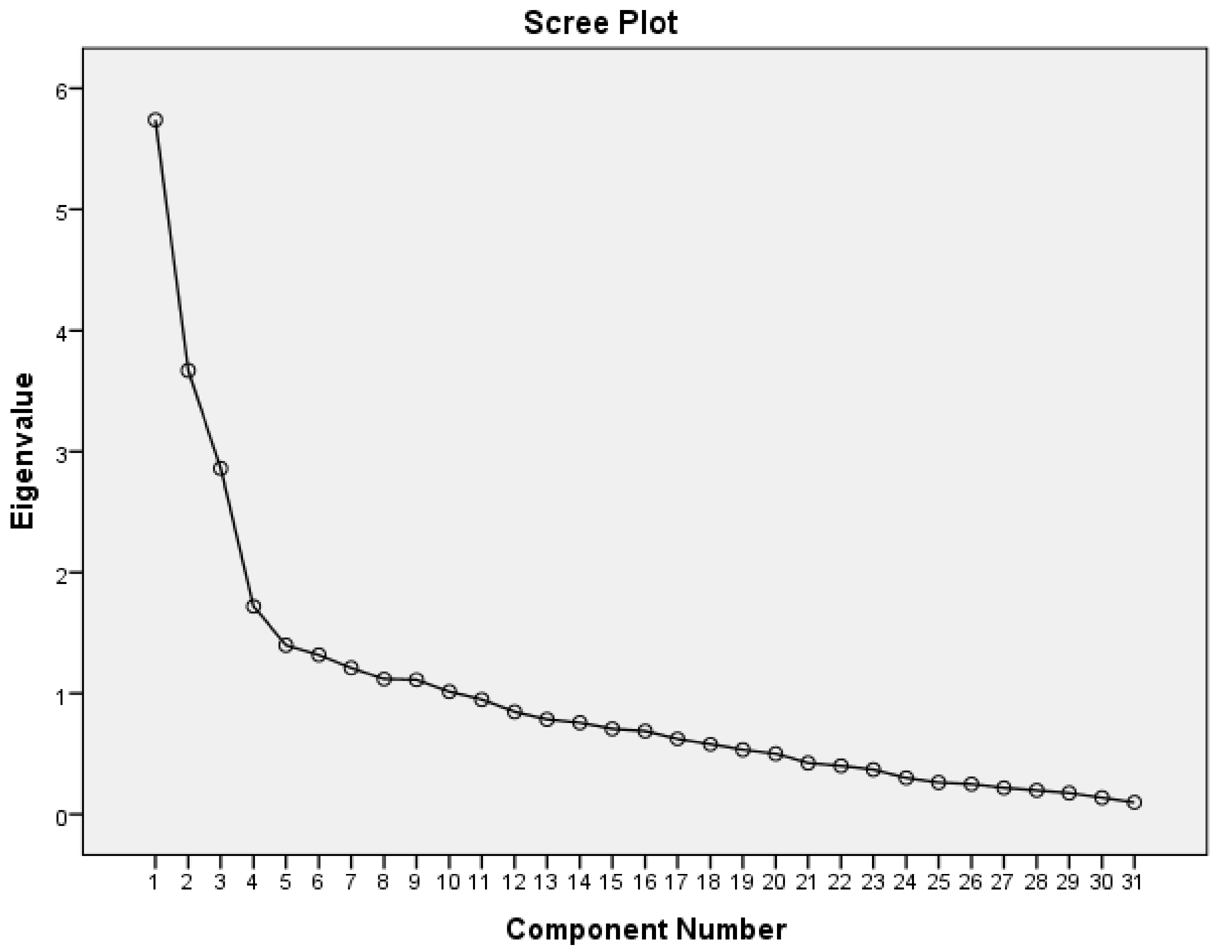
3. Factor Analysis: Component Score Coefficient Matrix

	Component									
	1	2	3	4	5	6	7	8	9	10
Zscore: #1	.026	.026	-.002	.241	-.051	-.042	.113	-.094	-.111	-.118
Zscore: #2	.041	-.030	-.027	-.109	.014	.017	.501	.085	.019	.079
Zscore: #3	-.045	.002	-.027	-.079	.071	-.022	.485	-.044	.036	-.010
Zscore: #4	.011	.084	.012	.292	-.106	-.018	-.017	-.069	-.054	.070
Zscore: #5	.024	.001	.044	-.061	-.061	.045	.054	-.068	.703	-.045
Zscore: #6	-.010	-.100	.012	.345	.133	-.076	-.168	.061	.033	-.042
Zscore: #7	-.083	-.001	-.028	.326	.166	-.060	-.219	.026	.287	.216
Zscore: #8	-.035	.057	-.030	.198	-.012	.003	.144	-.164	-.039	-.236
Zscore: #9	.082	-.024	.006	.116	-.086	.180	-.066	.062	-.198	.102
Zscore: #10	.013	-.092	-.011	.023	.058	.163	-.150	.335	-.194	-.082
Zscore: #11	.081	.003	.104	.014	-.167	-.148	.029	.484	.236	-.028
Zscore: #12	-.118	.052	-.074	-.106	.103	.034	.057	.583	-.120	.014
Zscore: #13	.002	.059	.034	-.052	-.013	.074	.052	-.046	-.018	.740
Zscore: #14	.011	-.034	.059	-.137	.000	.473	.093	-.049	.098	.005
Zscore: #15	-.069	.058	-.011	-.027	.038	.446	-.042	-.090	.064	.058
Zscore: #16a	.108	-.140	.286	-.025	-.038	-.021	.049	.031	.076	.069
Zscore: #16b	.346	-.101	.045	-.045	-.125	-.032	.055	.076	-.032	.109
Zscore: #16c	.118	-.210	-.023	.010	.368	-.030	.081	.037	-.088	.076
Zscore: #16d	.225	-.116	-.108	.073	.079	.011	-.070	-.084	-.011	.004
Zscore: #17.1a	.074	-.075	.340	.062	-.088	-.063	-.077	.043	.012	.060
Zscore: #17.1b	.299	-.002	.091	.001	-.182	-.020	.007	.017	.004	-.003
Zscore: #17.1c	.058	-.128	.011	.038	.354	-.026	-.017	-.012	-.018	.021
Zscore: #17.1d	.212	-.046	-.072	.020	.045	.016	-.048	-.136	.083	-.062
Zscore: #17.2a	-.137	.100	.219	-.071	.073	.135	-.004	-.136	.009	-.199
Zscore: #17.2b	.083	.197	.060	-.077	-.138	.077	.040	-.017	-.018	-.187
Zscore: #17.2c	-.109	.075	-.004	-.075	.316	.072	.057	.014	.010	-.157
Zscore: #17.2d	.050	.189	-.084	-.067	-.029	.033	.022	-.053	.135	-.102
Zscore: #17.3a	-.110	.147	.287	.028	-.027	.063	-.062	-.021	.026	.071
Zscore: #17.3b	.017	.350	.063	.028	-.221	-.061	.005	.088	-.155	.085
Zscore: #17.3c	-.208	.259	-.017	.074	.254	-.071	-.021	.048	-.015	.153
Zscore: #17.3d	-.047	.317	-.077	.057	-.033	-.025	-.054	-.031	.073	.118

4. Factor Analysis: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.731
Bartlett's Test of Sphericity	Approx. Chi-Square	3206.494
	df	465
	Sig.	0.000

5. Factor Analysis: Scree Plot



APPENDIX H – COMPARING DIFFERENCES AT START BETWEEN AI AND CONTROL

1. Comparing Difference in Demographics Between AI and Control

Independent Samples Test										
		Test for		t-test for Equality of Means						
									Confidence	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Course	Equal Var Not Assumed	27.141	.000	2.272	124.621	.025	.072	.032	.009	.135
IT Work	Equal Var Not Assumed	32.391	.000	3.512	167.565	.001	.503	.143	.220	.785
Gender	Equ Var Ass	.738	.391	-.428	253	.669	-.021	.050	-.120	.077
Computer Ethics	Equal Var Not Assumed	24.549	.000	13.547	211.547	.000	.648	.048	.554	.743
Other Ethics	Equal Var Not Assumed	6.093	.014	11.821	253.268	.000	.594	.050	.495	.692
Utilizer	Equal Var Not Assumed	.052	.819	.702	248.783	.483	.14082	.20054	-.25415	.53580
ConTran	Equal Var Not Assumed	16.670	.000	2.017	222.565	.045	.106	.052	.002	.209
Religious	Equ Var Ass	1.529	.218	1.435	235	.153	.432	.301	-.161	1.024
Antisocial	Equ Var Ass	.161	.689	-.492	257	.623	-.140	.285	-.701	.421
DIT2_AGE	Equal Var Not Assumed	7.814	.006	1.538	128.938	.127	1.422	.925	-.407	3.252
Political	Equ Var Ass	.123	.726	-1.088	224	.278	-.131	.120	-.368	.106

2. Comparing Moral Judgment for Start – AI and Control

Year		N	Mean	Std. Deviation	Std. Error Mean
Personal Interest	10	116	33.6565	13.00941	1.20789
	13	145	35.3655	13.33011	1.10701
Maintain Norms	10	116	33.5618	13.70117	1.27212
	13	145	31.6759	12.60670	1.04693
Post-Conventional	10	116	27.9165	14.51649	1.34782
	13	145	27.7034	11.57591	.96133
N2	10	116	25.5799	14.43602	1.34035
	13	145	25.0099	12.21388	1.01431
Type Start	10	116	3.82	1.932	.179
	13	145	3.41	1.793	.149

		Test for		t-test for Equality of Means						
									Interval of the	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Personal Interest	Equal variances assumed	.004	.952	-1.040	259	.299	-1.70905	1.64289	-4.94417	1.52607
	Equal variances			-1.043	249.017	.298	-1.70905	1.63843	-4.93601	1.51790
Maintain Norms	Equal variances assumed	.693	.406	1.155	259	.249	1.88595	1.63234	-1.32839	5.10029
	Equal variances			1.145	236.786	.253	1.88595	1.64753	-1.35974	5.13164
Post-Conventional	Equal variances assumed	8.073	.005	.132	259	.895	.21302	1.61492	-2.96703	3.39307
	Equal variances			.129	216.932	.898	.21302	1.65553	-3.04996	3.47600
N2	Equal variances assumed	4.824	.029	.345	259	.730	.56998	1.65011	-2.67936	3.81932
	Equal variances not assumed			.339	225.396	.735	.56998	1.68088	-2.74227	3.88223
Type Start	Equal variances assumed	2.268	.133	1.752	259	.081	.405	.231	-.050	.860
	Equal variances not assumed			1.738	237.921	.084	.405	.233	-.054	.864

3. Comparing Moral Sensitivity for Start – AI and Control

Year		N	Mean	Std. Deviation	Std. Error Mean
FAC1_S	10	116	-.0282985	1.00268561	.09309702
	13	145	.0332932	1.00323524	.08331415
FAC2_S	10	116	-.0988510	.94496621	.08773791
	13	145	.0636528	1.03724853	.08613880
FAC3_S	10	116	-.0500559	1.06945624	.09929652
	13	145	.0324579	.94501217	.07847899
FAC4_S	10	116	.2302229	1.00614795	.09341849
	13	145	-.1872380	.96543417	.08017494
FAC5_S	10	116	-.0472863	1.17673341	.10925695
	13	145	.0428099	.83747382	.06954841
FAC6_S	10	116	-.0280186	.92760547	.08612601
	13	145	.0224454	1.05755364	.08782505
FAC7_S	10	116	.1988529	.85831445	.07969250
	13	145	-.1542461	1.08332195	.08996499
FAC8_S	10	116	-.0834909	1.02076747	.09477588
	13	145	.0558782	.98401858	.08171830
FAC9_S	10	116	.0370252	1.05074552	.09755927
	13	145	-.0267568	.96560448	.08018909
FAC10_S	10	116	-.0947189	1.01127879	.09389488
	13	145	.0821552	.98790158	.08204076

Independent t-test: Compare Moral Sensitivity for Start for Control and AI (Cont.)

		Test for		t-test for Equality of Means						
									Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
FAC1_S	Equal variances assumed	.057	.811	-.493	259	.622	-.06159171	.12494083	-.30762089	.18443747
	Equal variances			-.493	246.631	.622	-.06159171	.12493320	-.30766379	.18448037
FAC2_S	Equal variances assumed	.731	.393	-1.308	259	.192	-.16250380	.12423541	-.40714389	.08213629
	Equal variances			-1.322	254.618	.187	-.16250380	.12295460	-.40464133	.07963373
FAC3_S	Equal variances assumed	.434	.510	-.661	259	.509	-.08251375	.12483934	-.32834307	.16331557
	Equal variances			-.652	231.427	.515	-.08251375	.12656520	-.33188106	.16685355
FAC4_S	Equal variances assumed	1.401	.238	3.407	259	.001	.41746087	.12254022	.17615890	.65876284
	Equal variances not assumed			3.391	241.965	.001	.41746087	.12310579	.17496504	.65995670
FAC5_S	Equal variances assumed	11.689	.001	-.722	259	.471	-.09009627	.12486530	-.33597673	.15578419
	Equal variances not assumed			-.696	200.755	.487	-.09009627	.12951473	-.34548002	.16528748
FAC6_S	Equal variances assumed	4.007	.046	-.404	259	.686	-.05046401	.12480952	-.29623463	.19530661
	Equal variances not assumed			-.410	256.778	.682	-.05046401	.12300784	-.29269665	.19176862
FAC7_S	Equal variances assumed	7.994	.005	2.864	259	.005	.35309901	.12329131	.11031800	.59588002
	Equal variances not assumed			2.938	258.980	.004	.35309901	.12018566	.11643346	.58976456
FAC8_S	Equal variances assumed	1.046	.307	-1.118	259	.264	-.13936919	.12463079	-.38478785	.10604946
	Equal variances not assumed			-1.114	242.509	.267	-.13936919	.12514131	-.38587183	.10713345
FAC9_S	Equal variances assumed	1.895	.170	.510	259	.611	.06378198	.12510383	-.18256817	.31013214
	Equal variances not assumed			.505	236.625	.614	.06378198	.12628579	-.18500608	.31257005
FAC10_S	Equal variances assumed	.129	.720	-1.422	259	.156	-.17687409	.12436256	-.42176455	.06801638
	Equal variances not assumed			-1.419	244.031	.157	-.17687409	.12468735	-.42247484	.06872667

APPENDIX I – COMPARE DIFFERENCES AT END BETWEEN AI AND CONTROL

1. Independent t-test: Comparing Moral Judgment at End for AI and Control

Year		N	Mean	Deviation	Mean
Personal Interest_A	10	116	31.2406	13.75330	1.27696
	13	145	30.4757	12.69512	1.05427
Maintain Norms_A	10	116	33.4882	13.83042	1.28412
	13	145	34.8744	12.30031	1.02149
Post-Conventional_A	10	116	28.9925	15.24832	1.41577
	13	145	28.4631	11.82505	.98202
N2_A	10	116	28.6266	15.52218	1.44120
	13	145	27.4601	12.12964	1.00731
Type End	10	116	3.94	1.953	.181
	13	145	3.76	1.701	.141

		Test for		t-test for Equality of Means						
								Std.	Interval of the	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Error Differenc	Lower	Upper
Personal Interest_A	Equal variances	.531	.467	.466	259	.642	.76488	1.64124	-2.46700	3.99676
	Equal variances not assumed			.462	237.195	.645	.76488	1.65594	-2.49734	4.02710
Maintain Norms_A	Equal variances	.960	.328	-.856	259	.393	-1.38622	1.61963	-4.57554	1.80309
	Equal variances not assumed			-.845	232.302	.399	-1.38622	1.64085	-4.61908	1.84663
Post-Conventional_A	Equal variances assumed	9.748	.002	.316	259	.752	.52940	1.67581	-2.77056	3.82935
	Equal variances not assumed			.307	212.917	.759	.52940	1.72301	-2.86695	3.92574
N2_A	Equal variances assumed	6.688	.010	.682	259	.496	1.16650	1.71154	-2.20380	4.53680
	Equal variances not assumed			.663	214.015	.508	1.16650	1.75833	-2.29937	4.63237
Type End	Equal variances assumed	4.170	.042	.800	259	.425	.181	.226	-.265	.627
	Equal variances not assumed			.788	229.440	.432	.181	.230	-.272	.634

2. **Independent t-test: Comparing Moral Sensitivity at End for AI and Control**

Year		N	Mean	Std. Deviation	Std. Error Mean
FAC1_E	10	116	-.0180259	.82040240	.07617245
	13	145	.0201517	.92927589	.07717216
FAC2_E	10	116	.0782845	.90922219	.08441916
	13	145	-.0533241	.79333633	.06588300
FAC3_E	10	116	-.3207328	1.27655930	.11852556
	13	145	.2526138	.83127408	.06903356
FAC4_E	10	116	.2039569	.95525043	.08869278
	13	145	-.1506966	.81245038	.06747033
FAC5_E	10	116	.0707586	1.01545011	.09428218
	13	145	-.0570621	.95183112	.07904527
FAC6_E	10	116	.2323707	1.01305053	.09405938
	13	145	-.1924690	.85014235	.07060048
FAC7_E	10	116	.1791810	.97391686	.09042591
	13	145	-.1385586	.98407563	.08172303
FAC8_E	10	116	.0841724	1.09453875	.10162537
	13	145	-.0609724	.93093301	.07730978
FAC9_E	10	116	.1312155	.99184183	.09209020
	13	145	-.1063310	.90076970	.07480485
FAC10_E	10	116	.0215690	.89962527	.08352811
	13	145	-.0110276	.93689590	.07780497

Independent t-test: Compare Moral Sensitivity for End for Control and AI (Cont.)

		Test for		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	of the Difference Lower	Upper
FAC1_E	Equal variances	.184	.669	-.347	259	.729	-.03817759	.10994312	-.25467380	.17831862
	Equal variances not assumed			-.352	256.458	.725	-.03817759	.10843332	-.25171068	.17535551
FAC2_E	Equal variances	2.971	.086	1.248	259	.213	.13160862	.10547831	-.07609563	.33931288
	Equal variances not assumed			1.229	229.697	.220	.13160862	.10708484	-.07938552	.34260276
FAC3_E	Equal variances assumed	15.612	.000	-4.373	259	.000	-.57334655	.13110850	-.83152088	-.31517222
	Equal variances not assumed			-4.180	188.897	.000	-.57334655	.13716391	-.84391636	-.30277674
FAC4_E	Equal variances assumed	3.834	.051	3.240	259	.001	.35465345	.10946120	.13910623	.57020066
	Equal variances not assumed			3.182	226.134	.002	.35465345	.11143902	.13506176	.57424514
FAC5_E	Equal variances assumed	1.370	.243	1.046	259	.296	.12782069	.12215017	-.11271321	.36835459
	Equal variances not assumed			1.039	239.131	.300	.12782069	.12303367	-.11454751	.37018889
FAC6_E	Equal variances assumed	1.402	.237	3.683	259	.000	.42483966	.11535271	.19769107	.65198824
	Equal variances not assumed			3.612	224.240	.000	.42483966	.11760780	.19308178	.65659753
FAC7_E	Equal variances assumed	.002	.965	2.604	259	.010	.31773966	.12202429	.07745364	.55802567
	Equal variances not assumed			2.607	247.641	.010	.31773966	.12188314	.07767989	.55779942
FAC8_E	Equal variances assumed	3.369	.068	1.157	259	.248	.14514483	.12542316	-.10183414	.39212380
	Equal variances not assumed			1.137	226.136	.257	.14514483	.12768915	-.10646789	.39675755
FAC9_E	Equal variances assumed	1.065	.303	2.024	259	.044	.23754655	.11737991	.00640607	.46868704
	Equal variances not assumed			2.002	235.090	.046	.23754655	.11864388	.00380550	.47128760
FAC10_E	Equal variances assumed	.554	.457	.284	259	.776	.03259655	.11466921	-.19320611	.25839922
	Equal variances not assumed			.286	250.520	.775	.03259655	.11415147	-.19222232	.25741542

APPENDIX J–MEASURING CHANGE IN MORAL ATTITUDE FOR CONTROL GROUP

1. Paired t-test: Comparing Moral Judgment Start to End for Control Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Personal Interest	33.6565	116	13.00941	1.20789
	Personal Interest_A	31.2406	116	13.75330	1.27696
Pair 2	Maintain Norms	33.5618	116	13.70117	1.27212
	Maintain Norms_A	33.4882	116	13.83042	1.28412
Pair 3	Post-Conventional	27.9165	116	14.51649	1.34782
	Post-Conventional_A	28.9925	116	15.024832	1.41577
Pair 4	N2	25.5799	116	14.43602	1.34035
	N2_A	28.6266	116	15.52218	1.44120
Pair 5	Type Start	3.82	116	1.932	.179
	Type End	3.94	116	1.953	.181

		N	Correlation	Sig.
Pair 1	Personal Interest & Personal Interest_A	116	.256	.006
Pair 2	Maintain Norms & Maintain Norms_A	116	.310	.001
Pair 3	Post-Conventional & Post-Conventional_A	116	.507	.000
Pair 4	N2 & N2_A	116	.473	.000
Pair 5	Type Start & Type End	116	.285	.002

Paired t- test: Compare Moral Judgment for Start and End for the Control Group (Cont.)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Personal Interest - Personal Interest_A	2.41586	16.33573	1.51673	-.58850	5.42022	1.593	115	.114
Pair 2	Maintain Norms - Maintain Norms_A	.07362	16.17066	1.50141	-2.90038	3.04762	.049	115	.961
Pair 3	Post-Conventional - Post-Conventional_A	-1.07603	14.79313	1.37351	-3.79669	1.64462	-.783	115	.435
Pair 4	N2 - N2_A	-3.04672	15.40945	1.43073	-5.88073	-.21272	-2.129	115	.035
Pair 5	Type Start - Type End	-.121	2.322	.216	-.548	.306	-.560	115	.577

2. Paired t-test: Comparing Moral Sensitivity Start to End for Control

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	FAC1_S	-.0282985	116	1.00268561	.09309702
	FAC1_E	-.0180259	116	.82040240	.07617245
Pair 2	FAC2_S	-.0988510	116	.94496621	.08773791
	FAC2_E	.0782845	116	.90922219	.08441916
Pair 3	FAC3_S	-.0500559	116	1.06945624	.09929652
	FAC3_E	-.3207328	116	1.27655930	.11852556
Pair 4	FAC4_S	.2302229	116	1.00614795	.09341849
	FAC4_E	.2039569	116	.95525043	.08869278
Pair 5	FAC5_S	-.0472863	116	1.17673341	.10925695
	FAC5_E	.0707586	116	1.01545011	.09428218
Pair 6	FAC6_S	-.0280186	116	.92760547	.08612601
	FAC6_E	.2323707	116	1.01305053	.09405938
Pair 7	FAC7_S	.1988529	116	.85831445	.07969250
	FAC7_E	.1791810	116	.97391686	.09042591
Pair 8	FAC8_S	-.0834909	116	1.02076747	.09477588
	FAC8_E	.0841724	116	1.09453875	.10162537
Pair 9	FAC9_S	.0370252	116	1.05074552	.09755927
	FAC9_E	.1312155	116	.99184183	.09209020
Pair 10	FAC10_S	-.0947189	116	1.01127879	.09389488
	FAC10_E	.0215690	116	.89962527	.08352811

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	FAC1_S & FAC1_E	116	.234	.012
Pair 2	FAC2_S & FAC2_E	116	.091	.332
Pair 3	FAC3_S & FAC3_E	116	.277	.003
Pair 4	FAC4_S & FAC4_E	116	.418	.000
Pair 5	FAC5_S & FAC5_E	116	.223	.016
Pair 6	FAC6_S & FAC6_E	116	.069	.464
Pair 7	FAC7_S & FAC7_E	116	.400	.000
Pair 8	FAC8_S & FAC8_E	116	.325	.000
Pair 9	FAC9_S & FAC9_E	116	.207	.026
Pair 10	FAC10_S & FAC10_E	116	.235	.011

Paired t-test: Compare Moral Sensitivity for Start and End for Control (Cont.)

		Paired Differences					t	df	Sig. (2-tailed)
					of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	FAC1_S - FAC1_E	-.01027269	1.13743960	.10560862	-.21946303	.19891765	-.097	115	.923
Pair 2	FAC2_S - FAC2_E	-.17713545	1.25034644	.11609175	-.40709087	.05281997	-1.526	115	.130
Pair 3	FAC3_S - FAC3_E	.27067686	1.42026377	.13186818	.00947137	.53188234	2.053	115	.042
Pair 4	FAC4_S - FAC4_E	.02626600	1.05922346	.09834643	-.16853935	.22107135	.267	115	.790
Pair 5	FAC5_S - FAC5_E	-.11804496	1.37192839	.12738035	-.37036093	.13427100	-.927	115	.356
Pair 6	FAC6_S - FAC6_E	-.26038930	1.32573159	.12309109	-.50420906	-.01656955	-2.115	115	.037
Pair 7	FAC7_S - FAC7_E	.01967189	1.00858112	.09364441	-.16581966	.20516343	.210	115	.834
Pair 8	FAC8_S - FAC8_E	-.16766336	1.23029703	.11423021	-.39393143	.05860470	-1.468	115	.145
Pair 9	FAC9_S - FAC9_E	-.09419030	1.28709677	.11950394	-.33090459	.14252400	-.788	115	.432
Pair 10	FAC10_S - FAC10_E	-.11628786	1.18535519	.11005747	-.33429052	.10171480	-1.057	115	.293

3. Wilcoxon Test For Changes in Type

Ranks

		N	Mean Rank	Sum of Ranks
Type End - Type Start	Negative Ranks	36[m]	42.56	1532.00
	Positive Ranks	44[n]	38.82	1708.00
	Ties	36[o]		
	Total	116		

m. Type End < Type Start

n. Type End > Type Start

o. Type End = Type Start

Test Statistics[a]

	Personal Interest_A - Personal Interest	Maintain Norms_A - Maintain Norms	Post-Conventional_A - Post-Conventional	N2_A - N2	Type End - Type Start
Z	-1.713[b]	-.021[b]	-.917[c]	-2.361[c]	-.426[c]
Asymp. Sig. (2-tailed)	.087	.983	.359	.018	.670
Exact Sig. (2-tailed)	.087	.984	.361	.018	.673
Exact Sig. (1-tailed)	.043	.492	.181	.009	.336
Point Probability	.000	.001	.000	.000	.001

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

4. Discussions in the Online Forum - Representative Responses

1. Use of computing facilities

Question: Comment on whether you think it is acceptable or not for someone to use the University's computing facilities for their own profit-making activities if this has no adverse affect on the university. Do you think it is different it is the employer's facilities rather than the universities?

- If your using the university facilities for profit-making and it has no affect on the university, then I think it would be ethical to do. Since you are doing it without causing any harm to other people who are in the organization. While if you were at work, then I would consider this a different situation since your workplace might be impacted by the profit-making activity, which makes this unethical.

- I do not think it is acceptable to use the universities computing environment for personal financial gain. The IT network at the university is made for school use only. Although there may not be an apparent adverse affect on the network, looking at a simple web page has a negative affect against bandwidth. If a large number of students are all using the schools network in such a way the primary network functions will be diminished.

- It is also not acceptable to use a professional work environment for personal financial gain as its computer facilities are made for supporting the business activities of the specific business.

- I think using a University's or Employer's computing facilities for my own profit-making activities is acceptable as long as it has no adverse effect on anyone else. The main concern would be making sure that there are no policies against this sort of usage and to be sure that there are no negative effects by my actions. As long as I was sure of those two things, I would have no problem using these facilities for my own gains.

- If it has no effect on someone else, what is it to them? Greed? Power Hungry? Why limit the capacity of society for no reason? I/we feel that it is reasonable to say that it would be for "no reason" because of the fact that there is no adverse effect. We do feel there is a slight difference between workplace and university. The workplace has a little more leeway in deciding what is acceptable use of their property. It is really up to them on this topic.

Where as in a University, the students are paying the University, not the other way around, so in a sense they own the assets of the University, so really, the students can do whatever they want with it. Besides, part of University for many is to become a person who earns money and thus the University would be acting counter productively if they were to put restrictions on the use of their equipment regarding profit making activities.

It is is important to note that when we considered this question the fact that there is "no adverse effect" played a big role in the conclusion we came to.

2. Use of Access Codes

Question: Comment on whether you think it is acceptable for someone to use other peoples' access codes/passwords with their permission to access data they are not authorized to see. Do you think there is a difference between the university and the employer's environment?

- As a group we do not feel as though it is acceptable for someone to use other peoples access codes/passwords with their permission to access data they are not authorized to see. Codes/Passwords have been created for a reason and obviously sharing this information with one another has been prohibited for obvious reasons. The situation may deal with personal information and financial information of that person's password you are using and thus puts this information at risk of becoming public. There isn't really a difference between the university and employer's environment seeing as how both would have information that if leaked could potentially be harmful to the specified person. The university environment would deal with student information, finances and grades while the workplace environment includes employee information.

- It is unacceptable for anyone to access other peoples' access codes/passwords with their permission. There are no exceptions for accessing someone else's personal information. There is absolutely no difference between the university and the employer's environment because the information accessed is personal and can be used wrongly under any circumstances. For example, in a university, if someone else were to access another student's log in, they could access their grades, standings, account balance, and course enrolments. Anyone can easily misuse this information and possibly create complications and share this information with other people. In the workplace, employee's personal documents could be misused of accessible to other people.

- In my opinion it is not acceptable to use other people's access codes/passwords even with that person's permission, because according to the codes of ethics of each organization access codes/passwords are for the strict use of the individual that owns that username/password and that has been granted that account. So if a person succeeds in retrieving another's access code/password by deceiving the legal owner both parties have committed a misdemeanour. The first party has committed a wrong by handing out private information to an unauthorized party and the second by finding the privilege of accessing data that he/she is not authorized to access. There is no difference in this case between a university and an employer's environment because in both cases confidential information could be given away and the consequences could be inevitable. In both cases the person whom has given unauthorized access might commit a public wrong on behalf of the authorized user. In this case the authorized user will be blamed for a crime that he/she has not directly committed.

3. Copying Commercial Software

Question: Comment on whether you think it is acceptable for someone to make unauthorized copies of commercial software for their own private use. Does your view change between the university and the work environment? How do you think a company should handle the situation if a company employee has been found with an unauthorized copy of the software for his home computer?

- I don't think it's acceptable to make unauthorized copies of commercial software for their own private use because they can easily illegal distribute this software locally or globally for profit or not for profit, without the company's consent. My views however, do not change between the university and work environment because both areas require a level of professionalism which should not be compromised. If a company finds an employee with authorized copies, I think that employee should either be removed from the company or severely reprimanded with regular monitoring on that employee's performance/activities.

- I personally believe that it is not acceptable to make unauthorized copies of commercial software for a person's own private use. However, despite this belief, I recognize how expensive software can be and as a student with minimal financial security, I believe that if I find a torrent website that provides the specific software I need, I'm going to download it. I would not download it at the university, or obtain any unauthorized copies from a workplace because I would be jeopardizing both my career as well as the university's reputation. I also believe that an employee should be terminated if found with unauthorized software.

- It is unacceptable in the eyes of the law to make unauthorized copies of commercial software. But I believe that this sorta depends on the type of software being copied and whether it occurs in a university or work environment. Pirating software for work related use can get the company in a lot of trouble aswell as yourself. After all it is unethical for a company to be using software without permission for profit. In an university environment though, I think it should be ok to copy vital software such as Microsoft Word because it is quite needed to complete university work. This may seem ethically unacceptable but it is also unacceptable for companies to charge over 200$ for 1 program. Employees found with unauthorized software on their home computer does not matter what so ever unless it effects the company's profits and even then the company is breaching their employee's home privacy which is really what I believe is unethical.

4. Surveillance in the Learning and Teaching Areas

Question: Comment on whether you think it is acceptable for the university to use surveillance of students' use of university IT resources in the learning and teaching areas? Why or why not? Under what conditions?

- Under certain situations for universities to use surveillance of students. In terms of video surveillance, it is acceptable in certain areas to prevent theft and for the very own safety of the students. With regards to surveillance of the teaching and learning process, it is unethical to do so without consent and making the student aware.

- I think it is acceptable for the university to use surveillance of students use of university IT resources in the learning and teaching area becaues the programs being used is owned by the university. Also, because this way the university can keep track of the usefullness of certain programs and too see if it benefits the students in anyway. The majority of the time the university already knows what your doing or what kind of resources your using so it doesnt matter if they see what your doing.

- I don't beleive its accptable for blackbord virtual learing enviornment to have surveillance of students without their knowledge or concent because they might have their personal informaiton which they are not comfortable sharing.

- We believe that it is acceptable for the university to use surveillance students' use of IT resources.
  Why:
  1) Protecting and ensuring the well being of everyone
  2) Prevent/Deteriorate damage/criminal acts to school resources, learning and teaching environments.
  3) Security + Safety of everyone.

  Conditions: Surveillance on property, and good enough to view the faces of the students. (High Defi Cameras)

- Its not acceptable for the university to use surveilance of students in certain environments because it is an invasion of privacy. In places where valuable items are stores such as vending machines or tim hortons are acceptable places for cameras but to have cameras watching students in classes, study halls, and bathrooms. Thats just unacceptable.
  The University therefore they should have control on what and how it is used. The surveillance of university IT resources should be acceptable under any circumstance.

- It depends on the location and usage of the space under surveillance.

  If the university is installing cameras in every classroom and common area, many students would consider that a violation of privacy.

If the university is installing cameras in every computer lab, which already has a strict usage policy, it would not be considered such an invasion. Also, there is expensive equipment that needs to be protected from theft, so surveillance would keep costs down for everybody.

Monitoring network traffic with student's permission is acceptable but doing so without the users being aware seems unethical. Since there is a Internet usage agreement as part of Ryerson's computer policy, students have been informed of what is acceptable before being allowed to use the university's resources.

5. Surveillance in the VLE

Question: Comment on whether you think it is acceptable for the university to use surveillance of students' use of the Blackboard Virtual Learning Environment. Why or why not? Under what conditions?

- I think it is acceptable for the university to use surveillance of students' use of the Blackboard Virtual Learning Enrvironment under the condition that it is stated in a written policy where the student has agreed or inform students that they are to use blackboard at their own risk.

- It is acceptable because it is a university resource that is used explicitly for learning purposes. However, there is no real way to abuse the blackboard resource because everything that you are capable of doing is set a way so that it is what the university allowed you to do. Some people might think that things like account balance are confidential but the university needs to know things like this so that they can make sure they've collected their money and you're not getting a free education. They also need to make sure that work isn't plagarised so they need access to your work, especially if they're marking it. Since it is not an open resource like the Internet, it shouldn't matter to the individual if it is monitored or not by the university. By allowing it to be monitored, they can track down someone that has accessed your account illegally and protect your identity.

- I think that it is acceptable for the University to use surveillance of students' use of Blackboard. It's acceptable as long as they have this information in their records already, information such as grades, student fees or any other personal academic information. Since the University owns this information and is authorized to view it. However it is unacceptable if someone with access to the surveillance of the students is looking at their academic information out of curiosity.

- I think that if the students are not aware of the survailance it is wrong to use it, and if the students agree to be monitored by survailance it is fine.

- I believe that it is not acceptable for the University to use surveillance on Blackboard. Not only does Blackboard contain Sensitive information, the university has nothing to worry about when it comes to the students use of the Blackboard Virtual Learning Environment, there is nothing that a student could do that justifies monitoring.

- It is not acceptable for a university to use surveillance of students' use of the Blackboard Virtual Learning Environment. The main reasons include that it is an invasion of the student's privacy. Students have access to RAMSS and their payment inquiry, grades, etc that they might not want others or the university to monitor.

Also, besides looking at courses and documents available to students on blackboard, and their RAMSS information, there is nothing else someone can do on blackboard that would require surveillance.

5. Descriptive Analysis of Survey Questions – Control Group

W2010 Start End Compare

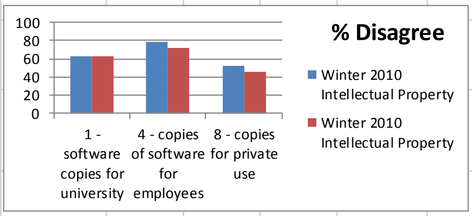
Intellectual Property — Winter 2010 Start / Winter 2010 End

Question

1. It is acceptable for me to make unauthorized copies of commercial software to use for my university work.

4. If an organization has purchased/developed software for use in the office, it is acceptable for their employees to make unauthorised copies of this software for use at home.

8. It is acceptable for me to make unauthorised copies of commercial software for my own private use.

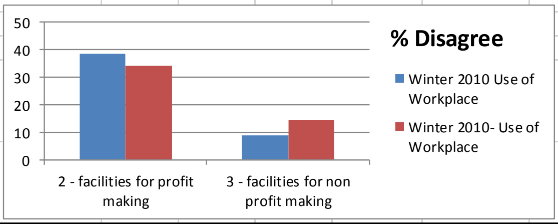


	Winter 2010 Start					Winter 2010 End			
	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
1 - software copies for university	63	22.4	14.6	100	1	62.4	12.8	24.8	100
4 - copies of software for employees	78.2	15.8	7.1	101.1	4	72.4	11.2	16.3	99.9
8 - copies for private use	52.1	20.5	27.3	99.9	8	46.1	26.5	27.4	100

Use of Workplace Computing Resources

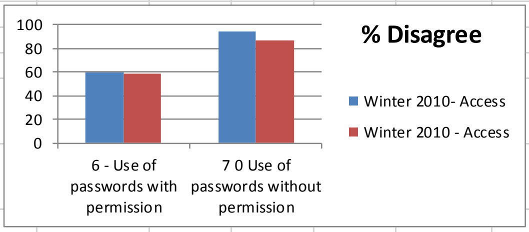
2. It is acceptable to use the University's computing facilities for my own profit-making activities if this has no adverse affect on the University.

3. It is acceptable to use the University's computing facilities for my own non profit-making activities if this has no adverse affect on the University.



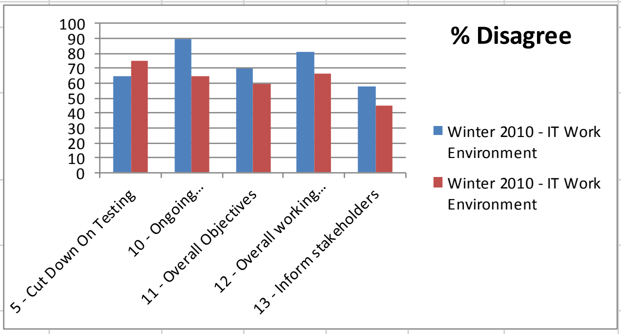
	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
2 - facilities for profit making	38.5	19.7	41.8	100	2	34.2	20.2	45.6	100
3 - facilities for non profit making	8.7	19.8	71.5	100	3	14.5	19.7	65.8	100

Access and permission
6. It is acceptable for me to use other peoples' access codes/passwords with their permission to access data I am not authorised to see.
7. It is acceptable for me to use other peoples' codes/passwords without their permission to access data I am not authorised to see.



	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
6 - Use of passwords with permission	59.8	17.9	22.3	100	6	59.1	18.3	22.7	100.1
7 0 Use of passwords without permission	94.9	2.6	2.6	100.1	7	87.1	7.8	5.2	100.1

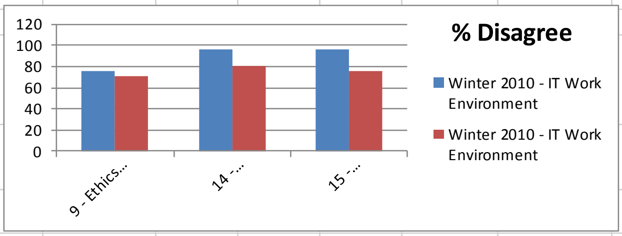
IT Work Environment
5. If a project is significantly behind schedule or over budget, it is acceptable to cut down on testing effort.
10. In an IS development project, ongoing consultation with representatives of all those affected by it shouldn't occur throughout the information system development life cycle.
11. So long as a system development project provides me with an interesting challenge. I do not care about its overall objectives or purpose.
12. Consideration of the overall working environment is not part of the IS professional's responsibility.
13. Consultation with all stakeholders in an information system development project is not always possible; to keep stakeholders informed is sufficient.



	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
5 - Cut Down On Testing	64.6	19	16.4	100	5	75.2	13.7	11.2	100.1
10 - Ongoing stakeholder communication	89.6	9.6	0.9	100.1	10	65	29.1	6	100.1
11 - Overall Objectives	69.6	16.5	13	99.1	11	59.5	24.1	16.4	100
12 - Overall working environment	80.7	11.4	7.9	100	12	66.3	19	14.7	100
13 - Inform stakeholders	57.5	19.5	23	100	13	44.7	21.1	34.2	100

Use of Surveillance

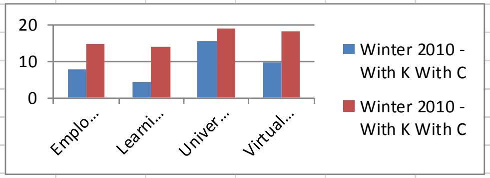
Ethics Programs and Codes
9. Organizations, including universities, should develop and administer an ethics awareness programme for all employees/students
14. I think that all organizations should require IS/IT employees to abide by a code of professional ethics.
15. I think that all organizartions should require all employeesto abide by a code of professional ethics.



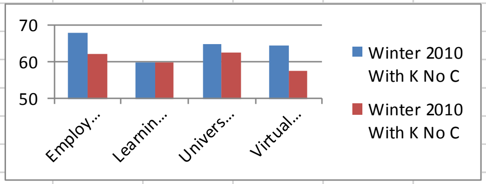
	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
9 - Ethics awareness programme	75.2	22.2	2.6	100	9	71	20.5	8.6	100.1
14 - Professional ethics-IS/IT employees	95.6	3.5	0.9	100	14	80.9	13	6	99.9
15 - Professional ethics-employees	95.6	3.5	0.9	100	15	76.1	11.1	12.8	100

16. Employers are entitles to use electronic surveillance to monitor employees' performance in the workplace:									
17a. Students' use of university IT resources from learning and teaching areas (e.g. labs, library):									
17b. Students' use of university IT resources from university residences:									
17c. My learning activities when I log into the VLE (Blackboard)									

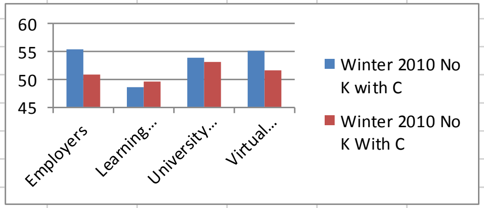
	With Knowledge and Consent					With Knowledge and Consent			
a	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	7.7	5.1	87.1	99.9	16	14.5	6.8	78.6	99.9
Learning & Teaching Areas	4.4	6.1	89.5	100	17.1	13.9	7	79.2	100.1
University Residences	15.3	9	75.6	99.9	17.2	19	10.3	70.7	100
Virtual Learning Environment	9.5	10.4	80	99.9	17.3	18.1	11.2	70.6	99.9



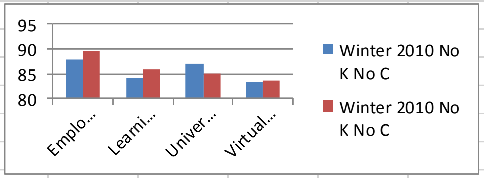
	With Knowledge and Without Consent					With Knowledge and Without Consent			
b	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	67.8	6.9	22.7	97.4	16	62.1	18.1	19.8	100
Learning & Teaching Areas	59.7	13.2	27.2	100.1	17.1	59.6	13.2	27.2	100
University Residences	64.8	16.2	18.9	99.9	17.2	62.6	16.5	20.9	100
Virtual Learning Environment	64.4	14.8	20.9	100.1	17.3	57.3	20.5	22.3	100.1



	Without Knowledge and With Consent					Without Knowledge and With Consent			
c	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	55.3	14.9	29.8	100	16	50.9	21.6	27.6	100.1
Learning & Teaching Areas	48.6	16.8	34.5	99.9	17.1	49.5	18.6	31.8	99.9
University Residences	54	20.7	25.2	99.9	17.2	53.1	19.1	27.8	100
Virtual Learning Environment	55.2	16.7	28.1	100	17.3	51.7	21.6	26.8	100.1



	Without Knowledge and Without Consent					Without Knowledge and Without Consent			
d	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	87.9	5.2	7	100.1	16	89.7	8.6	1.7	100
Learning & Teaching Areas	84.1	5.3	10.6	100	17.1	86	7.9	6.1	100
University Residences	87.1	5.5	7.4	100	17.2	85.1	10.5	4.4	100
Virtual Learning Environment	83.3	7.9	8.8	100	17.3	83.5	10.4	6.1	100



APPENDIX K – MEASURING CHANGE IN MORAL ATTITUDE - APPRECIATIVE INQUIRY

1. Paired t-test: Comparing Moral Judgment Start to End for AI

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Personal Interest	35.3655	145	13.33011	1.10701
	Personal Interest_A	30.4757	145	12.69512	1.05427
Pair 2	Maintain Norms	31.6759	145	12.60670	1.04693
	Maintain Norms_A	34.8744	145	12.30031	1.02149
Pair 3	Post-Conventional	27.7034	145	11.57591	.96133
	Post-Conventional_A	28.4631	145	11.82505	.98202
Pair 4	N2	25.0099	145	12.21388	1.01431
	N2_A	27.4601	145	12.12964	1.00731
Pair 5	Type Start	3.41	145	1.793	.149
	Type End	3.76	145	1.701	.141

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Personal Interest & Personal Interest_A	145	.446	.000
Pair 2	Maintain Norms & Maintain Norms_A	145	.356	.000
Pair 3	Post-Conventional & Post-Conventional_A	145	.373	.000
Pair 4	N2 & N2_A	145	.468	.000
Pair 5	Type Start & Type End	145	.254	.002

Paired t- test: Compare Moral Judgment for Start/End for AI Group (Cont.)

		Paired Differences					t	df	Sig. (2-tailed)
					Interval of the				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Personal Interest - Personal Interest_A	4.88979	13.70534	1.13817	2.64012	7.13946	4.296	144	.000
Pair 2	Maintain Norms - Maintain Norms_A	-3.19855	14.13584	1.17392	-5.51889	-.87822	-2.725	144	.007
Pair 3	Post-Conventional - Post-Conventional_A	-.75966	13.10354	1.08819	-2.91054	1.39123	-.698	144	.486
Pair 4	N2 - N2_A	-2.45021	12.55392	1.04255	-4.51088	-.38954	-2.350	144	.020
Pair 5	Type Start - Type End	-.345	2.136	.177	-.695	.006	-1.944	144	.054

2. Paired t-test: Comparing Moral Sensitivity Start to End for AI

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	FAC1_S	.0332932	145	1.00323524	.08331415
	FAC1_E	.0201517	145	.92927589	.07717216
Pair 2	FAC2_S	.0636528	145	1.03724853	.08613880
	FAC2_E	-.0533241	145	.79333633	.06588300
Pair 3	FAC3_S	.0324579	145	.94501217	.07847899
	FAC3_E	.2526138	145	.83127408	.06903356
Pair 4	FAC4_S	-.1872380	145	.96543417	.08017494
	FAC4_E	-.1506966	145	.81245038	.06747033
Pair 5	FAC5_S	.0428099	145	.83747382	.06954841
	FAC5_E	-.0570621	145	.95183112	.07904527
Pair 6	FAC6_S	.0224454	145	1.05755364	.08782505
	FAC6_E	-.1924690	145	.85014235	.07060048
Pair 7	FAC7_S	-.1542461	145	1.08332195	.08996499
	FAC7_E	-.1385586	145	.98407563	.08172303
Pair 8	FAC8_S	.0558782	145	.98401858	.08171830
	FAC8_E	-.0609724	145	.93093301	.07730978
Pair 9	FAC9_S	-.0267568	145	.96560448	.08018909
	FAC9_E	-.1063310	145	.90076970	.07480485
Pair 10	FAC10_S	.0821552	145	.98790158	.08204076
	FAC10_E	-.0110276	145	.93689590	.07780497

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	FAC1_S & FAC1_E	145	.263	.001
Pair 2	FAC2_S & FAC2_E	145	.308	.000
Pair 3	FAC3_S & FAC3_E	145	.317	.000
Pair 4	FAC4_S & FAC4_E	145	.215	.009
Pair 5	FAC5_S & FAC5_E	145	.186	.025
Pair 6	FAC6_S & FAC6_E	145	.257	.002
Pair 7	FAC7_S & FAC7_E	145	.384	.000
Pair 8	FAC8_S & FAC8_E	145	.253	.002
Pair 9	FAC9_S & FAC9_E	145	.176	.034
Pair 10	FAC10_S & FAC10_E	145	.420	.000

Paired t-test: Compare Moral Sensitivity for Start and End for AI (cont)

		Paired Differences					t	df	Sig. (2-tailed)
					of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	FAC1_S - FAC1_E	.01314144	1.17489636	.09756983	-.17971266	.20599554	.135	144	.893
Pair 2	FAC2_S - FAC2_E	.11697697	1.09446522	.09089039	-.06267471	.29662865	1.287	144	.200
Pair 3	FAC3_S - FAC3_E	-.22015594	1.04176191	.08651362	-.39115660	-.04915528	-2.545	144	.012
Pair 4	FAC4_S - FAC4_E	-.03654143	1.11997207	.09300862	-.22037994	.14729709	-.393	144	.695
Pair 5	FAC5_S - FAC5_E	.09987200	1.14457120	.09505146	-.08800436	.28774835	1.051	144	.295
Pair 6	FAC6_S - FAC6_E	.21491437	1.17444146	.09753205	.02213494	.40769379	2.204	144	.029
Pair 7	FAC7_S - FAC7_E	-.01568747	1.15032503	.09552929	-.20450829	.17313335	-.164	144	.870
Pair 8	FAC8_S - FAC8_E	.11685066	1.17118590	.09726170	-.07539439	.30909570	1.201	144	.232
Pair 9	FAC9_S - FAC9_E	.07957427	1.19891615	.09956457	-.11722257	.27637111	.799	144	.425
Pair 10	FAC10_S - FAC10_E	.09318278	1.03770620	.08617681	-.07715216	.26351771	1.081	144	.281

3. Wilcoxon Results for changes in Type

Ranks

		N	Mean Rank	Sum of Ranks
Type End - Type Start	Negative Ranks	36[a]	51.17	1842.00
	Positive Ranks	60[b]	46.90	2814.00
	Ties	49[c]		
	Total	145		

a. Type End < Type Start

b. Type End > Type Start

c. Type End = Type Start

Test Statistics[a]

	Type End - Type Start
Z	-1.792[b]
Asymp. Sig. (2-tailed)	.073

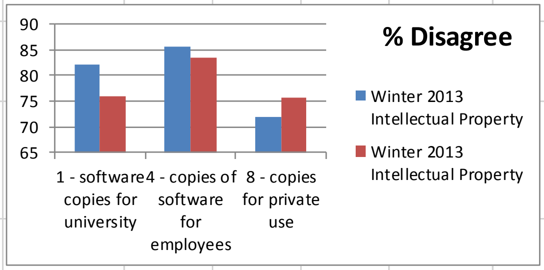
a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

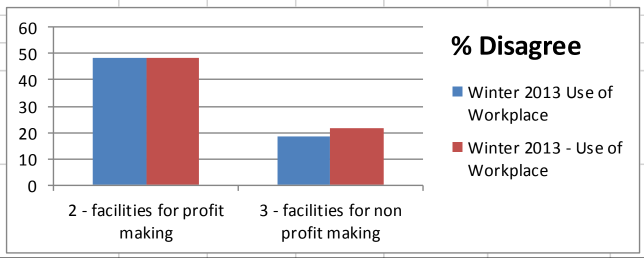
4. Descriptive Analysis of Survey Questions – AI Group

W2013 Start End Compare

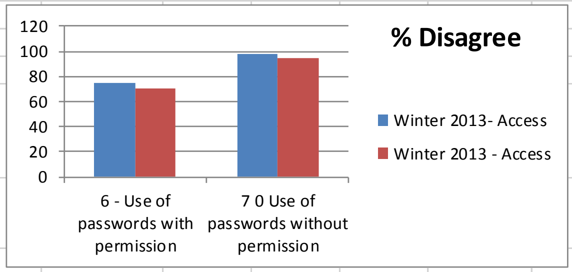
Intellectual Property			Winter 2013 Start				Winter 2013 End		
Question									
1. It is acceptable for me to make unauthorized copies of commercial software to use for my university work.									
4. If an organization has purchased/developed software for use in the office, it is acceptable for their employees to make unauthorised copies of this software for use at home.									
8. It is acceptable for me to make unauthorised copies of commercial software for my own private use.									
	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
1 - software copies for university	82.2	11	6.9	100.1	1	75.9	9.7	14.4	100
4 - copies of software for employees	85.6	9.6	4.8	100	4	83.4	8.3	8.3	100
8 - copies for private use	72	14.4	13.7	100.1	8	75.8	9	15.1	99.9



Use of Workplace Computing Resources									
2. It is acceptable to use the University's computing facilities for my own profit-making activities if this has no adverse affect on the University.									
3. It is acceptable to use the University's computing facilities for my own non profit-making activities if this has no adverse affect on the University.									
	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
2 - facilities for profit making	48.6	21.9	29.4	99.9	2	48.6	21.5	29.9	100
3 - facilities for non profit making	18.4	23.3	58.3	100	3	21.9	14.8	63.4	100.1

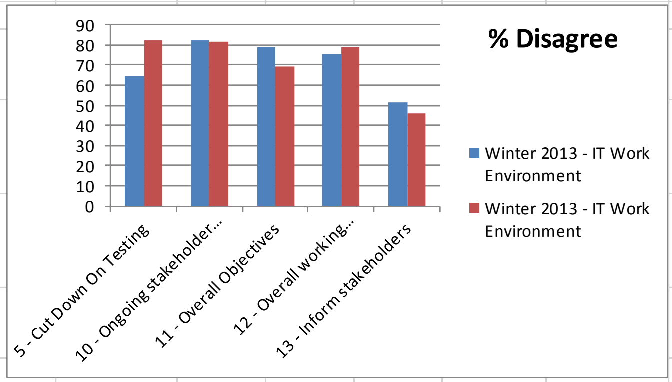


Access and permission
6. It is acceptable for me to use other peoples' access codes/passwords with their permission to access data I am not authorised to see.
7. It is acceptable for me to use other peoples' codes/passwords without their permission to access data I am not authorised to see.



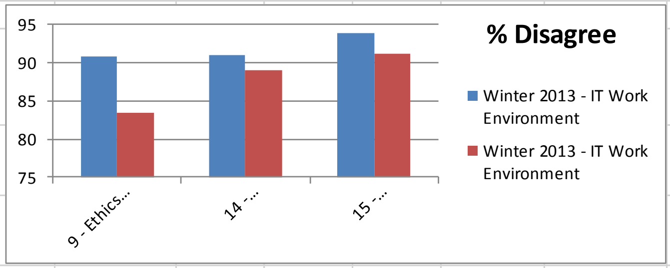
	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
6 - Use of passwords with permission	74.5	13.8	11.7	100	6	70.1	13.9	16	100
7 0 Use of passwords without permission	97.3	0.7	2.1	100.1	7	94.5	2.8	2.8	100.1

IT Work Environment
5. If a project is significantly behind schedule or over budget, it is acceptable to cut down on testing effort.
10. In an IS development project, ongoing consultation with representatives of all those affected by it should occur throughout the information system development life cycle.
11. So long as a system development project provides me with an interesting challenge. I do not care about its overall objectives or purpose.
12. Consideration of the overall working environment is not part of the IS professional's responsibility.
13. Consultation with all stakeholders in an information system development project is not always possible; to keep stakeholders informed is sufficient.



	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
5 - Cut Down On Testing	64.4	23.3	12.4	100.1	5	82.6	9.1	8.4	100.1
10 - Ongoing stakeholder communication	82.1	17.2	0.7	100	10	81.7	14.8	3.5	100
11 - Overall Objectives	78.6	13.8	7.6	100	11	69.4	20.8	9.7	99.9
12 - Overall working environment	75.2	17.9	6.9	100	12	78.6	10.3	11	99.9
13 - Inform stakeholders	51.7	24.8	23.5	100	13	45.8	20.8	33.4	100

Ethics Programs and Codes
9. Organizations, including universities, should develop and administer an ethics awareness programme for all employees/students
14. I think that all organizations should require IS/IT employees to abide by a code of professional ethics.
15. I think that all organizartions should require all employeesto abide by a code of professional ethics.



	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
9 - Ethics awareness programme	90.8	15.1	4.1	110	9	83.4	10.3	6.2	99.9
14 - Professional ethics-IS/IT employees	91	7.6	1.4	100	14	89	7.6	3.5	100.1
15 - Professional ethics-employees	93.8	4.8	1.4	100	15	91.1	6.2	2.8	100.1

Use of Surveillance

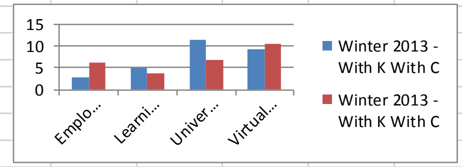
16. Employers are entitles to use electronic surveillance to monitor employees' performance in the workplace:

17a. Students' use of university IT resources from learning and teaching areas (e.g. labs, library):

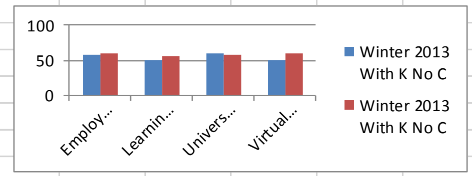
17b. Students' use of university IT resources from university residences:

17c. My learning activities when I log into the VLE (Blackboard)

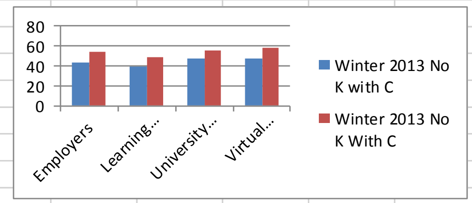
	With Knowledge and Consent					With Knowledge and Consent			
a	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	2.7	6.8	90.5	100	16	6.3	4.2	89.5	100
Learning & Teaching Areas	4.8	4.8	90.3	99.9	17.1	3.7	2.2	94.1	100
University Residences	11.5	10.1	78.4	100	17.2	6.7	5.2	88.1	100
Virtual Learning Environment	9.1	5.6	85.3	100	17.3	10.5	2.2	87.3	100



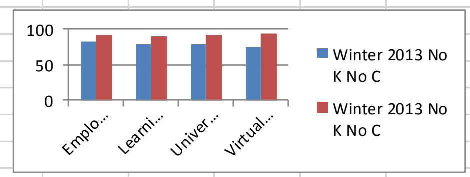
	With Knowledge and Without Consent					With Knowledge and Without Consent			
b	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	58	17.9	24.1	100	16	60.2	23.1	16.8	100.1
Learning & Teaching Areas	50	19.4	30.6	100	17.1	56	18.7	25.4	100.1
University Residences	59.4	21.7	18.8	99.9	17.2	57.6	18.2	24.2	100
Virtual Learning Environment	50.4	23.1	26.6	100.1	17.3	59.8	22	18.2	100



	Without Knowledge and With Consent					Without Knowledge and With Consent			
c	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	42.7	26.2	31	99.9	16	54.6	18.9	26.6	100.1
Learning & Teaching Areas	39.6	25.7	34.7	100	17.1	49.3	23.9	26.8	100
University Residences	47.1	27.5	25.3	99.9	17.2	55.3	22.7	22	100
Virtual Learning Environment	47.9	22.5	29.5	99.9	17.3	58	21.4	20.6	100



	Without Knowledge and Without Consent					Without Knowledge and Without Consent			
d	% Disagree	% Indifferent	% Agree	Total		% Disagree	% Indifferent	% Agree	Total
Employers	83.5	8.3	8.3	100.1	16	93	3.5	3.5	100
Learning & Teaching Areas	79.1	7.6	13.2	99.9	17.1	90.3	3	6.7	100
University Residences	78.2	9.4	12.3	99.9	17.2	91.7	4.5	3.8	100
Virtual Learning Environment	74.9	10.5	14.7	100.1	17.3	93.9	1.5	4.6	100



APPENDIX L – COMPARING DIFFERENCE IN CHANGES IN MORAL ATTITUDE BETWEEN AI AND CONTROL

1. Comparing Difference in Change in Moral Judgment Between AI and Control

Year		N	Mean	Std. Deviation	Std. Error Mean
Delta_PI	10	116	-2.4159	16.33573	1.51673
	13	145	-4.8898	13.70534	1.13817
Delta_MN	10	116	-.0736	16.17066	1.50141
	13	145	3.1986	14.13584	1.17392
Delta_PC	10	116	1.0760	14.79313	1.37351
	13	145	.7597	13.10354	1.08819
Delta_N2	10	116	3.0467	15.40945	1.43073
	13	145	2.4502	12.55392	1.04255
Delta_Type	10	116	.12	2.322	.216
	13	145	.34	2.136	.177

		Test for		t-test for Equality of Means						
									Interval of the	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Delta_PI	Equal variances assumed	3.427	.065	1.330	259	.185	2.47393	1.85988	-1.18847	6.13633
	Equal variances not assumed			1.305	224.205	.193	2.47393	1.89629	-1.26290	6.21076
Delta_MN	Equal variances assumed	2.924	.088	-1.743	259	.083	-3.27217	1.87765	-6.96958	.42523
	Equal variances not assumed			-1.717	229.953	.087	-3.27217	1.90586	-7.02736	.48301
Delta_PC	Equal variances assumed	1.280	.259	.183	259	.855	.31638	1.72890	-3.08811	3.72087
	Equal variances not assumed			.181	231.757	.857	.31638	1.75234	-3.13617	3.76892
Delta_N2	Equal variances	4.038	.046	.345	259	.731	.59652	1.73081	-2.81173	4.00476
	Equal variances not assumed			.337	220.010	.736	.59652	1.77028	-2.89236	4.08540
Delta_Type	Equal variances assumed	.186	.667	-.810	259	.419	-.224	.277	-.769	.321
	Equal variances not assumed			-.803	236.704	.423	-.224	.279	-.774	.326

2. Comparing Difference in Change in Moral Sensitivity Between AI and Control

Year		N	Mean	Std. Deviation	Std. Error Mean
Delta_Fac1	10	116	.0102727	1.13743960	.10560862
	13	145	-.0131414	1.17489636	.09756983
Delta_Fac2	10	116	.1771354	1.25034644	.11609175
	13	145	-.1169770	1.09446522	.09089039
Delta_Fac3	10	116	-.2706769	1.42026377	.13186818
	13	145	.2201559	1.04176191	.08651362
Delta_Fac4	10	116	-.0262660	1.05922346	.09834643
	13	145	.0365414	1.11997207	.09300862
Delta_Fac5	10	116	.1180450	1.37192839	.12738035
	13	145	-.0998720	1.14457120	.09505146
Delta_Fac6	10	116	.2603893	1.32573159	.12309109
	13	145	-.2149144	1.17444146	.09753205
Delta_Fac7	10	116	-.0196719	1.00858112	.09364441
	13	145	.0156875	1.15032503	.09552929
Delta_Fac8	10	116	.1676634	1.23029703	.11423021
	13	145	-.1168507	1.17118590	.09726170
Delta_Fac9	10	116	.0941903	1.28709677	.11950394
	13	145	-.0795743	1.19891615	.09956457
Delta_Fac10	10	116	.1162879	1.18535519	.11005747
	13	145	-.0931828	1.03770620	.08617681

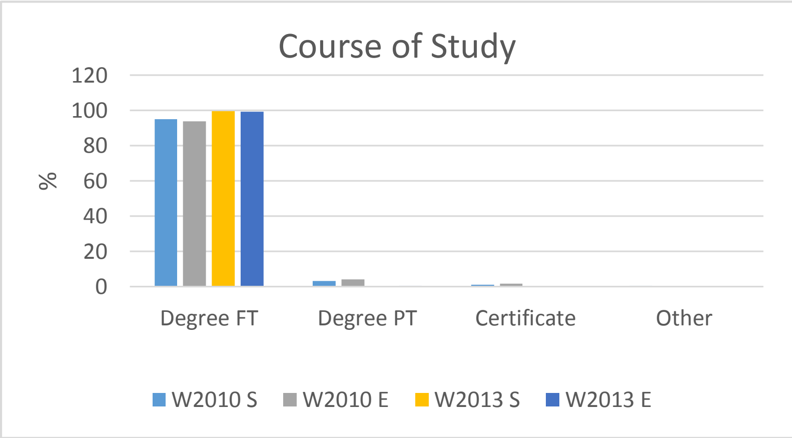
		Test for		t-test for Equality of Means						
									the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Delta_Fac 1	Equal variances assumed	.006	.940	.099	261	.921	.01416609	.14340708	-.26821604	.29654822
Delta_Fac 2	Equal variances assumed	.662	.416	2.022	261	.044	.29431064	.14551973	.00776851	.58085276
Delta_Fac 3	Equal variances not assumed	8.391	.004	-3.065	207.298	.002	-.48014498	.15663368	-.78894417	-.17134579
Delta_Fac 4	Equal variances assumed	.004	.949	-.393	261	.695	-.05342268	.13593808	-.32109764	.21425228
Delta_Fac 5	Equal variances assumed	2.573	.110	1.349	261	.179	.20880478	.15479277	-.09599685	.51360641
Delta_Fac 6	Equal variances assumed	.245	.621	3.034	261	.003	.46709846	.15396045	.16393575	.77026116
Delta_Fac 7	Equal variances assumed	1.446	.230	-.366	261	.714	-.04946047	.13505339	-.31539339	.21647246
Delta_Fac 8	Equal variances assumed	1.235	.268	1.862	261	.064	.27691467	.14874849	-.01598521	.56981454
Delta_Fac 9	Equal variances assumed	.025	.874	1.167	261	.244	.17885064	.15319621	-.12280721	.48050848
Delta_Fac 10	Equal variances assumed	.545	.461	1.553	261	.122	.21221583	.13668449	-.05692887	.48136054

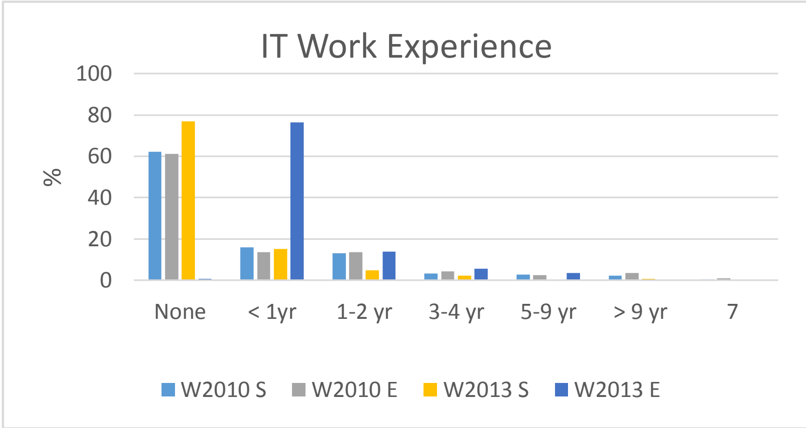
3. Comparing Difference in Pathways for Change in Type

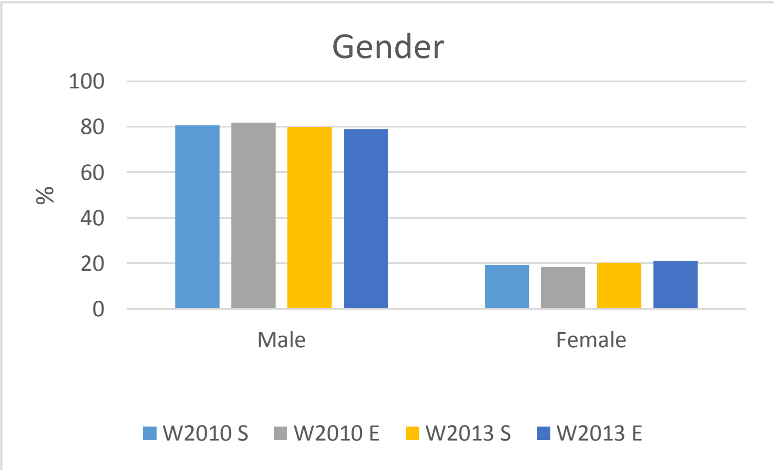
How Participant's Type Changed Over the Course - Percentages for each Pathway														
	2010		2013			2010		2013			2010		2013	
	#	%	#	%		#	%	#	%		#	%	#	%
Pathway					**Pathway**					**Pathway**				
1-up					**1-down**					**No Change**				
12	4	3.4%	3	2.1%	21	2	1.7%	1	0.7%	11	0	0.0%	1	0.7%
23	4	3.4%	12	8.3%	32	2	1.7%	7	4.8%	22	13	11.2%	25	17.2%
34	3	2.6%	4	2.8%	43	2	1.7%	0	0.0%	33	8	6.9%	6	4.1%
45	0	0.0%	1	0.7%	54	0	0.0%	1	0.7%	44	3	2.6%	6	4.1%
56	3	2.6%	2	1.4%	65	4	3.4%	0	0.0%	55	2	1.7%	3	2.1%
67	6	5.2%	3	2.1%	76	0	0.0%	1	0.7%	66	4	3.4%	8	5.5%
Total	20	17.2%	25	17.2%		10	8.6%	10	6.9%	77	6	5.2%	0	0.0%
2-up					**2-down**						36	31.0%	49	33.8%
13	3	2.6%	4	2.8%	31	1	0.9%	0	0.0%					
24	3	2.6%	2	1.4%	42	6	5.2%	1	0.7%	**Total**	116		145	
35	1	0.9%	4	2.8%	53	0	0.0%	3	2.1%					
46	0	0.0%	0	0.0%	64	3	2.6%	2	1.4%					
57	1	0.9%	1	0.7%	75	1	0.9%	3	2.1%					
Total	8	6.9%	11	7.6%		11	9.5%	9	6.2%					
3-up					**3-down**									
14	1	0.9%	0	0.0%	41	0	0.0%	0	0.0%					
25	2	1.7%	6	4.1%	52	3	2.6%	3	2.1%					
36	1	0.9%	3	2.1%	63	4	3.4%	3	2.1%					
47	1	0.9%	0	0.0%	74	0	0.0%	3	2.1%					
Total	5	4.3%	9	6.2%		7	6.0%	9	6.2%					
4-up					**4-down**									
15	0	0.0%	0	0.0%	51	0	0.0%	0	0.0%					
26	4	3.4%	10	6.9%	62	5	4.3%	7	4.8%					
37	2	1.7%	3	2.1%	73	0	0.0%	1	0.7%					
Total	6	5.2%	13	9.0%		5	4.3%	8	5.5%					
5-up					**5-down**									
16	1	0.9%	0	0.0%	61	0	0.0%	0	0.0%					
27	5	4.3%	1	0.7%	72	1	0.9%	0	0.0%					
Total	6	5.2%	1	0.7%		1	0.9%	0	0.0%					
6-up					**6-down**									
17	0	0.0%	1	0.7%	71	1	0.9%	0	0.0%					
Total	0	0.0%	1	0.7%		1	0.9%	0	0.0%					
Total	45	38.79%	60	41.38%		35	30.17%	36	24.83%					
		0.3879		0.4138			0.3017		0.2483					

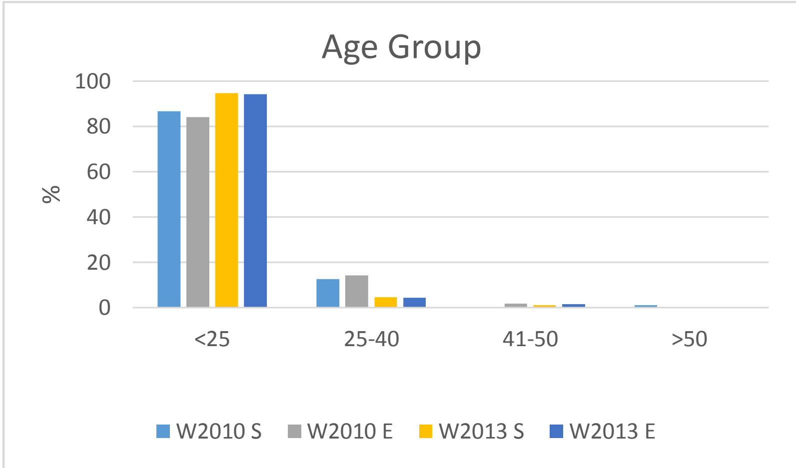
APPENDIX M – DEMOGRAPHIC COMPARISON BETWEEN CONTROL AND AI

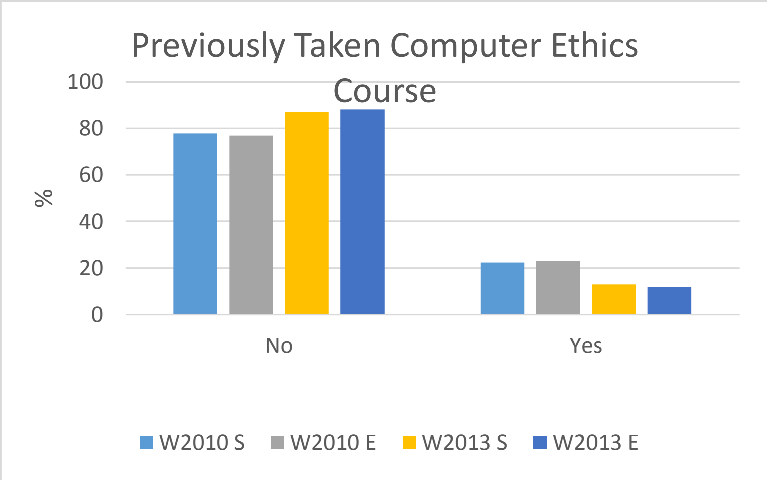
1. Demographic Comparison of Start and End Demographics for Control and **AI** Groups

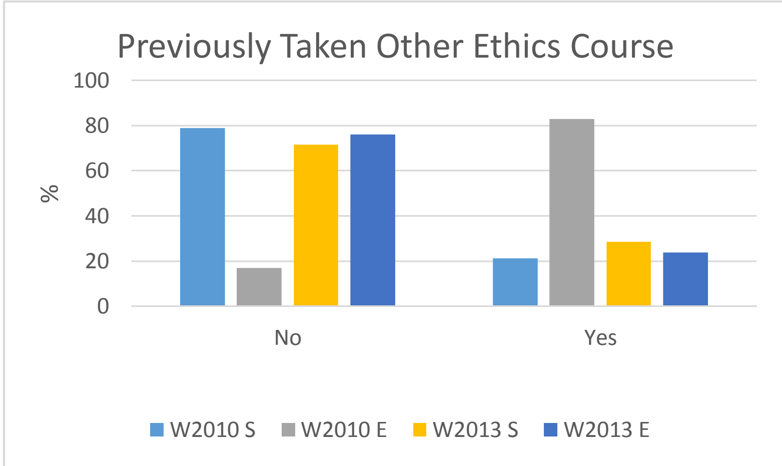


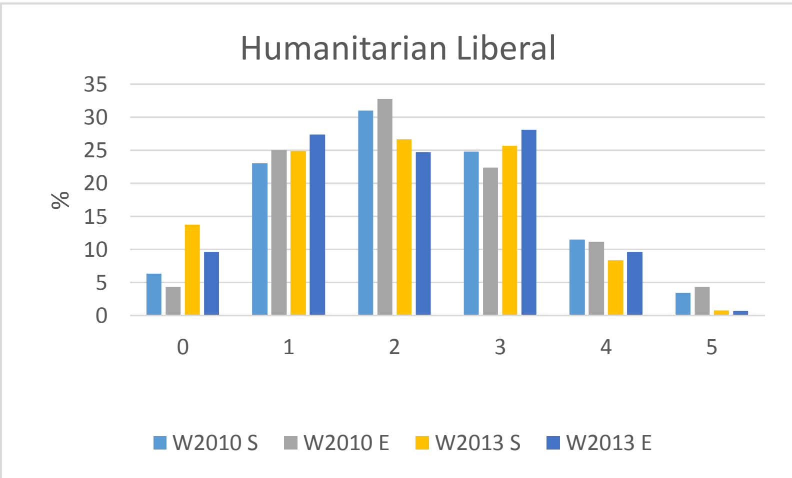


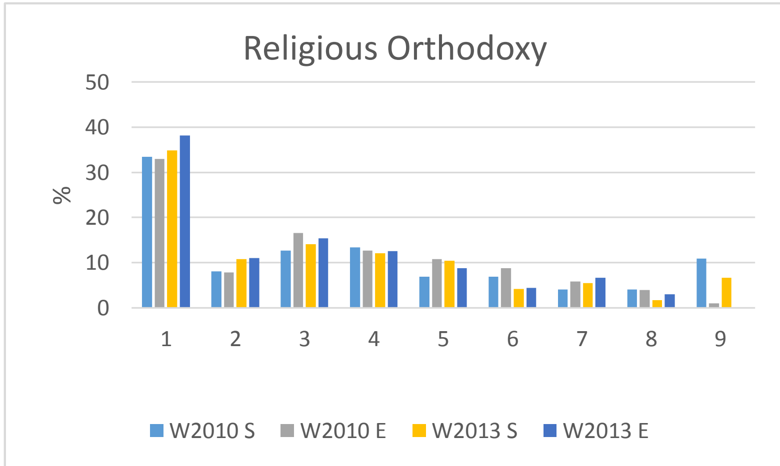


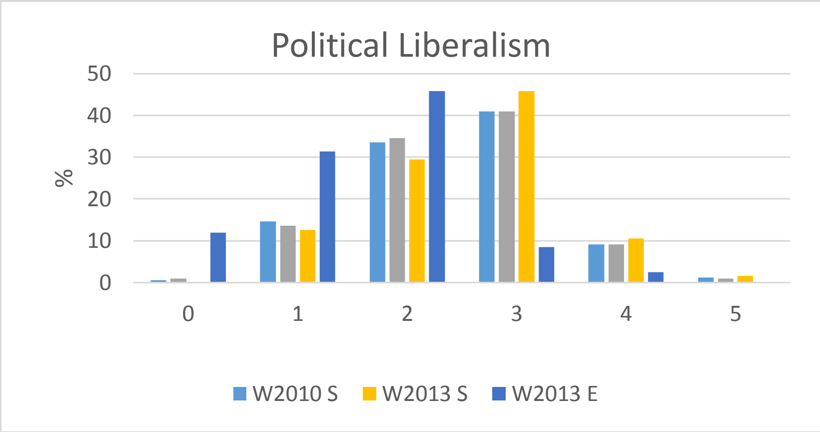


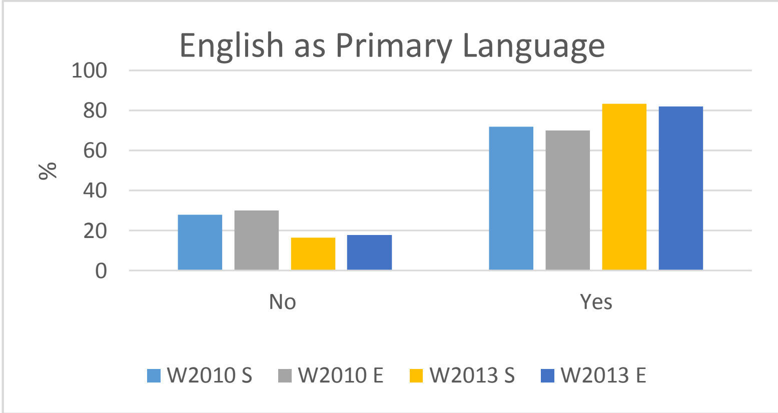

Previously Taken Computer Ethics Course
100
80
60
40
20
0
%
No
Yes
W2010 S
W2010 E
W2013 S
W2013 E

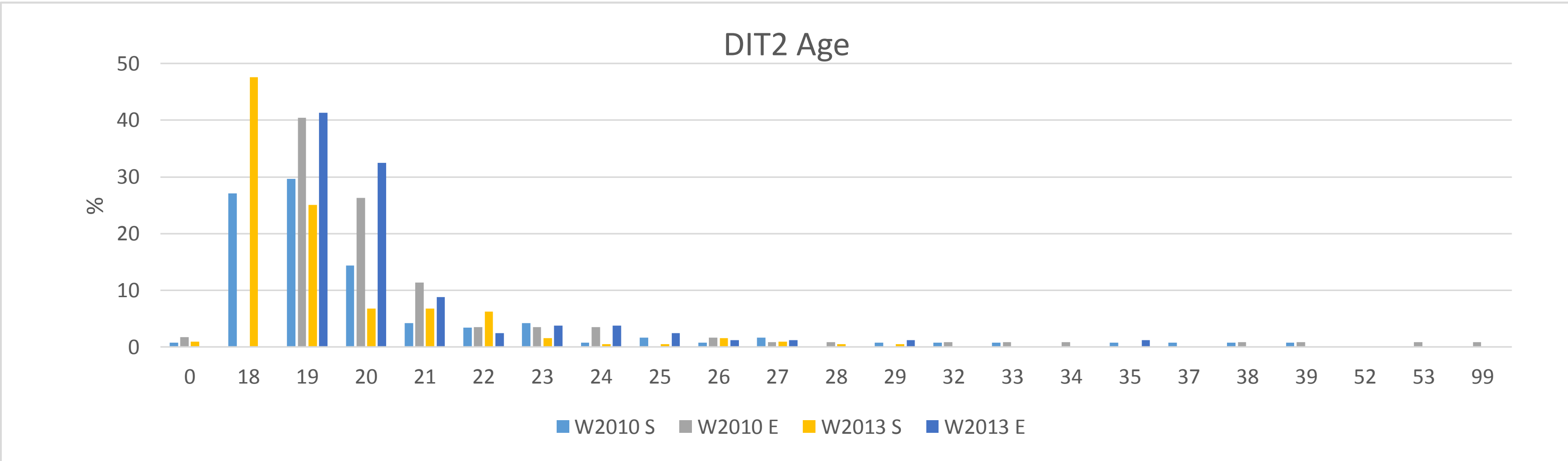

Previously Taken Other Ethics Course
100
80
60
40
20
0
%
No
Yes
W2010 S
W2010 E
W2013 S
W2013 E


Humanitarian Liberal
35
30
25
20
15
10
5
0
%
0
1
2
3
4
5
W2010 S
W2010 E
W2013 S
W2013 E


Religious Orthodoxy
50
40
30
20
10
0
%
1
2
3
4
5
6
7
8
9
W2010 S
W2010 E
W2013 S
W2013 E


Political Liberalism
50
40
30
20
10
0
%
0
1
2
3
4
5
W2010 S
W2013 S
W2013 E


English as Primary Language
100
80
60
40
20
0
%
No
Yes
W2010 S
W2010 E
W2013 S
W2013 E


DIT2 Age
50
40
30
20
10
0
%
0
18
19
20
21
22
23
24
25
26
27
28
29
32
33
34
35
37
38
39
52
53
99
W2010 S
W2010 E
W2013 S
W2013 E

APPENDIX N – DATA DICTIONARY

Variable	Description	Type	Value
Individual Number	Individual Student – id# Assigned	Nominal	99999
Year	Winter 2010 – control group Winter 2013 – treatment group		10, 13 10 – Control Cohort 13 – Treatment Cohort
Start_S_D	Coding those with valid start tools	Nominal	1 – completed start survey 2 – completed start DIT2 3 – completed both start tests
End_S_D	Coding those with valid end tools	Nominal	1 – completed end survey 2 – completed end DIT2 3 – completed both end tests
Section	Workshop Section Control Treatment	Nominal	 911, 921, 931, 941 911, 921, 931, 941, 951
Demographics			

Variable	Description	Type	Value
Course of Study	Type of program in which individual is enrolled	Nominal	1-Degree FT 2-Degree PT 3-Certificate 4-Other
IT Work Experience Range	Years of IT related work experience	Nominal	1-None 2-< 1yr 3-1-2 yr 4-3-4 yr 5-5-9 yr 6-> 9 yr
Gender	Male or female	Binary	1-Male 2-Female
Age Range	Age group individual falls into – also have specific age	Nominal – from the survey	1-<25 2- 25-40 3- 41-50 4- >50
Age	Age	Interval – from the DIT2	
Taken previous Ethics course		Binary	1-No 2-Yes
Taken previous Computer Ethics course		Binary	1-No 2-Yes
Humanitarian Liberal	Sum of the times the individual chose an answer similar to a professional in	Interval	0-6

Variable	Description	Type	Value
	political science or philosophy. (DIT2 calculates)		
Religious Orthodoxy	Sum of the rates and ranks for item 9 in the DIT2 scenario on the doctor and the cancer patient. (DIT2 calculates)	Interval	1-9
Political Liberalism	Student selects opinion of themselves	Ordinal	Range of 1-5 where 1 is conservative and 5 is liberal
Strong Religious Affiliation	Student selects	Nominal	1 - No 2 - Yes 3 - Roman Catholic 4 - Muslim 5 - Jewish 6 - Christian 8 - Buddhist 9 - Hindu 11 - Sikh1-strong affiliation
Survey	Survey Instrument to measure moral sensibility – students answer each question		
Pre-Test / Post Test		Ordinal	1-5 on Likert Scale (1 is more ethical) 1 – Strongly Disagree 2- Disagree 3 – Indifferent 4 – Agree 5 – Strongly Agree

Variable	Description	Type	Value
Moral Sensitivity Themes			
Surveillance – no consent	Absence of consent in use of surveillance in both the university and workplace.	16b, 16d, 17.1b, 17.1d	1-5 Likert scale
Surveillance – consent in private environments	Consenting to surveillance in the residence and virtual learning environment.	17.2b, 17.2d, 17.3b, 17.3d	1-5 Likert scale
Surveillance – knowing and consenting	Surveillance regardless of the environment where both knowing and consenting is important	16a, 17.1a, 17.2a, 17.3a	1-5 Likert scale
Authority – copying software and accessing data	Presence of authority in copying software or accessing confidential data.	1, 4, 6, 7, 8	1-5 on Likert Scale
Surveillance no consent, no knowledge	Not knowing but consenting to surveillance.	16c, 17.1c, 17.2c	1-5 Likert scale
Codes of Ethics	Importance of codes of ethics and ethics programs.	9, 14,15	1-5 Likert scale
Using others computing resources	Use of another's computing resources.	2, 3	1-5 Likert scale
The ICT working environment	Consideration of the objectives and stakeholders in the working environment	10, 11, 12	1-5 Likert scale
Testing	Importance of testing	5	1-5 Likert scale

Variable	Description	Type	Value
Stakeholders	Importance of stakeholders	13	
Change in Moral Sensitivity			
Δ Surveillance – no consent	Absence of consent in use of surveillance in both the university and workplace.	16b, 16d, 17.1b, 17.1d	1-5 Likert scale
Δ Surveillance – consent in private environments	Consenting to surveillance in the residence and virtual learning environment.	17.2b, 17.2d, 17.3b, 17.3d	1-5 Likert scale
Δ Surveillance – knowing and consenting	Surveillance regardless of the environment where both knowing and consenting is important	16a, 17.1a, 17.2a, 17.3a	1-5 Likert scale
Δ Authority – copying software and accessing data	Presence of authority in copying software or accessing confidential data.	1, 4, 6, 7, 8	1-5 on Likert Scale
Δ Surveillance no consent, no knowledge	Not knowing but consenting to surveillance.	16c, 17.1c, 17.2c	1-5 Likert scale
Δ Codes of Ethics	Importance of codes of ethics and ethics programs.	9, 14,15	1-5 Likert scale
Δ Using others computing resources	Use of another's computing resources.	2, 3	1-5 Likert scale
Δ The ICT working environment	Consideration of the objectives and stakeholders in the working environment	10, 11, 12	1-5 Likert scale
Testing	Importance of testing	5	1-5 Likert scale

Variable	Description	Type	Value
Moral Judgment Test			
Pre-Test / Post-Test	Based on student answers, computer analyses responses and assigns the following:		
PI	% of time a personal interest approach is used to making a moral judgment.	Interval	%
MN	% of time a maintaining norms approach is used to making a moral judgment.	Interval	%
PC	% of time a post-conventional approach is used to making a moral judgment.	Interval	%
N2	Weighted factor based on high PC and low MN and low PI	Interval	%
Type	Assigned based on the calculations of PI, MN, MC	Ordinal	1 to 7
Consolidated/Transition	Consolidated is Type=1,4,7 Transitional is Type = 2,3,5,6	Binary	Consolidated = 1 Transitional = 2
Change in Moral Judgement			
ΔPI	% of time a personal interest approach is used to making a moral judgment.	Interval	%
ΔMN	% of time a maintaining norms approach is used to making a moral judgment.	Interval	%
ΔPC	% of time a post-conventional approach is used to making a moral judgment.	Interval	%

Variable	Description	Type	Value
ΔN2	Weighted factor based on high PC and low MN and low PI	Interval	%
ΔType	Assigned based on the calculations of PI, MN, MC	Ordinal	-6 to +6

APPENDIX O – ETHICAL DECISION MAKING PROCESS

The following ethical decision making process was developed based on the work of several researchers (Bynum, 2006a; Moor, 1999; Reynolds, 2007; Tavani, 2011). Students applied this process in analysing ethical dilemmas in case studies to develop a recommendation on what might be done. Following are the steps that need not be done in the order presented.

1. What is your immediate reaction to the situation? What do your *emotions* tell you?

2. Identify the *key facts* in the case that you find disturbing. There are important because your recommendation should address each of these concerns.

3. Identify at least five *stakeholders* and describe how they are affected by this situation. Be sure to identify the secondary as well as the primary stakeholders as this is often where the ethical issues occur.

4. Identify three to five *consequences*. What could happen if the situation is not resolved? This becomes the imperative for action.

5. Identify at least three *alternatives* and describe the pros and cons of each. Focusing on more than two alternatives moves the discussion beyond the binary: “will I” or “won’t I” and often into a discussion of “how” rather than “whether” it will be implemented.

6. Articulate your recommendation in the following format:

   a. Grounds – describe the facts of the situation that cause concern. Your claim should address these.

   b. Claim – provide a detailed description or what you think should be done.

   c. Reasons – support your claim with three to five personal reasons.

   d. Backings – add strength and creditability to your recommendation by including external references. Include three to five backings from the list below:
      i. Professional Standards – e.g. codes of ethics, standards and methods from the ICT profession.
      ii. Expert References – e.g. citations from peer reviewed journals
      iii. Roles and Responsibilities – e.g. responsibilities of managers, employees, trainers, etc.
      iv. Policies, Treaties, Laws – e.g. organizational or professional policies, copyright laws
      v. Ethical Frameworks
         1. Utilitarian – e.g. greatest benefit for the least harm
         2. Social Contract – e.g. right to security, right to property
         3. Virtues – e.g. honesty, loyalty
         4. Duties – e.g. duties of care

   e. Objection – Include three counter arguments that you think others will raise. This strengthens your recommendation because it shows you have considered objections,

   f. Rebuttal – Include your response to the counter arguments raised in Objection.

APPENDIX P – INFORMED CONSENT

STUDENT PARTICIPATION ELECTRONIC CONSENT

Assessing the Ethical Attitudes of ICT Professionals
Ryerson University

1. You are invited to participate in a course innovation project led by Candace Grant, Assistant Professor, Ted Rogers School of Information Technology Management at Ryerson University.

   The purpose of this project is to assess the ethical attitudes of ICT Professionals. The researcher is engaged in a multi-year research project to examine the ethical attitudes of ICT professionals and to determine ways in which these attitudes can be influenced in the development of trainee ICT professionals. This project, to be carried out in conjunction with parallel studies at two other universities, will use data already being collected as part of the course delivery of ITM407 (Information Technology, Ethics and Society).

   Three distinct approaches to making moral judgments were identified in the first phase of research and this next phase will expand our understanding of each group with a view to identifying successful educational intervention techniques suitable for each group.

   As part of the course delivery, students take two self-assessments and complete course assignments to help them develop awareness of ethical attitudes in professional environments. The self-assessments are standard instruments, widely used in the field. The intention is to use data from these surveys and analyze words and word patterns in course assignments and their relation to students' ethical attitudes. The data collection methods are not instrusive and only anonymous data will be used in the study.

2. You are being invited to participate by allowing your professor to use work you have completed as part of your ITM407 course. Specifically, your permission is being requested to allow the use of the two sets of survey data gathered in the ITM407 course and to extract some data from your assignments completed during the course.
3. There are no anticipated risks associated with this research. The researcher (your professor) will not see your name or other identifying data while analysing the survey results. In addition, the data will not be analysed until after all grades have been submitted for the course.

4. Students taking the course will receive personal feedback by email from, the Research Assistant, whether or not they consent to have their data included in the study. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You will NOT be penalized in any way should you choose not to participate or to withdraw. It will have no impact on course grades or future relations with Ryerson University.

5. We will do everything we can to protect students' privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study. Her Research Assistant will remove all personal references from the data before it is used.

6. If you have any questions or concerns regarding this study, or if any problems arise, you may contact the professor, Candace Grant, ctgrant@ryerson.ca; or phone 416-979-5000 x 7937 or you may contact Parisa Gavahi, the Research Assistant at pgavahi@ryerson.ca. You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research Services at 416-979-5042.

7. You should read the consent form and raise any questions and then respond to the email from "research assistant name" with the message "I agree to participate in this study" or "I don't agree to participate in this study".

APPENDIX Q – JOURNAL PUBLICATIONS IN BUSINESS AND ICT ETHICS

	Name of Publication	Date Founded
1	International Journal of Ethics	1980
2	Journal of Business Ethics	1982
3	Business Ethics Quarterly	1991
4	Business Ethics	1992
5	Professional Ethics	1992
6	Journal of Law, Business & Ethics	1993
7	Electronic Journal of Business and Organization Ethics	1996
8	Teaching Business Ethics	1997
9	Management Ethics	1998
10	Journal of Academic Ethics	2003
11	International Journal of Business Governance and Ethics	2004
12	African Journal of Business Ethics	2005
13	Carnegie Ethics Online	2006
14	Ethics and Education	2006
15	Journal of Business Systems, Governance and Ethics	2006
16	Code of Ethics for Professional Accountants	2007
17	Journal of Leadership, Accountability and Ethics	2008
18	Business Ethics The Magazine of Corporate Responsibility	2009
19	Journal for International Business Ethics	2009
20	Journal of Academic and Business Ethics	2009
21	Journal of Applied Ethics and Philosophy	2009
22	Asian Journal of Business Ethics	2012
1	Ethics and Information Technology	1999
2	Journal of Information, Communication & Ethics in Society	2003

APPENDIX R – LEONARD ET AL. INFLUENCERS OF MORAL DEVELOPMENT

Ethical Behaviour of Information Systems Personnel – Legend	
MORAL JUDGMENT	The way an individual reasons when faced with a moral dilemma and where reasoning depends on the individual's current stage of moral development.
PERSONAL NORMATIVE BELIEFS	An individual's moral obligation to perform an act.
PERCEIVED BEHAVIORAL CONTROL	The perceived ease or difficulty of performing the behavior.
EGO STRENTH	The strength of one's conviction or one's self-regulating skills.
LOCUS OF CONTROL	The degree to which an individual perceives that a reward results from one's attitudes or behaviour rather than from outside forces.
SEX	Gender—an individual characteristic. Many authors state that the individual's gender could be an indicator of ethical or unethical behavior intention.
AGE	Age—an individual characteristic. Dawson suggested that ethical perceptions change with age and experience.
PERCEIVED IMPORTANCE	The perception of the degree of importance of the ethical issue.
ORGANIZATIONAL ETHICAL CLIMATE	This represents the ethical culture of an organization as perceived by an individual.
SCENARIO (ISSUE INVOLVED)	Scenario—ethical scenario is a control variable and is based on the scenario being judged (see Appendix B).
ATITUDE TOWARDS ETHICAL BEHAVIOR	An individual's degree of favorable or unfavorable evaluation of a behavior.
Societal environment	Societal environment—society's values, one's culture. The societal environment represents the social and cultural values that impact the individual.
Belief system	Belief system—religious values and beliefs developed in one's spiritual or religious environment.
Personal values	Personal values—one's personal values, goals, and experiences, moral level.
Personal environment	Personal environment—the influence of family, peers and significant others, peer group.
Professional environment	Professional environment—codes of conduct and professional expectations within one's profession [23].
Legal environment	Legal environment—law, legislation, government.
Business environment	Business environment—corporate goals and profit motive. The business environment reflects the corporate goals and profit motive of the business in which a person works [63].
Consequences	Consequences—awareness that behavior may have consequences that affect oneself and/or others.

(Leonard et al., 2004)

APPENDIX S – ETHICS APPROVAL

RYERSON UNIVERSITY
RESEARCH ETHICS BOARD

To: Candace Grant
ITM
Re: REB 2009-200: Assessing ethical attitudes and moral judgment of trainee Information and Communication Technology (ICT) professionals
Date: December 11, 2009

Dear Candace Grant,

The review of your protocol REB File REB 2009-200 is now complete. The project has been approved for a one year period. Please note that before proceeding with your project, compliance with other required University approvals/certifications, institutional requirements, or governmental authorizations may be required.

This approval may be extended after one year upon request. Please be advised that if the project is not renewed, approval will expire and no more research involving humans may take place. If this is a funded project, access to research funds may also be affected.

Please note that REB approval policies require that you adhere strictly to the protocol as last reviewed by the REB and that any modifications must be approved by the Board before they can be implemented. Adverse or unexpected events must be reported to the REB as soon as possible with an indication from the Principal Investigator as to how, in the view of the Principal Investigator, these events affect the continuation of the protocol.

Finally, if research subjects are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research.

Please quote your REB file number (REB 2009-200) on future correspondence.

Congratulations and best of luck in conducting your research.

Sharon Wong

Sharon Wong, Ph.D.
Interim Chair, Research Ethics Board

RYERSON UNIVERSITY
RESEARCH ETHICS BOARD

To: Candace Grant
ITM

Re: REB 2009-200: Assessing ethical attitudes and moral judgment of trainee Information and Communication Technology (ICT) professionals

Date: May 10, 2011

Dear Candace Grant,

The review of your protocol REB File REB 2009-200 is now complete. The project has been approved for a one year period. Please note that before proceeding with your project, compliance with other required University approvals/certifications, institutional requirements, or governmental authorizations may be required.

This approval may be extended after one year upon request. Please be advised that if the project is not renewed, approval will expire and no more research involving humans may take place. If this is a funded project, access to research funds may also be affected.

Please note that REB approval policies require that you adhere strictly to the protocol as last reviewed by the REB and that any modifications must be approved by the Board before they can be implemented. Adverse or unexpected events must be reported to the REB as soon as possible with an indication from the Principal Investigator as to how, in the view of the Principal Investigator, these events affect the continuation of the protocol.

Finally, if research subjects are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research.

Please quote your REB file number (REB 2009-200) on future correspondence.

Congratulations and best of luck in conducting your research.

Nancy Walton, Ph.D.
Chair, Research Ethics Board

RYERSON UNIVERSITY
RESEARCH ETHICS BOARD

To: Candace Grant
ITM

Re: REB 2009-200: Assessing ethical attitudes and moral judgment of trainee Information and Communication Technology (ICT) professionals

Date: May 27, 2013

Dear Candace Grant,

The review of your protocol REB File REB 2009-200 is now complete. This is a renewal for REB File . The project has been approved for a one year period. Please note that before proceeding with your project, compliance with other required University approvals/certifications, institutional requirements, or governmental authorizations may be required.

This approval may be extended after one year upon request. Please be advised that if the project is not renewed, approval will expire and no more research involving humans may take place. If this is a funded project, access to research funds may also be affected.

Please note that REB approval policies require that you adhere strictly to the protocol as last reviewed by the REB and that any modifications must be approved by the Board before they can be implemented. Adverse or unexpected events must be reported to the REB as soon as possible with an indication from the Principal Investigator as to how, in the view of the Principal Investigator, these events affect the continuation of the protocol.

Finally, if research subjects are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research.

Please quote your REB file number (REB 2009-200) on future correspondence.

Congratulations and best of luck in conducting your research.

Nancy Walton, Ph.D.
Chair, Research Ethics Board

RYERSON UNIVERSITY
RESEARCH ETHICS BOARD

To: Candace Grant
ITM
Re: REB 2009-200: Assessing ethical attitudes and moral judgment of trainee Information and Communication Technology (ICT) professionals
Date: May 15, 2014

Dear Candace Grant,

The review of your protocol REB File REB 2009-200 is now complete. This is a renewal for REB File . The project has been approved for a one year period. Please note that before proceeding with your project, compliance with other required University approvals/certifications, institutional requirements, or governmental authorizations may be required.

This approval may be extended after one year upon request. Please be advised that if the project is not renewed, approval will expire and no more research involving humans may take place. If this is a funded project, access to research funds may also be affected.

Please note that REB approval policies require that you adhere strictly to the protocol as last reviewed by the REB and that any modifications must be approved by the Board before they can be implemented. Adverse or unexpected events must be reported to the REB as soon as possible with an indication from the Principal Investigator as to how, in the view of the Principal Investigator, these events affect the continuation of the protocol.

Finally, if research subjects are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research.

Please quote your REB file number (REB 2009-200) on future correspondence.

Congratulations and best of luck in conducting your research.

Lynn Lavallée, Ph.D.
Chair, Research Ethics Board