

Spring 2006

Teaching Ethics in the Information Systems Curriculum

Camille Françoise Rogers

Follow this and additional works at: <https://digitalcommons.georgiasouthern.edu/etd>

Recommended Citation

Rogers, Camille Françoise, "Teaching Ethics in the Information Systems Curriculum" (2006). *Electronic Theses and Dissertations*. 583.

<https://digitalcommons.georgiasouthern.edu/etd/583>

This dissertation (open access) is brought to you for free and open access by the Graduate Studies, Jack N. Averitt College of at Digital Commons@Georgia Southern. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact digitalcommons@georgiasouthern.edu.

TEACHING ETHICS IN THE INFORMATION SYSTEMS CURRICULUM

by

CAMILLE FRANÇOISE ROGERS

(Under the Direction of John A. Weaver)

ABSTRACT

This dissertation evaluates the importance of teaching ethics in the Information Systems curriculum. It begins with a review of the expectations and recommendations of three distinct academic and professional organizations (AACSB, IS2002 Model Curriculum, and ABET) specifically related to ethics teaching. This case study is centered on a set of ethics instruction that was used to teach ethics to senior level Information Systems students, which included a discussion of professional codes of ethics, mini-case studies, contemporary news events, a historical novel called *IBM and the Holocaust* (Black, 2001a), a Systems Development Life Cycle (SDLC) ethics grid created by the instructor, and online discussions in WebCT. The students were surveyed at the end of the semester as to the effectiveness of the ethics instruction, and the quantitative results along with a qualitative data analysis of their online discussions and SDLC-Ethics grid is presented. An analysis of the data leads the researcher to believe that overall the students found the curriculum useful, with the reading of the IBM book and the SDLC-Ethics grid providing the most benefit.

INDEX WORDS: Teaching ethics, Ethics curriculum, Information Systems curriculum, SDLC-Ethics grid, ABET, AACSB, IS2002, Holocaust

TEACHING ETHICS IN THE INFORMATION SYSTEMS CURRICULUM

by

CAMILLE FRANÇOISE ROGERS

BBA, Eastern New Mexico University, 1991

MBA, Eastern New Mexico University, 1993

A Dissertation Submitted to the Graduate Faculty of Georgia Southern University in

Partial Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

STATESBORO, GEORGIA

2006

© 2006

Camille Françoise Rogers

All Rights Reserved

TEACHING ETHICS IN THE INFORMATION SYSTEMS CURRICULUM

by

CAMILLE FRANÇOISE ROGERS

Major Professor: John A. Weaver, Dept of Curriculum, Foundations, and Reading

Committee: Marla B. Morris, Dept of Curriculum, Foundations, and Reading

Thomas L. Case, Dept. of Information Systems

Manouchehr Tabatabaei, Dept. of Information Systems

Electronic Version Approved:

May 2006

DEDICATION

This dissertation is dedicated to my family and close friends who have provided a tremendous amount of support and prayer in accomplishing this dream.

To my husband Bruce: Thank you for all your support, patience, and encouragement. I could not have done this without you. I know that sounds cliché, but it is true. You know how much I struggled with completing this degree, particularly during the first year of classes, when I would come home discouraged, wondering what I was getting myself into. You encouraged me to keep going and I am finally finished. I love you.

To my girls, Faith and Hope: Mommy thanks you for your love and patience. Remember your namesake always. Have faith in God and hope for the future. God has great plans for both of you and He will lead you to your dreams. You fill me up with tremendous joy, you are my blessings, and I love you. I'm finally done with my school work and it's time to do the happy dance!

ACKNOWLEDGEMENTS

I would like to thank all of my committee members and faculty who guided me along the way towards completing this degree. In particular, I would like to thank the two most valuable influences in my academic success.

John: Thank you for your leadership as chair of my committee. As a teacher, you literally made me think outside the box, more specifically, the technological box. Your perspective was enlightening and challenging, mixed in with a little bit of quiet humor. Thank you for your support, understanding, and guidance along this academic journey.

Tom: I have known you the longest, and I appreciate your friendship, leadership, and mentoring in my career and education. Thank you for the encouragement and all the long hours you put in to editing my writing. Thank you also for showing me what it takes to not just be a good faculty member, but a great faculty member! I appreciate you more than I can express. Thank you.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	6
LIST OF TABLES	10
LIST OF FIGURES	11
FORWARD.....	12
CHAPTER	
1. INTRODUCTION	13
Background of Study	13
Information Systems Discipline.....	14
Why Ethics is Important	16
Purpose of Case Study	19
Research Questions.....	21
Significance of Study	21
2. REVIEW OF RELATED LITERATURE	23
Ethicality of Studying Curriculum.....	23
Ethics as a Curriculum Topic.....	24
Curriculum Theory and Computing Ethics.....	28
Ethics in the Business Curriculum.....	34
Ethics in the Information Systems Curriculum.....	36
Content of the Ethics Curriculum	42

Concerns about Teaching Ethics.....	62
Evaluating Ethics Teaching	71
Summary of Literature Review.....	75
3. CASE STUDY TEACHING METHODS	77
Methods Used to Teach Ethics	77
Historical Narrative.....	78
SDLC – Ethics Grid.....	83
Professional Codes of Ethics	85
Hypothetical Case Studies	86
Contemporary Case Studies.....	87
In-class/Online Discussions	88
Summary of Ethics Instruction	89
4. METHODOLOGY	91
Research Questions.....	91
Participants.....	92
Design	92
Instrumentation	93
Procedures.....	97
5. RESULTS	98

Quantitative Data Analysis of Survey Instrument	98
Qualitative Analysis of Web Discussions & SDLC-Ethics Grid.....	107
6. CONCLUSION.....	131
Discussion.....	131
Limitations	137
Recommendations.....	138
Concluding Thoughts.....	141
REFERENCES	144
APPENDICES	158
A GLOSSARY OF TERMS.....	158
B SURVEY ON ETHICS TEACHING	159

LIST OF TABLES

TABLE 1: Example SDLC-Ethics Grid	84
TABLE 2: Summary of Ethics Instruction	90
TABLE 3: Results of Previous Ethics Instruction	99
TABLE 4: Course Where Ethics was Previously Taught.....	100
TABLE 5: Student Perception Before and After Reading Book	102
TABLE 6: Change Approach to Job Responsibility.....	103
TABLE 7: Required Reading for all IS students	104
TABLE 8: Statistics for Q.7 – 12: Effectiveness of Instructional Technique	105
TABLE 9: WebCT Postings by Students after Chapter 1.....	110
TABLE 10: Student Comments Questioning Author’s Objectivity	112
TABLE 11: Student Perceptions about Watson and Hollerith	114
TABLE 12: Comments Reflecting Watson Receiving Hitler’s Medal.....	117
TABLE 13: Comments on the France and Holland Chapter	120
TABLE 14: Final Comments about the Book.....	123
TABLE 15: SDLC-Ethics Grid Example	129
TABLE 16: Summary of Ethics Curriculum Directives by Organization.....	133
TABLE 1A: Glossary of Terms.....	158

LIST OF FIGURES

FIGURE 1: Range of Responses Before and After Reading Book	101
FIGURE 2: Frequency Response Percentages for Instructional Methods.....	106

FORWARD

For a dissertation discussing computer ethics, I thought it would be appropriate to include the following “Ten Commandments” from the Computer Ethics Institute, enlightening readers about the responsibilities that need to be considered regarding information systems technology. While these commandments may appear to be humorous, this issue should not be taken lightly, as Black’s book (2001a) about the Holocaust and the data analysis of student feedback will illustrate in the final chapters.

Ten Commandments for Computer Ethics

(from the Computer Ethics Institute of the Brookings Institution, Washington, DC)

1. Thou shalt not use a computer to harm other people.
 2. Thou shalt not interfere with other people’s computer work.
 3. Thou shalt not snoop around in other people’s files.
 4. Thou shalt not use a computer to steal.
 5. Thou shalt not use a computer to bear false witness.
 6. Thou shalt not copy or use proprietary software for which you have not paid.
 7. Thou shalt not use other people’s computer resources without authorization or proper compensation.
 8. Thou shalt not appropriate other people’s intellectual output.
 9. Thou shalt think about the social consequences of the program you write or the system you design.
 10. Thou shalt always use a computer in ways that show consideration and respect for your fellow humans.
-

CHAPTER 1
INTRODUCTION

“To teach is to touch a life forever” - author unknown

Background of Study

To teach is indeed to touch one or more lives forever. My introduction to this dissertation begins with someone else’s ending, someone who once told me that I touched their life as a teacher by teaching them about ethics. This individual was a few weeks shy of graduating with her BBA in Information Systems degree, when she made a comment that also touched my life and gave me my foundation for writing this dissertation. This student was being recognized as one of our best students in the discipline at an annual honor’s day luncheon. It was her moment to shine, as she was being congratulated for her academic accomplishments during the previous four years. After being recognized she respectfully thanked her parents and her professors for everything they had taught her. She finished by specifically thanking me for not just teaching her the computer skills she needed, but also for the impact I had on her by teaching about ethics and responsibilities as an information systems professional. Her words at that moment sounded a lot better than I can recall or put into words, but I do remember feeling like my job as a teacher was complete. I had finally touched one life forever and perhaps more. In writing this dissertation, I will share with the academic world my methods for teaching ethics in the hope that I can touch a few more lives.

Information Systems Discipline

Information Systems (occasionally referred to as IS), is the discipline that links computer technology with business principles. Specifically, IS students complete an assortment of computer classes and the core business classes of accounting, finance, management, marketing, and economics. They graduate not only with a business degree but with computer skills that prepare them for a job in a business, government, or other closely related organization.

The IS curriculum at each college and university is influenced by many different stakeholders that include, but are not limited to, industry needs, community needs, faculty qualifications, student expectations, government influence, and academic guidelines. For the IS curriculum academic guidelines are critical for accreditation of a program and are driven in part by three distinct academic and professional organizations, the IS 2002 Model Curriculum, AACSB, and ABET recommendations.

The current version of the first model, *IS2002 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems* (Gorgone et. al, 2002), also known as IS2002, lists the characteristics of an IS professional as one who must have:

- 1) ... broad business and real world perspective.
- 2) ... strong analytical and critical thinking skills.
- 3) ... interpersonal communication and team skills and have strong ethical principles.
- 4) ... design and implement information technology solutions that enhance organizational performance. “ (pg. v)

In examining these characteristics it must be noted that in addition to the business skills (item 1), and the IT skills (item 4), that IS professionals must also have critical thinking skills (item 2), people skills (item 3), and ethical integrity. It is this last characteristic that provides a foundation for including ethics in the IS curriculum and it is listed as such in the IS2002 recommendations as one of the representative capabilities and knowledge expectations of an IS program graduate (Gorgone et al., 2002, pg. 14). According to their report, the IS2002 model is widely accepted in the United States and “has become the basis for accreditation of undergraduate programs of information systems” (pg. iii) by AACSB (Association to Advance Collegiate Schools of Business), the accrediting body for business schools, and by ABET (Accreditation Board for Engineering and Technology), the accrediting body for computing, engineering, and other technology disciplines. Thus the IS2002 model does appear to play a vital role in curriculum development of IS programs and it is expected that all recommendations be followed so that these programs can be accredited. As such, it is then reasonable to expect that the teaching of ethics is included in any accredited IS degree program.

The Association to Advance Collegiate Schools of Business or AACSB is the international governing accreditation body for business schools worldwide, and it provides recommendations about what should be included in the business school curriculum at both the undergraduate and graduate levels. The most recent set of standards from 2003 (AACSB website, 2005) recommends that ethics education is an essential asset the business curriculum. The recommendation however does not specify any time commitments, approaches, reading lists, or actual course requirements, other than that it is to be taught as a topic in the business curriculum. It does not even specify

that it has to be an entire course, but instead can be taught as a topic in one or more business courses. At most institutions this is done in either a management class, as recommended by AACSB, or in a business law class or both.

Ethics education has become a priority to the AACSB so much so that in academic year 2002-03, it created the Ethics Education Task Force which released their first report in June 2004. Appropriately titled as *Ethics Education in Business Schools*, this report reiterated the necessity and importance of teaching ethics in the business curriculum, in the wake of scandals at both Enron, Parmalat, and other international corporations. In the foreword to the report, it specifically states that its overarching purpose is to “urge and encourage administrators and faculty in business education to contemplate their current approaches to ethics education and to explore methods to strengthen this vital part of the curriculum” (2004, p.7).

There are several key initiatives that were implemented as a result of the ethics report, one of which is a creation of a website on the AACSB (www.aacsb.edu) portal that provides resources for the teaching of ethics in the business school.

Why Ethics is Important

There are many different forms of technology which have been around for centuries, and along with them has been the controversy of whether or not they are “good” for society. There are some groups who whole-heartedly embrace new technology, those who adamantly oppose it and others whose position lies somewhere in between the debate. Those who oppose technology generally do so because of ethical concerns or fear of how it might negatively affect our present state of society. Many times these concerns are voiced in political debates, news media, popular culture,

literature, movies, educational curriculum, and even religion. Examples of some of the ethical debates centered on technology include digital fingerprinting, stem cell research, cloning, pharmaceuticals, and gene therapy. These are all very good discussions, but not the area of ethical dimensions that will be explored in this text. The focus of this discussion will be on the ethical dimensions of information systems technology and its inclusion in the curriculum.

Information Systems distinguishes itself from other computer disciplines by focusing on the technology systems that produce *information* to support decision-making in businesses, government, and other organizations. Students in this discipline typically become proficient in learning HTML, webpage development, network administration, computer applications, operating systems, programming, database administration, data modeling, and numerous other skills that help them *design, implement, and maintain* the computer in an organizational setting.

Technology, however, is about more than the skills. It is more than learning how to turn on a machine, punch a few keys, click the mouse here and there, and then turn it off. It is more than a device that requires a skilled programmer to input lines of code that will, in turn, generate output. Computer systems are a source of organizationally-relevant information, hence the term “information systems” for the discipline. The system consists of the hardware, software, people, policies, and procedures, all working in synergy to generate needed information. This information can change organizations, business environments, change people’s lives, and change the way we live.

This concept of the power of information systems was first brought home to me after reading the book *IBM and the Holocaust* by Black (2001). In this book the author

tells the compelling tale of IBM's alliance with the Nazi party, to which they leased thousands of Hollerith machines during the 1930's and 40's, which led to the identification, round-up, and eventual murder of millions of people during World War II, particularly the Jews. The Holocaust is not normally a topic included in the information systems curriculum, but in this particular instance the book made such a personal impression that I decided to use it in class to teach ethics to IS students

In this 500 page text, which is supported by 70+ pages of references and bibliography, Black provides thorough research and creative narrative that traces the history and ruthless characterization of Herman Hollerith, Thomas Watson, Sr., and the tabulating machine company that evolved into IBM. The book documents the period from 1933 to 1945 as Hitler and the Nazis moved into each new territory and country, and how technology was used in every instance for census taking of every individual in a community, and those in the labor/concentration camps. In particular, Black lays out details of how IBM not only knew what their machines were being used for, but also how they designed them, implemented them, provided training, and maintained them onsite at countless statistical offices and concentration camps throughout Nazi Germany. Designing, implementing, training users, and maintenance of a computer system is part of the information system professional's job responsibility and are all important aspects of the *Systems Development Life Cycle (SDLC)*, which will be defined and discussed later in the text.

In addition, the author also provides evidence of IBM's numerous opportunities to sever ties with the Nazis, but instead they choose to continue financially profiting from the situation, at the expense of people's lives. At one point in the text, the lead executive

of IBM, Thomas Watson, Sr. is personally awarded a medal by Hitler himself at a lavish party in Berlin, in honor of IBM's contributions to the cause. IBM managed to stay under the radar and avoid public scrutiny during this time by operating through its many European subsidiaries, primarily the German subsidiary, Dehomag (Deutsches Hollerith Maschinen Gesellschaft). Black conceded that the Holocaust may have still occurred had IBM punched card technology not been used, but he provided evidence that it would not have happened so swiftly and so extensively without the technology and without Watson's aggressive business plans. This book is not an easy read because of the graphic nature of the Holocaust that is detailed throughout, but it does provide a valuable, real-life example for information students to learn from when considering the ethical implications of technology and business.

Purpose of Case Study

The purpose of this case study is to examine a course model that is used in an IS program at one regional university to see if it is effective in teaching the ethical characteristics that the IS2002 curriculum model recommends is expected of all IS graduates.

Chapter 2 of this dissertation will provide a review of relevant literature that discusses the need to teach ethics in the business curriculum and then specifically in the IS curriculum. It will also review literature that provides examples of how ethics is currently being taught in the computing curriculum, followed by research that has been done on how to assess the teaching of ethics.

Chapter 3 of this study will outline the pedagogy that will be used to teach ethics at a regional university in the southeastern United States. Included in this chapter will be

a summary of the *IBM and the Holocaust* book and an outline of the SDLC framework, which will be used as the foundation for evaluating the Black's book (2001). In addition, the teaching methods will also include in-class and online discussions of ethical issues in computing, contemporary business examples, hypothetical cases, and an evaluation of professional codes of ethics.

Chapter 4 of this dissertation will discuss the methodology that will be used to assess the effectiveness of the ethics curriculum. It will include methods for obtaining both quantitative and qualitative data from the students in this class. A brief questionnaire will be used to obtain quantitative feedback from the students and online discussions along with a written assignment using the systems development life cycle (SDLC) framework will be used to obtain the qualitative data needed to evaluate the teaching techniques.

Chapter 5 will provide the results of the data analysis along with a discussion of what was discovered and learned. In particular it will map out a comparison of the teaching model to the IS2002, AACSB, and ABET recommendations to see if the pedagogy meets expected criteria. The chapter will also include the results of the survey administered to students to determine effectiveness of the teaching model. The final part of the chapter will conclude with a summary and discussion of the student's written responses.

Chapter 6 will conclude the dissertation with a discussion of the limitations, concerns, and weaknesses of the study. As with any research there is room for improvement and this section will conclude with recommendations for future inquiries into the teaching of ethics in the IS curriculum.

Research Questions

The following research questions will be considered in this investigation:

1. Does the teaching model used in this case study sufficiently meet the criteria for teaching ethics in the IS curriculum as outlined by IS 2002, AACSB, and ABET recommendations?
2. Is the teaching model effective in helping IS students comprehend the importance of ethics and professional responsibility? Specifically:
 - a. Do students find the discussion on professional codes of ethics helpful?
 - b. Do students learn about the importance of IS ethics from reading the IBM book?
 - c. Are specific pedagogical materials, such as the SDLC-ethics grid helpful in mapping out IS ethical decision making?
 - d. Do students find the discussion about current business examples from the news media helpful in learning about ethics in IS?
 - e. Are the extensive online discussion postings helpful in reflecting on the ethical issues of computing?
 - f. Is the overall instructional approach effective in changing the way the IS students think about their future job responsibilities in regards to ethics and professionalism?
 - g. Do students recommend this teaching method for future use? Do they find it valuable for all IS students?

Significance of Study

The significance of this study is multi-faceted. On the individual side, it is significant to me and the many students' lives that I have touched, particularly the one mentioned at the beginning of the chapter. While her words may not be statistically significant for academic publishing and research, they were significant enough for me to consider choosing this dissertation topic.

On the professional level, this study is significant because it has the potential to assist other IS professors who are assigned to teach ethics by providing them with a teaching model and an evaluation of the method's effectiveness.

On the societal level, this case study has the potential to ease the minds of those concerned that at least some IS students are not just being taught technology skills, but also the ethical and professional dimensions of their job. It will be up to the students to apply what they have learned.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Ethicality of Studying Curriculum

The study of curriculum is an ethical obligation that educators should undertake regularly regardless of the discipline they are in. The field of curriculum theory looks beyond the task-oriented process of curriculum development and shifts the focus instead on the contextual dimensions of students, teachers, society, politics, and the basic question of whose knowledge are we reproducing. The reconceptualization of the curriculum is a movement that began in the 1970's when a group of researchers created an alternative stream of discussion about the major influences that affect educational curriculum, in contrast to the work of Tyler, and other traditional curriculum thinkers. In Tyler's text, *Basic Principles of Curriculum and Instruction* (1949), he outlined the four fundamental questions of curriculum development which became a structural roadmap for educational administrators to use in school policy making. Tyler's rationale, as it has become known, focused on content development by using objectives, lesson plans, instructional efficiency, and the measurement of learning.

The curriculum theorists changed that. As some would suggest, they were the ones who collectively "worked to reconceptualize the field from one focused on curriculum development to one focused on understanding curriculum" (Pinar et al, 2000, pg.10). These theorists went beyond the one-dimensional look at what subject matter should be taught and included conversations such as the subjectivity of the teacher, the lived experience of the student, the political influence of subject matter, and how much society plays a role in the educational process. These individuals changed the way we

look at education by providing a holistic view to understanding curriculum. Some of the different perspectives and inquiries in the re-conceptualist paradigm include historiography, phenomenology, hermeneutics, postmodernism, feminism, Marxism, neo-Marxism, and post-structuralism.

Some of the key curriculum theorists and philosophers that were part of the paradigm shift that led to the development of the curriculum studies discipline include Huebner, Macdonald, Apple, Grumet, Pinar, Greene, Giroux, Miller, Noddings and several others. Most of them published their work in the *Journal of Curriculum Theorizing*, or *JCT*, which was first released in 1978 (Pinar, 1999). Most of the literature by curriculum theorists focuses not on the known or stated curriculum of the school, but instead on the hidden curriculum of the existing social order. In some circles, the curriculum theorists are the rebellious group, the lost children, the protestors of traditional curriculum development and instruction, or as Weaver (2004) cleverly described, the Spawns from hell.

Ethics as a Curriculum Topic

Ethics as a curriculum topic has a long history in the American public education. Dating back to the early years of American history, one can find primers, hornbooks, and other materials that taught students about religion, philosophy, and ethics (Bernard & Mondale, 2001). In contemporary curriculum studies, the discussion of ethics, morality, and religion, is still prevalent as seen in the works of Purple (1989), Slattery (1995), and many others. Regardless of whether we overtly discuss these issues or not, Morris (2001) maintains that they exist as part of our school life. She writes:

Curriculum theorists cannot underestimate the importance of understanding how these theological memories, traces, emotionally and intellectually affect our lives in schools. Although school is the place that is supposed to be neatly separated from religion, it is not. Students and teachers grow up in traditions and bring them into the classroom, if only in quiet ways, even if the question of religion is never raised. The traces of these traditions mark the text of school life. (Morris, 2001, pg. 60)

The works of these writers are compelling and helpful to the discussion of ethics in the curriculum, but there is additional area that must also be considered that is particularly relevant to the ethics teaching in this text, and that is the examination of Holocaust literature to learn about ethics. This is a delicate topic for many and some would suggest that using the Holocaust to teach ethics is problematic because it could be seen as minimizing the tragedy of this unmatched, horrific genocide. This is a valid concern and one that cannot be easily resolved. The intent of this study is not to minimize the Holocaust, but to read and learn from it. The sensitive nature of the Holocaust and the countless narratives about this time generally provide lasting impressions that one should never forget.

Morris (2001) in the text *Curriculum and the Holocaust* uses what she terms as a “social psychoanalytic hermeneutic” (Morris, 2001, pg. 4) lens for examining Holocaust histories and novels. In her work she contends that there are many forms of representation about this tragedy and that “the ways in which the Holocaust gets represented tells much about the ways in which this event will be remembered in generations to come” (Morris, 2001, pg. 5). As a result, examining the Holocaust

through an ethical lens will hopefully not only teach students about ethics, but will also form a memory representation about the Holocaust that will be remembered for a long time.

In discussing the inclusion of ethics in the curriculum, it is helpful to also define what it is. Ethics can be viewed as a systematic method of determining right from wrong, or good from bad, based upon an established set of rules and formulas. Others would argue that there are situational ethics that can not be guided by conventional rules. The *Random House Dictionary of the English Language* provides two working definitions of ethics. They are:

1. The body of moral principles or values governing or distinctive of a particular culture;
2. A complex of moral precepts held or rules of conduct followed by an individual. (1983, p. 489).

Both of these definitions are useful explanations of ethics for this research study. The first definition positions ethics as a collective reasoning as agreed upon by those in the same culture. The ethics agreed upon by one society or culture will not necessarily be the same as those agreed upon by others. What might be ethical for businesses to do in the United States may not necessarily be considered ethical business practices in Europe or Asia, and vice-versa. The second definition pertains to an individual's framework of ethics. It positions ethics as a set of morals, perhaps from religious training, or a set of rules, like professional codes of conduct, that provide a framework for making individual ethical decisions.

In order to teach ethics as a curriculum topic, it must be done in a manner that provides students with a framework for discussion in the context of professional guidelines as well as for the situation or environment in which it will be applied.

Ethical thinking and decision-making are not, however, simply about following rules or guidelines (Strike & Soltis, 1998), but exist in an axiological framework and commitment to do what is right and good, in all circumstances. Some (Pierce & Henry, 1996) categorize the teaching of ethics into personal, informal, and formal codes of ethics. Their definition defines personal ethics for example, as those developed “from observation and experience” (p. 426), an informal code of ethics is simply the accepted behavior or corporate culture of the work place, and formal code of ethics refer to official company policies and guidelines. Regardless of how ethics is defined, it should be considered an important enough topic to be included in the curriculum.

In reviewing the literature regarding teaching ethics in the Information Systems curriculum, I would like to note that in addition to curriculum theory and information systems literature, additional research was used from both the business area and computer science discipline because these disciplines are intertwined with Information Systems. Business research literature was used because Information Systems is considered one of the functional areas of business, and any suggestions regarding teaching of business ethics classes would also apply to IS ethics content. Computer science literature is also used because it is a closely related discipline in regards to technical theories and concepts, and the recommendations in reference to teaching computing courses may also apply to the IS curriculum. In addition, the computer science model curriculum currently requires a three semester hour course on the topic of ethics and professional issues as

outlined in the final report of *Computing Curricula 2001* (CC2001, 2001), whereas the IS discipline only requires that ethics be introduced as an “additional area of study” (ABET, 2005). Consequently, there are a sizeable number of articles that have been published since 1991, that discuss the various merits of how to fulfill this requirement in computer science degree programs.

Curriculum Theory and Computing Ethics

There is not a significant amount of literature by traditional or reconceptualist curriculum theorists on the issue of information technology and the curriculum. This is in part because IT/IS is a relatively new discipline with most of its development occurring concurrently during or after the reconceptualist movement. A few curriculum theorists who have addressed technology in the curriculum are Aoki (1987), Bowers (2000, 1988), Bromley & Apple (1998), Cuban (2002, 1980), Fensham (1992), Ferneding (2002, 2003, 2004), Haraway (1997), and Weaver (2004). The common thread in the writings of these scholars is the hesitancy to embrace computer technology, they instead suggest careful consideration of its impact on society.

Bromley is one of the few curriculum theorists who have established a research stream in the area of technology curriculum and education. He has co-edited a text with Apple titled *Education, Technology, and Power: Educational Computing as a Social Practice* (1998). This includes a collection of essays that look at how modern technological practices align with or subvert existing forms of dominance. In his opening chapter of the book, Bromley (1998) contends that the “computer functions as a *symbol* of the quality of education” (p. 1) that children are receiving, suggesting that the increased usage of technology in the public schools is generally seen as positive thing.

Bromley is not content with this symbolism and claims that assumptions about the benefits of technology should be critically examined. He believes those assumptions are:

...that computing technology benefits all students equally....that access to such technology is a guarantee of upward social mobility...that wider facility with high technology will alleviate the problems of the United States economy. It is assumed that anything involving new technologies must be an improvement; that it can, and indeed will, make life much easier for educators who now suffer in undertechnologized situations.

(Bromley, 1998, p. 2)

Bromley sustains that computers are far from neutral instruments and that they “partake in an epistemology that promotes certain visions of knowledge and who counts as a knowing subject” (1998, p. 2). He claims that computers reinforce existing power relationships in that they benefit some areas of society, while depriving others who don’t have access to them. He concludes his writing by asserting that there are progressive possibilities that will lead to a more democratic future of educational computing.

Bowers is a writer that typically addresses the connections between education, culture, and the ecological crisis. He has written on wide range of social, cultural and technological issues in education, and like Bromley (1998) believes that there is a non-instrumental essence to computers in society and the classroom. One of his best texts, *Let Them Eat Data* (Bowers, 2000), focuses on how computers affect education and cultural diversity. In this work Bowers (2000) is surprised at the “superficial understanding of the culturally transformative quality of computers” (p. 109) and blames the educational system for not providing computer proponents with a clearer understanding of the

complexity of culture and technology. He firmly believes that “not all technological innovations are expressions of progress” (Bowers, 2000, p. 109) and that the general public has an inability to recognize that. As evidence he notes that there is a shift in the quality of education citing “the increasing reliance on e-mail for student-professor communication, the shift to virtual libraries, and the growing number of courses offered in cyberspace” (Bowers, 2000, p. 112).

The cultural representations in computer-mediated learning is also of concern to Bowers (2000) because the screen images are then used in the thought processes of students “as they organize data, make simulated decisions, and do word processing” (p. 123). In a discussion about the educational software programs, Bowers (2000) claims that it is “easy to identify egregious instances of violence, racial, and gender bias, and gross misinformation that should concern even the most staunch supporters of educational computing” (p. 128). He suggests that we must rethink technology and consider how modern technology has transformed the process of commodifying knowledge, relationships, and culture.

An early curriculum theorist, Aoki (1987), in an article published in the *Journal of Curriculum Theorizing*, questioned the use of technology in classrooms as means to deliver the curriculum. He briefly discussed the three waves of educational technology, beginning with media projectors, then television, and finally the microcomputer, all of which have been slowly integrated into the classroom as instruments of education. Using Heidegger’s classic essay, “The Question Concerning Technology” (1977) as his framework, Aoki questions the instrumental application of microcomputers and technology in general, and suggested that it is “not the computer technology that is

dangerous; it is the essence of computer technology that is dangerous” (1987, p. 171).

He concludes that the “truth of technology is in the essence of technology, as Heidegger insisted, in the revealing of things and people as only resources, as standing-reserves that can be objectified, manipulated, and exploited” (1987, p. 175).

In the *Understanding Curriculum* book by Pinar, Reynolds, Slattery, and Taubman (2000), there is limited discussion of technology in the institutionalized text section, implying that it is still regarded as an issue of instruction and curriculum development, but its themes of cultural influence and critical inquiry reflect the conversations of the reconceptualists. Taking an instrument of education perspective, they suggest that there are three ethical problems to consider when discussing the integration of computers in the classroom: the availability of computers, the availability of software, and the computer literacy of teachers. The biggest problem however that the authors voice concern about is how computers in the classroom change the role of the teacher, as indicated in the following excerpt:

There are several problems involved in the incorporation of computers into the curriculum. One is the simple availability of computers. Their cost ... may function to widen the general gap between wealthy and economically disadvantaged students. ... Perhaps the most serious problem is that the presence of computers alters the need for traditional academic skills and hence is affecting the roles of teachers. (Pinar et. al, 2000, p. 714)

Their discussion is consistent with other researchers regarding the discourse of teachers uncritically embracing new computer technology in the classroom, and not fully

contemplating the affect that computers may have on the curriculum, the students, and themselves. The authors suggest that “as important as technology is and can be to education, it leaves unexamined the classic curriculum question of what knowledge is of the most worth” (Pinar et. al, 2000, p. 716) and instead focuses on how the technology might help organize knowledge and learning. Pinar, Reynolds, Slattery, and Taubman (2000) conclude by maintaining that “technology in the curriculum must be critically evaluated, not uncritically embraced” (p. 719). In their conclusion, the authors are reasoning that as educators, we should consider the societal and ethical implications of computers in the classroom, and not limit the focus to how we should be using the technology to improve teaching and learning.

Cuban also discusses the use of computers in the classroom. In his most recent work *Oversold and Underused* (2001a), like the previous scholars, he addresses the issue of the implementation and availability of technology in the classroom. He also investigates the implications of technology to see if it has changed the way teachers teach and the manner in which students learn. His third area of discussion examines technology in the classroom from a cost-benefit framework. Cuban’s concluding thoughts suggest that we should look beyond basic technology integration and “examine the assumptions propelling reform through technology” (2001a, p. 197) thus implying a broader vision that also focuses on the cultural implications of technology in our society.

In a related article, Cuban (2001b) indicates that the “use and non-use of information technologies among general education teachers in the past two decades strongly suggests that computers have entered classrooms very slowly, with modest to minimal changes in what teachers commonly do” (p. 134). The explanation for the

teacher's infrequent computer use he reasons is rooted in the cultural beliefs of knowledge, teaching, and learning, as well as a limitation of teacher's time. Teachers are busy trying to operate within the constraints of the district, school, and class policies, and thus must juggle multiple tasks and don't necessarily have enough time to adopt technology into the classroom.

Ferneding, a curriculum theorist at the University of Illinois at Urbana-Champaign, is widely considered to be the most prolific researcher on technology and curriculum theorizing. Ferneding (2003) in her one of her most recent texts critiques the adoption of technology and the techno-utopianism disposition of many teachers in the classroom and suggests that there should be more questioning of educational reform. Like Aoki, she is concerned with the social and political essence of computer technology. She states that the "functionalist discourse of current educational reform has rationalized change in education by aligning the purpose of public education with that of economic interests and Information Age futurism, a purpose that includes rapid infusion of electronic technologies" (Ferneding, 2003, p. 6). Ferneding argues that this type technocentric discourse positions technology as a means to an end and believes that "even if the public becomes computer literate, citizen decision-making, in terms of educational policy, is essentially postpolitical" (p. 7). The author concludes her work by suggesting that administrators and teachers should engage in a responsibility of questioning technology. She clarifies the intent of this approach is not to criticize but instead:

...it is a form of engagement that reaches for understanding through inquiry. To question technology is to invite a responsible relationship

with it. Thus, as educators, are we not obliged to engage in the practice of questioning technology if we care to teach such a responsibility to our students? (Ferneding, 2003, p. 255)

Beyond the classroom, there are other discussions of information technology and societal impact. Weaver, like Ferneding, is another contemporary curriculum theorist whose interests include technology and the influence of popular culture in television, movies, and contemporary music. In his most recent work, Weaver (2004) serves as both an editor and writer of a collection of essays that explore science fiction as text for science and technology curricula. Weaver (2004) recognizes the importance of including information technology in the discussion in his text *Curriculum Theorists as Spawns from Hell*. According to this scholar, information technology “symbolizes the second media age of the internet, virtual reality, and hypertext” (Weaver, 2004, pg. 31) and it is an area for discussion by curriculum theorists that must include a “perspective other than silence”.

While there has been some discussion of technology by curriculum theorists, most of the research in this area comes from researchers in the computing disciplines. With curriculum theorists the concern is not so much whether the technology is good or bad for learning, but how it affects students and society in general. In each of the computer disciplines however, the curricula seem to emphasize the functionality of the technology and the development of skills, and there is minimal discussion on the culture, ethical dimensions, or essence of the computer as is seen in the works of the curriculum theorists.

Ethics in the Business Curriculum

Business ethics, as McDonald & Donleavy (1995, p. 843) claim, is a paradigm of applied ethics where the application of ethical theory and normative guidelines is done in the context of the business environment. The Association to Advance Collegiate Schools of Business (AACSB) is the international governing accreditation body for business schools worldwide, and it provides voluntary recommendations about what should be included in the business curriculum at both the undergraduate and graduate levels. The most recent set of standards from 2003 (AACSB, 2005) recommends that ethics education be included in the business curriculum as an essential requirement. This AACSB recommendation, according to one researcher (Bishop, 1992, p. 291) began in 1976 but has subsequently been decentralized and fragmented in most business school curricula because it does not specify any time commitments, approaches, reading lists, or actual course requirements, only that it should be taught as a topic in the business curriculum. It does not specify if ethics is to be addressed in an entire course, nor does it specify who should be teaching ethics, or which functional area of business is best suited for teaching it.

The research literature provides strong support for including ethics in the business curriculum. One recent report (Borrus, 2004) suggests that business ethics is an essential enough topic to warrant a new business ethics training institute at the University of Virginia for top executives of corporate America, decided upon and established by an association of CEOs themselves. This comes, of course in response to a string of corporate scandals that have appeared recently in the public media. In their study of business professionals, Cole and Smith (1996) similarly conclude that top executives

need to make ethics a high priority, and that this attitude can, in part, be molded while they are still in college.

Bishop (1992) recommends that business schools have a responsibility to proactively teach ethics to their students in a more formal and systematic manner than has previously been done. His research shows that ethics is typically found in management courses of business schools, as AACSB guidelines recommend. In particular, he notes that business ethics is traditionally taught in such classes with either a *philosophy-oriented approach* or a *management-oriented approach*, and argues that there is room for both in the curriculum (Bishop, 1992, p. 294).

The next section will review ethics being taught in the IS curriculum as influenced by industry needs, professional societies, and accrediting organizations.

Ethics in the Information Systems Curriculum

Just as ethics education is a priority topic in the business curriculum, researchers have suggested that it is equally important for technology students (Anderson & Sanzogni, 2000; Athey, 1996; Byrne & Staehr, 2004; Cougar, 1989; Laudon, 1995; Pierce & Henry, 1995). Computer technology students in the business school are typically placed in the Information Systems discipline, and like other business majors, they too should be introduced to ethics as part of their curriculum. One researcher (Athey, 1996) suggests that this is imperative because Information Systems students will become the ones who design and write systems for organizations and they should consider the ethical issues of how these systems will be used. She also maintains that technology professionals have a responsibility to share with society the pros and cons of

technology, and not just design information systems but reflect on whether these systems will be used for ethical purposes.

Laudon (1995) suggests that the study of ethics provide a valuable lesson for computing professionals. Technology is a social phenomenon that carries constraints such as responsibility and accountability. He argues:

An ethics of information systems is impossible without an understanding of how information technologies affect human choice, human action, and human potential. Societies do not stand naked before technological change, swept along before the tide, as some popular journalists intimate. Historically, societies react to technological change by mitigating its influence, civilizing the change, compensating injured individuals, attempting to restore balances...it is a socially enacted phenomenon, in its design, use, and implementation. (Laudon, 1995, p. 38)

Cougar's (1989) motivation for teaching computer ethics courses is a reaction to industry scandals. He notes that "computer industry has been plagued with problems for many years; to the extent that legislation has been introduced to try to control the problem" (p. 211). As a member of the ACM curriculum committee, he recommends however that it is not necessary to teach ethics as a full course, and in his article he mentions that he teaches two one-hour sessions on the topic to senior IS majors.

IS2002

The primary professional societies that are associated with the IS discipline are the ACM, AITP, and AIS. Collectively they release a periodic report, the most recent of which is the *IS2002* report, which provides specific model curriculum guidelines for

Information Systems programs and courses. The *IS2002 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems* (Gorgone et. al, 2002), also known as *IS2002*, outlines the characteristics of an IS professional as a person who has:

- 1) ... broad business and real world perspective.
- 2) ... strong analytical and critical thinking skills.
- 3) ... interpersonal communication and team skills and have strong ethical principles.
- 4) ... design and implement information technology solutions that enhance organizational performance. (pg. v)

In examining these characteristics it must be noted that in addition to the business skills (item 1), and the IT skills (item 4), that IS professionals must also have critical thinking skills (item 2), people skills and ethical integrity (item 3). It is this last characteristic that provides a foundation for including ethics in the IS curriculum and it is listed as such in the *IS2002* recommendations as one of the representative capabilities and knowledge expectations of an IS program graduate (Gorgone et al., 2002, pg. 14).

According to their report, the *IS2002* model is widely accepted in the United States and “has become the basis for accreditation of undergraduate programs of information systems” (pg. iii) by AACSB (Association to Advance Collegiate Schools of Business), the accrediting body for business schools, and by ABET (Accreditation Board for Engineering and Technology), the accrediting body for computing, engineering, and other technology disciplines.

The authors of the *IS2002* report, Gorgone, Davis, Valacich, Heikki, Feinstein, and Longenecker (2002) use the information systems professional characteristics as the foundation for developing the following exit capabilities for IS graduates:

- analytical and critical thinking
- business fundamentals
- interpersonal, communication, and team skills
- technology (Gorgone et. al, 2002, p. v)

Included in the criteria for analytical and critical thinking are the knowledge areas of ethics and professionalism. Specifically, they identify the topics in this category as codes of conduct, ethical theory, leadership, legal and regulatory standards, and professionalism. The *IS2002* report provides sample course descriptions for the model curriculum listed in a suggested sequence of completion, and ethics is listed as part of the content in two of the ten courses in the structure. The first course in the suggested model is labeled as *IS 2002.1: Fundamentals of Information Systems*, and in addition to introductory coverage of systems concepts, the topics are also to include “information security, crime, and ethics” (Gorgone et. al, 2002, p. 24). A discussion of professional codes of ethics is suggested for a subsequent course in the model curriculum. Identified as *IS 2002.7: Analysis and Logical Design*, this course teaches students to analyze and design information systems using the systems development life cycle phases. The entire body of knowledge recommended in the report is designed to be prescriptive and may be adjusted to meet the needs of the local university’s IS program.

The *IS2002* model appears to play a role in curriculum development for IS programs and normally it is expected that recommendations be followed in order to

achieve accreditation. As such, it is reasonable to expect that the teaching of ethics will increase in the IS curriculum, especially when programs wish to obtain ABET accreditation.

ABET

The ABET organization is a more recent stakeholder in the IS curriculum as it provides criteria for accreditation of Information Systems programs as well as other computing disciplines and programs in applied science engineering and technology. The Accreditation Board for Engineering and Technology (ABET), was established in 1932 and consists of 30 different professional and technical societies (ABET, 2005). Originally known as the Engineers Council for Professional Development or ECPD, it underwent its name change in 1980 to reflect its new accreditation area of computing and technology disciplines. Information Systems programs were not accredited by ABET until recently, beginning with PACE University in 2002.

ABET distinguishes itself from AACSB in that ABET accredits the actual discipline, such as IS, whereas AACSB accredits the business school/college where the IS program traditionally resides. As such, some IS programs are now trying to meet the standards for accreditation by both AACSB and ABET. As of July 2005, there are 504 business schools (AACSB, 2005) that have obtained AACSB accreditation, and only 17 IS programs (ABET, 2005) that have qualified for ABET accreditation. Of the 17 IS programs that are ABET accredited, only one school (Robert Morris University) is not associated with an AACSB business school. As pointed out earlier, the ABET accreditation standards are in still in their infancy for IS programs, but many more aspire to be accredited and are thus trying to abide by the criteria now outlined for ABET

accredited IS programs. The most recent standards available for both IS and Computer Science programs are included in the *Criteria for Accrediting Computing Programs* (2004), and are effective for programs being reviewed for accreditation during the 2005-2006 academic year.

Ethics is included as one of the criteria topics for additional areas of study under section IV-15 as follows:

IV-15. There must be sufficient coverage of global, economic, social and ethical implications of computing to give students an understanding of a broad range of issues in these areas. (ABET, 2004, p. 9)

The interpretation of the standards are such that ethics must be taught somewhere in the Information Systems curriculum as a recognizable area of study, but it does not specify it to be addressed in a particular IS core class or indicate how much content must be presented. This allows some latitude for IS faculty to determine where ethics should be placed within their own degree programs.

The structure of ABET includes an Industry Advisory Council (IAC) whose makeup consists of an assortment of industry leaders in the profession who provide viewpoints on issues related to accreditation. In 1999, the IAC released a white paper called *Improving Ethics Awareness in Higher Education*, in which they encouraged ABET to take a leadership role with universities in promoting ethics in the educational process. In this they outline six ways that colleges and universities can effectively improve and increase ethical awareness that include an analysis of corporate codes of conduct, and the increased inclusion of ethical awareness in a capstone computing or engineering course (IAC, 1999, p. 4). The recommendations of the IAC and the latest

criteria for IS programs clearly indicates ABET's commitment and influence on the inclusion of ethics in the curriculum.

Content of the Ethics Curriculum

The previous paragraphs have addressed the directive for ethics content in the Information Systems curriculum, now the question for educators becomes how should it be taught and what content should be included? The recommended guidelines and criteria from AACSB, IS2002, and ABET do not address what specifically should be taught, or how it should be taught; only that it should be included in the curriculum. Educators are left to determine the details.

Teaching techniques for business and IS ethics have been suggested by other researchers (Athey, 1996; ; Bishop, 1992; Brabston, 2003; Johnson, 2004; Laudon, 1995; Oz, 1993; O'Boyle, 2002). These include the lecture method, discussions, debates, modeling, case studies, professional codes of ethics, corporate codes of ethics, and designing practical ethical decision-making activities. Several of these ideas for content and methods will be discussed in the next few pages.

Traditional Philosophical Ethics

One approach to teaching ethics that has been suggested is to use traditional philosophical ethics; this is also referred to as general normative ethics by some researchers (Rariden, 2004; Derry & Green, 1989). This teaching model takes the students through a philosophical journey of classical ethical thinking observed in the writings of Socrates, Nietzsche, Aristotle, Kant, and others. In addition students are exposed to ethical theories such as deontology, utilitarianism, perennialism, pragmatism, and existentialism.

The writings of Nietzsche, for example, could be included in a discussion of philosophical ethics and morality. Known as one of the early existentialist philosophers, Friedrich Nietzsche discussed issues of morality and values in many of his works including the major text of *Beyond Good and Evil: Prelude to a Philosophy of the Future* (Kaufmann, 1968), originally published in 1886. In this nine part text; Nietzsche uses aphorisms to discuss topics such as the prejudices of philosophers, free spirit, question religion, history of morals, and virtues. In one part for example, he briefly writes that “all credibility, all good conscience, all evidence of truth come only from the senses” (Kaufmann, 1968, p. 278), implying that there is not one universal Truth, applicable to all, but that truth is more subjective. The writings of many of the philosophers, including Nietzsche, are very complex and require intense studying to fully comprehend.

A more practical discussion of philosophy and ethics would include the introduction of deontological and utilitarian frameworks for students to use when making complex decisions. Immanuel Kant and his writings on deontological ethics provide a framework for ethical decision making based on rules, duty and moral obligations to others, without regard to the consequences. On the other hand, utilitarian or consequentialist ethics, as discussed in the works of John Stuart Mill, provide a framework for ethical decision making based on the evaluation of the consequences of the actions. In short, should a decision be made on what is the right thing to do, such as following the rules of law, or should it be based on what the outcome might be? As a practical ethical dilemma, for example, would it be better for a man to rush his pregnant wife to the hospital when she is in the last stages of labor (consequentialist), or would it

be more ethical for him to follow the speed limits (deontological) and risk the consequences of immediate birth and his wife's health while enroute?

The Committee for Education in Business Ethics (CEBE) appears to be in favor of philosophical ethics because they recommend that a business ethics course should include fundamental ethical concepts followed by an application of these theories to business situations (Pamental, 1989, p. 548). Bishop (1992, p. 293) also believes that there is room for both a theoretical and applied approach in teaching ethics and suggests that the philosophy-oriented approach to teaching ethics is traditionally more rigorous with "theory, logical foundations, and abstract conceptualizations of business ethics problems". Siponen and Vartiainen (2001) likewise advise that students majoring in one of the computing disciplines should have a full course in ethics that include both ethical doctrines and the application of theories in the computing process.

Rariden (2004, p. 2) is strongly in favor of teaching classical ethics in the curriculum and argues that a normative ethical theory is a precondition to the practice of applied ethics. He defines applied ethics as something that "presupposes that there is an agreement on ethical principles at the general normative level" and that one "would be rightly concerned about just what is it that is being applied" (Rariden, 2004, p. 2). He wonders how universities can provide any applied ethics content without first identifying the fundamental ethical theories from which it is based, and recommends that we build this into the educational process.

Laudon (1995) contends that, barring a few exceptions, the IT ethics literature is void of a solid grounding in classical theories of ethics and as a result there is no recommended analysis or pathway for practitioners, researchers, and students to utilize

when sorting through issues in the computing environment. Instead, he maintains, the literature traditionally “catalogs situations and offers up situational ethics without any principles to guide us, and without suggesting a methodology” and it is for this reason that he advocates the inclusion of classical ethical concepts and theories in the Information Systems curriculum (Laudon, 1995, p. 34). Laudon goes on to suggest that the 2,000 years of ethics literature can be organized for IT ethicists into the following three distinctions (Laudon, 1995, p. 34):

- Phenomenology vs Positivism
- Rules vs. Consequences
- Individuals vs. Collectivities (micro vs. macro levels).

It is the latter two distinctions that he combines to create a typology of ethical theories that can be used for ethical reasoning about computing issues. The results are four schools of ethical thinking that he labels as:

- School 1: Collective Rule-based Ethics – follows collective and universal rules, laws and imperatives for ethical behavior, invariant of the consequences;
- School 2: Individual Rule-based Ethics – individuals make ethical decisions based on rules from their personal religion, intuition, and/or self-awareness;
- School 3: Collective Consequentialists - utilitarian in nature, ethical decisions are based on what provides the most utility or pleasure for the greatest number; considers the consequences for the group as a whole rather than following absolute rules; uses a stakeholder analysis approach;

- School 4: Individual Consequentialists - an ethical analysis of an individual's self-interest; a good act which results in good consequences for that individual; (Laudon, 1995, p. 35)

In each of the ethical schools presented Laudon (1995) provides an example computing application that fits into the appropriate analysis. For example, he suggests that a collective, rule-based argument (School 1) "is often used to support software anti-piracy and anti-copying policies" (Laudon, 1995, p. 35). An individual, rule-based (School 2) analysis, he states, would suggest not stealing software based on fear of violating a religious commandment. The third school, collective consequentialists, Laudon points out, is where most of the scholars of computing ethics are situated, and where computing professionals reside as they collectively form codes of conduct as a source for ethical advice and direction. The bias in the computing literature, he suggests is that "when faced with an ethical decision, the individual should consult some larger collectivity – the person's firm or professional society – for advice and should follow that advice" (Laudon, 1995, p. 36). Referencing any of the professional computing associations' codes of ethics, for example, would position the decision maker as a collective consequentialist.

Laudon continues his discussion of ethics by focusing on additional areas of consideration in ethical decision making and provides recommendations for the computing discipline and academics. In closing his discussion, Laudon proposes that as IS educators we should "discuss these situations more openly, explore options more forcefully, and be prepared to offer some kind of support for professionals caught in these situations" (1995, p. 39).

Derry and Green (1989, p. 522) also support the inclusion of ethical theory in any type of ethics course and suggest that it should not just be there as a prelude to teaching case studies, instead it should be a means for familiarizing students with terminology and theoretical positions in addition to providing a historical perspective on ethical debates. In a review of twenty-five textbooks used in business ethics classes, they found that although sixteen included at least one chapter on theoretical issues, they were not pleased with the content. They contend that in most of the textbooks, theory is only partially developed and many issues are left unresolved. In their concluding comments they propose the development of a “teaching methodology that would provide clearer guidance in the application of ethical theory to ethical practice” (Derry & Green, 1989, p. 532).

Additional researchers (Bishop, 1992; Pamental, 1995) suggest that as future computer and business professionals, IS students need a more applied and practical framework for discussing ethics. Pamental (1995, p. 548), for example, is not opposed to the teaching of traditional ethics theory but instead insists that it is not enough. Success in an ethics course, he claims, is when the students are able to apply their ethical reasoning to the business dilemmas.

Professional Codes of Ethics

A logical starting point for applied ethics teaching in any technology curriculum is to discuss the various professional computing associations’ codes of ethics and standards of conduct. The two most relevant professional groups for IS students are the *Association for Computing Machinery (ACM)*, and the *Association of Information Technology Professionals (AITP)*, both of which post ethical standards on their

respective websites (www.acm.org; www.aitp.org). The research literature provides some discussion that supports the use of teaching codes of ethics, while others extensively debate the merits of the codes themselves.

Some of the researchers that have indicated the use of professional codes in teaching ethics include Cohen & Cornwall (1989), Cougar (1989), Ghafarian (2002), Hanchey (2002), and Martin & Martin (1990). After opening the discussion with a definition of ethics, Cougar (1989) had students in his capstone undergraduate course examine and compare the ACM and DPMA (now AITP) codes of ethics. He reports that the comparison provided some good discussion, but additional pedagogy was needed to get the students to “internalize” the material (Cougar, 1989, p. 212).

Ghafarian (2002) also acknowledges using the ACM code of ethics in a junior level programming course. His motivation for the inclusion of ethics in the course was driven in part to address plagiarism by students in the course. The ethics curriculum that Ghafarian used therefore asked students to examine the professional codes of ethics in the context of their responsibilities in software development and teamwork. Like Cougar, Ghafarian also used additional resources beyond the codes to teach ethical awareness.

Instead of starting with the ACM and AITP codes of ethics, Hanchey (2002, p. 149) first used a listing of other professional organizations such as CPAs, lawyers, and physicians to jumpstart a one day module on ethics in a senior level *Data Structures* course. The students were left to conjecture what all the groups had in common, and eventually were guided into a discussion about how all professional organizations have ethical codes that members subscribe to, including computer professionals. The point of this brain-teasing exercise she claims was to make students realize that being a

professional does include obligations which are usually outlined in the standards of conduct or codes of ethics. Additional material and activities were then used to complete a one-class period module on ethical awareness.

Brabston (2003) describes success in teaching professional codes of ethics to a set of senior IS students in an *Information Resource Management* (IRM) class. This professor engaged the students by incorporating team projects that required them to investigate and debate the strengths and weaknesses of both professional codes of ethics and corporate policies with other teams. A final task required of these students was to anonymously select the best set of code of ethics, either professional or corporate, and many of them choose none, and instead they recommended a combination of various codes (Brabston, 2003).

Professional codes of ethics do appear to be a good starting point for discussion, but as many of the researchers (Laudon, 1995; Martin & Martin, 1990; Oz, 1992 & 1993) have indicated, there are advantages to also include additional discussion, topics, activities, and pedagogical mechanisms. One possible direction for further discussion in the classroom would be to extend the conversation of codes beyond an introduction and awareness of their existence, to a critical examination of the strengths, weaknesses, and merits of them, as some researchers (Martin & Martin, 1990; Oz, 1992 & 1993) have already done.

In an attempt to recognize the ethical standards of computer professionals, Martin & Martin (1990) reviewed not only the ACM and DPMA (now AITP) codes of conducts, but also those of the Institute of Electrical and Electronic Engineers (IEEE). This article is a solid pedagogical source because it formulates the common themes that are found in

the computing professional codes. Martin & Martin identified (1990) several recurring themes across all three codes: (1) dignity/worth of people, (2) personal integrity, (3) responsibility for work, (4) confidentiality of information, (5) public safety, health, and welfare, (6) participation in professional societies, and (7) knowledge about technology = social power. In addition to the common themes, their discussion also articulates two major criticisms about computing professional codes. The first critique is that the codes are generic and are not specific enough to “reflect the unique ethical problems raised by computer technology” (Martin & Martin, 1990, p. 98). The second criticism addresses the lack of enforcement or sanctions to those who violate the codes, in part due to their vagueness of application. These criticisms are useful because it helps explain why discussing the professional codes in the classroom is not sufficient to cover ethical awareness in the curriculum.

The work of Oz (1992, 1993) could also provide guidance for discussing professional codes of ethics in the classroom. In both articles, Oz completes an in-depth analysis of various computing professional organizations, not only in the USA, but also in Canada, and Great Britain. In the first article Oz (1992) reviews the ethical codes of the ACM, the DPMA (now AITP), the Institute for Certification of Computer Professionals (ICCP), the Canadian Information Processing Society (CIPS), and the British Computer Society (BCS). Reflective of the profession as a whole, each of these organizations are relatively young compared to other professional societies, with the ACM created in 1947, the DPMA/AITP established in 1951 (name change in 1995), ICCP in 1973, the CIPS in 1958, and the BCS in 1957. One of the things that distinguishes the ICCP from the ACM and the DPMA/AITP is that they are not a

professional organization that meets as a group, but instead provides voluntary certification to computing professionals who want additional credentials. In addition, Oz (1992) points out that ICCP is unique in that part of its codes of conduct are mandatory and a violation could revoke a certification. The CIPS is Canada's largest computing association, and the BCS is not only a very active society within industry and government, but they are also an accrediting institute for colleges and universities (Oz, 1992).

In his second article on professional ethics codes, Oz (1993) limits his discussion to a comparison of computing organizations in the United States. In addition to the ACM, the DPMA/AITP, and the ICCP, he also includes the Information Technology Association of America (ITAA) whose membership consists of software companies, instead of individuals. What makes both of Oz's articles useful is that they provide a very detailed and organized analysis of all professional codes involved. For example, Oz (1993) points out that one of the flaws of all these codes of ethics is the "lack of priorities among the subjects of moral obligations" (p. 724). In other words, there is no hierarchy of commitment to various interested parties and the computer professional has to determine whose best interest they will serve. He suggests:

Obligation to one party may collide with obligation to another party.

Protecting one's employers interests may harm the public; protecting a colleague's interest may contradict with obligations to one's employer, etc... What is the member to do in such cases? (Oz, 1993, p. 724)

Later in the same article Oz maintains that conflicts of interest also exist in other professions, but a clear distinction of obligation is indicated in the codes of ethics for

these professionals. As an example, he indicates that both doctors and lawyers are always obligated to put their clients first.

Both articles conclude with thought provoking recommendations, the primary of which is a call for a binding, unified code amongst all computing professionals worldwide (Oz, 1992, 1993). In one of the articles Oz provides the following analogy of why he supports a cohesive code of ethics:

The relationship between IS professionals and the public is similar to most other professional relationships in terms of knowledge and reliance.

People approach a physician for help because the physician has a knowledge that they do not have. People hire a lawyer because the lawyer possesses skills they do not possess. Similarly, IS professionals possess expertise that others do not. Their obligations to the public and clients are therefore similar to those of other experts. (Oz, 1992, p. 431)

Oz reasons that a single, coherent code of ethics for computing professionals will help achieve many objectives such as creating a stronger public recognition of the profession and a better commitment by the professionals to employers, clients, and society. As is shown by some of the discussions provided in this section, each of these articles has the potential to be an excellent resource for a classroom discussion on professional codes of ethics, which could then lead into a discussion of corporate policies and standards of conduct.

Corporate Codes and Policies

Corporate policies and standards of conduct are another topic to consider in teaching IS ethics as demonstrated in Brabston's (2003) study. Pierce & Henry (2000)

examined the significance of company codes in a survey of over three hundred and fifty AITP professionals. Their results suggest that a clear presence, awareness, and adherence to corporate computer policies does influence the course of action taken by IS professionals in ethical decision-making. In their study, AITP members were presented with nine different scenarios of computer-related ethical dilemmas. The results indicate that those individuals who work in organizations where a corporate policy is well established, show a statistical significance in the disapproval ratings on six of the nine scenarios from those members who work in organizations where corporate policies are not known.

An earlier study by the same researchers (Pierce & Henry, 1996) demonstrates the importance of both corporate codes and professional codes of computer ethics. In this work, Pierce and Henry propose a framework of ethical decision making that includes personal, informal, and formal codes of ethics. They found that 78% of the IS professionals they surveyed used professional codes and company policies “to help guide ethical decision making” (p. 434). In addition, the respondents also indicated that when company policies are in place, they are valued and taken seriously by the employees. A final item of interest from this study is their recommendation that IS professionals should be included in the development of formal company policies. Typically, they claim, this task is left up to attorneys which results in policies that are challenging for most employees to read. Including IS professionals, they suggest, would not only help make the policies more practical, but also more comprehensive in regards to computer concerns, since they are the ones most familiar with the systems.

Several researchers suggest that having established codes and guidelines is not enough. Peterson (2002) for example, suggests that they can only be effective if they are known and clearly communicated to the employees of the organization. This researcher also found that if an employee believes in universal morals, corporate policies are not likely to influence them as much and that such policies are more helpful to those employees who believe in situational ethics. The policies and codes must therefore be detailed enough so that employees can apply them to relevant situations.

One recommended method of communicating corporate standards and codes of ethics to employees are to post them on the company website. Cougar (1989) used the policies and ethics programs from IBM and Hewlett-Packard as a source of discussion in his classroom to contrast the distinction between those corporations that have very little guidance for ethical conduct to those that have very detailed listings. In research conducted by Harris, Cummings, and Fogliasso (2002), the web site contents of fifty IT firms were searched for information about company codes of ethics; they found that 20% had statements of core values, and only 10% had links to their corporate codes of ethics. It was the codes of ethics that provided the most detailed guidance for employees. They concluded that more firms probably had company codes; they just were not posting them online and making them available to employees or researchers. Harris et al. (2002), like other researchers, note that company policies and ethics that are clearly communicated and supported by management “help an organization create and maintain an environment conducive to ethical decision making” (p. 228). The work of Trevino (1992) also suggests that corporate policies are not sufficient and that top management must be consistent in implementing these standards.

The implications of the results of these studies that have the greatest value to IS ethics education is that corporate policies, when they are made known, do influence ethical decision making of employees. A discussion of how to develop, improve, and communicate these policies, in light of today's technology should be included in the IS curriculum, so that students are not only familiar with them, but also learn to value their importance and provide continuous input to management about evolving changes in technology that might have significant ethical consequences.

Case Studies

Case studies are another useful and popular tool to teach ethics according to the research literature (Anderson et al., 1993; Benbunan-Fich, 1998; Cohen & Cornwell, 1989; Cougar, 1989; Epstein, 1995; Ghafarian, 2002; Polack-Wahl, 2000; Searls, 1988; Siponen & Vartianen, 2001; Wahl, 1999). The types of case studies indicated range from description that are less than one (Anderson et. al, 1993; Cougar, 1989) page in length to several pages (Epstein, 1995, Weiss, 1990) of both real and fictional scenarios dealing with various information systems related ethical issues such as privacy, intellectual property, unauthorized access, software quality and testing, and confidentiality. The quantity of case studies used in published studies range from only one (Ghafarian, 2002) to multiple cases sequentially written by the same professor (Epstein, 1995). Epstein developed so many cases that he published his own fictional book, *The Case of the Killer Robot* (Epstein, 1997), which will be discussed further in the next section.

All of the researchers describe using case studies in conjunction with, or following discussion of professional codes of ethics. Cougar (1989) argues that students

are more motivated to read the codes of ethics in detail when presented with case scenarios, because they serve as a source of guidance in analyzing the situation at hand. Anderson, Johnson, Gotterbarn, and Perolle (1993) rationalize that one of the functions of the codes of ethics should be to facilitate decision-making and yet they recognize that the ACM code of ethics by themselves are not written for practical application. Their solution was to develop nine fictional computing scenarios that would stimulate ethical decision. They published these cases collectively as an article in the *Communications of the ACM* (Anderson et. al, 1993), which is now easily available for downloading on the ACM website (www.acm.org). The articles are realistic in nature and integrate a good discussion of the applicable code of ethic(s) each scenario pertains to. It is not clear when these cases were posted on the ACM website, or if they are being used by other professors since they have not yet been mentioned in the literature.

Another set of case studies that have been created by members of the ACM are available in Weiss's *Self-Assessment XXII* publication (1990). This self-assessment publication is part of a series of self-assessments for ACM members and faculty to evaluate their knowledge in the various content areas of computing. In this particular assessment there are fifteen fictional, but realistic scenarios that cover everything from piracy, copyrights, conflicts of interest, and email monitoring. The article also provides a framework for analyzing and self-assessing the scenarios and is recommended for use in the classroom. The author suggests that the objective of this material "is to help the reader think about ethics and ethical behavior" (Weiss, 1990, p. 110) in relationship to the computing profession. The scenarios appear to be good teaching material, but their use is not mentioned in the research literature.

Beyond Epstein (1995), the creation of custom case studies for use in the classroom has also been done by Polack-Wahl (2000), thanks to the help of a *National Science Foundation (NSF) Workshop on Teaching Ethics and Computing* that she attended. The grant funded several annual summer workshops beginning in 1998, where faculty members were instructed and guided into creating contemporary computing case studies that promote ethical awareness and decision making. All of the cases created at the workshops are, according to Polack-Wahl, available for download on the Web, but unfortunately she failed to provide a URL in her article. A quick Google search on the web found two possible sources, one at a website by another participant of the workshop (<http://www.cse.nd.edu/~kwb/nsf-ufe/exercises-overview.html>) and the other on the Developing on/offline Computer Ethics (DOCLE) website (<http://csethics.uis.edu/dolce>). As Polack-Wahl explains, access to a resource such as this assures that there are plenty of cases for professors to use without having to reinvent the wheel (2000).

Benbunan-Fich (1998) indicates that using case studies can be a means of motivating students to practice ethical analysis. The students in this investigation are first provided theoretical foundations using ethical concepts, and then presented with several case scenarios chosen by the instructor based on either its classification by content (privacy, copyrights, etc.) or by the ethical and/or legal aspect emphasized in the material (Benbunan-Fich, 1998). What is interesting about this instructor's pedagogy is that she uses an active learning mode in the classroom which includes a case worksheet, online asynchronous discussion, in-class discussion, and a debriefing, using both an individual and group analysis of each case. The case worksheet is used as a foundation for the group work, classroom discussions and debriefing, and was developed by Benbunan-

Fich(1998) as a means of improving the student’s ethical analysis. It is structured so that there is “the application of analytical skills, abstract and concrete knowledge, and the development of recommendations” (Benbunan-Fich, 1998, p. 22).

The outline of the worksheet includes the following five question areas:

1. Statement of the problem and stakeholder identification
2. Application and explanation of the relevant ethical philosophical theories
3. Applicable ACM guidelines
4. Legal issues
5. Recommendations

Students are placed into groups and asked to complete the worksheet in preparation for discussions both in class and online. This instructor finds the asynchronous web discussion useful because it eliminates some of the constraints of in-class face-to-face discussions, it allows room for every student to participate, allows time for reading and formulation of questions and responses, and enhances the quality of the decision making. The disadvantage Benbunan-Fich (1998) reports for this technique is that students procrastinate in responding unless given the right incentives. A debriefing session in class is the last activity for each case study and allows the instructor to summarize and wrap-up the key issues and recommendations.

Wahl (1999) uses a similar approach to Benbunan-Fich (1998) that includes ethical theories, approximately thirty case study articles each semester, and the assignment of position papers that resemble the worksheet layout that Benbunan-Fich recommended. Coldwell (2001) also uses online discussion of case studies and contends that it gives students a “very, marketable, skill – working in a computer supported

collaborative work environment”, similar to those found in large, distributed organizations (p. 77). She also cites some of the same advantages that Benbunan-Fich (1998) indicated, and in addition maintains that peer support and responses in asynchronous web discussion between students alleviate the burden of the faculty member from having to respond to each comment or question.

Overall, most of these researchers maintain that case scenarios can be effective tools for learning about computer ethics, particularly if they are used in a discussion format.

Books

Textbooks are most likely an obvious source for learning about ethics, and there are several to choose from, even some relating specifically to ethics and technology. This section however will not focus on traditional textbooks, but will instead review some of the more non-traditional books that have been mentioned in the research literature as successful resources for introducing ethical awareness to computer students. In the computer science curriculum for example, a popular fictional text known as *The Case of the Killer Robot* (Epstein, 1997) is frequently used to teach ethics. The book, published in 1997, was originally created by Epstein (1989, 1994) as a series of nine mystery-like short stories, each written in the format of a newspaper article. The book is about a robot that accidentally kills a factory worker due to a suspected programming error and, as the story progresses, reveals a variety of complex ethical issues in a software development company that realistically reflects today's corporate environment (Epstein, 1989; Gerhardt, 2001). Over the years, additional articles have been created and collectively published and the most recent version of the book also includes discussion questions for instructors of computer ethics courses to use (Epstein, 1995).

Educators have indicated that using *The Case of the Killer Robot* presents realistic ethical situations that are useful for teaching in computer science and information systems curricula (Gehring, 2001; Gerhardt, 2005, 2001; Grodzinsky, Gehring, King, & Tavani, 2004). Gerhardt (2001, 2005) for example, uses the book in her Systems Analysis and Design course as a way of enhancing her subject matter while allowing the students to have fun. A pre-test/post-test survey showed that her students not only had an increased concern for ethical issues after reading the book, but also had an increased

awareness of the importance of ethics in the computer workplace (Gerhardt, 2005). The original set of killer robot short stories can be found on several online ethics resources centers such as the *Online Ethics Center for Engineering and Science at Case Western Reserve University* website (<http://onlineethics.org/cases/robot/robot.html>) and the *Ethics in Computing* website (http://ethics.csc.ncsu.edu/risks/safety/killer_robot) created by Gehringer (2001) at North Carolina State University.

Botting (2005) and Zlatarova (2004) also mention successfully using a book to teach ethics in a computer science course. The book *CyberEthics: Morality and Law in Cyberspace* by Spinello (2003) focuses on the social, ethical, and legal aspects of cyberspace and it includes traditional ethical theory in addition to applied ethics. Botting (2005) concedes that he did not survey the students directly regarding the book, but indicates that there was clear evidence that the learning objectives were met; in addition, his end-of-term teaching evaluations were the best he ever received.

Both of the books discussed in the literature have been shown to be effective in introducing ethical awareness to students and suggest that it is not always necessary to use a traditional textbook when teaching ethical concepts. Zlatarova (2004) thinks that books represent a non-prescriptive teaching method that captures the student's interest and provides valuable learning moments. The list of books available for creatively teaching computer ethics is probably not limited to the two mentioned above, and with further investigation in the literature and resources, additional works are likely to be found.

Rariden (2004) proposes an approach to teaching ethics that identifies and discusses concepts with a reasonable claim to ethics. In particular he suggests using

history and literature to point out the long term effects of decision-making. He argues that we often find history repeating itself when it comes to ethical issues, and a:

...young person who is unaware of the long-term personal effects of their actions is not going to take those long-term effects into account in making a decision to do whatever it is that they are about to do. But if s/he has considered a similar situation previously then s/he may not make a serious mistake in judgement.

(Rariden, 2004, p. 4)

IBM and the Holocaust (Black, 2001), is an example of a book whose discussion covers ethical issues intertwined with business strategy, corporate culture, and historical narrative, much as Rariden suggests. It provides a historical look at a major computer company's actions during a tragic time of history, outlining the misuse of technology and identifying examples of unethical decision making that were, according to Black (2001) complicit in the murder of millions. While the title of the book does not explicitly use the word "ethics", most discussions about the Holocaust imply ethical issues, and this book is no exception. This book is the focus of the teaching model introduced in Chapter Three of this dissertation.

Concerns about Teaching Ethics

Many concerns have been expressed by faculty responsible for teaching ethics, whether instruction occurs in the business school as part of the general core or specifically in IS. Some of the more common concerns about teaching ethics can be distilled into traditional who, what, when, where, and why inquiries. The previous sections of this literature review have already addressed the question of *what* methods to use, and the remaining concerns may be summarized as follows:

1. **who** should teach ethics? (business/IS or philosophy faculty)
2. **when** should it be taught in curriculum/? (freshman/sophomore classes or junior/senior)
3. **where** to teach ethics? (one course, or integrated across the curriculum)
4. **why** should we teach ethics? (what is its value to students)

Who should teach ethics?

Numerous researchers (Cohen & Cornwell, 1989; Gotterbarn, 1994; Greening, Kay, & Kummerfeld, 2004, Johnson, 1994; Pamental, 1989) have debated the merits of **who** should be teaching ethics to IS and/or business students. Possible solutions include having IS/business professors teach it or to have someone who studies ethics, such as a professor in philosophy or an ethicist, lead the discussions.

Pamental (1989) reviewed ninety-nine business ethics courses and found that two-thirds (n=66) of them were listed as being taught by the philosophy department. Cohen & Cornwell (1989) assert that ethics content being taught by a professor who specializes in ethics and philosophy has distinct advantages for students in that the professor would be in a better position to guide students toward appropriate considerations of ethical alternatives.

Johnson (1994) in her feature article, *Who Should Teach Computer Ethics and Computers & Society* also argues in favor of having a philosopher trained in ethics teach the mandated *Computer Ethics* course for computer science majors. She suggests that computer science faculty and those in closely related disciplines lack the training that prepares them to meet the teaching objectives of the ethics course. She contends that the objectives should be: ethical awareness, ethical sensitivity, understanding of computers'

impact on society, and using tools and analytical skills for ethical decision making (Johnson, 1994, p. 6). A disadvantage she observes, in having a philosopher teach the course is that it may send a hidden message to the computer students that the ethics course is less important than their technical classes and that it is an issue that can also be separated from computing (Johnson, 1994).

Several researchers (Gotterbarn, 1994; Maner, 1994; Martin, 1994; White, 1994), disagree with Johnson's assessment, and believe that faculty in the computing disciplines are well suited to teach the *Computer Ethics* course. Gotterbarn provides a very strong response to Johnson (1994) when he states that "all computer scientists have just been slapped in the face" (1994, p.12) by Johnson. He disagrees with her assumptions as illustrated in the following response:

Philosophers do not have in depth training in computing while in graduate school. In graduate school they examine the ebb and flow of arguments. The computer scientist learns about computing. The clear implication of Johnson's positions is that philosophers are capable of learning what they need to know about computing without having graduate school training, whereas the computer scientist is not capable of learning what they need to know about philosophy or ethical positions without graduate school training (Gotterbarn, 1994, p. 12).

Gotterbarn (1994) contends that philosophers are good at evaluating arguments based on ethical theory but rarely reach a decisive conclusion and this could be detrimental to computer students who need to learn how to make a decision when confronted by ethical computing dilemmas. He argues that people make good decisions

every day without knowing or labeling their choice using ethical concepts and terminology (Gotterbarn, 1994). He concludes that computer faculty are indeed capable of teaching their students how to address ethical issues.

White (1994) also responds to Johnson (1994) with opposition and believes that it would be easier to train a computer professor in the fundamentals of ethical theory than it would be to immerse a philosopher in the technical details of computing. He suggests that a computing faculty member who has experience in all phases of the system development life cycle process is a better choice for teaching computer ethics than a “philosopher whose only understanding of software may be how to run specific application software such as word processors or spreadsheets” (White, 1994, p. 12).

Maner (1994, p. 10), whose doctoral work was in philosophy, reasons that while philosophers may have an expertise in ethical theory, their educational background was not intended to be used to develop professionals who then make the moral decisions that impact others. Instead, he recommends that professors in the computing disciplines are professionals and the more appropriate instructors for courses in professional ethics.

Other researchers (Greening, Kay & Kummerfeld, 2004) while not directly responding to Johnson (1994), maintain that it is tempting to have specialists in ethics teach the concepts to IS students, but they are concerned that this might lead students into believing that you have to be an expert in ethics in order to deal with ethical issues in the workplace. They also believe that it would be difficult to use ethical specialists when trying to integrate ethics across the computing curriculum rather than concentrating it in one course. McDonald and Donleavy (1995), Maner (1994), and White (1994) all feel that the best approach is to train business faculty about ethical issues in their area of

specialization. Their concern is not meant to invalidate the capabilities of the ethics specialists, but instead to focus on the abilities of guiding students through the various case studies and technical requirements of the IS discipline while highlighting the ethical dimensions within the text. McDonald & Donleavy (1995) also argue that while professors in philosophy have a solid grounding in ethical theory, they are seldom capable of ethical interpretation of real life issues in business and information systems; as a result this challenge will be left up to the student to figure out once they are on the job.

When should ethics be taught?

In addition to the question of who should be teaching ethics to IS students, the timing of *when* the ethics course should be offered is also a concern and the options are usually narrowed down to either lower division or upper division courses. To clarify, the lower division classes in IS are those taken in the freshmen and sophomore years and this often consists of pre-business and general core classes. Upper division courses are therefore defined as those designated for juniors and seniors and largely consist of either business core classes or discipline specific Information Systems courses.

Pamental (1989, p. 547) analyzed ninety-nine undergraduate business ethics syllabi and discovered that half of the classes (n=50) are taught at the lower division level. He argues that students in these classes are not be able to deal with the course content effectively because they do not yet have sufficient knowledge of the functional areas of business. Pamental (1989) also found that ethics courses frequently rely heavily on case analysis, and an underclassman typically does not yet have experience with this instructional method; therefore, he recommends that business ethics courses be limited to

upper class students. McDonald and Leavy (1995) support Pamental's argument; their research found that many courses in business ethics are indeed taught as a senior level class for this very same reason.

Where should ethics be taught?

Another concern that has appeared in the research literature is *where* exactly in the curriculum should ethics be taught? One potential solution is to integrate ethics awareness into each core IS class, which enables each professor to be responsible for outlining the ethical dimensions of the particular subject area they are teaching, in addition to the regular content. An alternative solution is to have a substantial ethics module in one course, such as the senior capstone course in the IS program, or to offer ethics awareness as a self-sustaining course, similar to what is recommended for the computer science discipline. Each of these models has merits which will be discussed over the next few paragraphs.

There are several researchers (Bishop, 1992; Cohen & Cornwell, 1989; Friedman & Kahn, 1994; Greening, Kay, & Kummerfeld, 2004; MacDonald & DonLeavy, 1995;) who favor an integrated approach to teaching ethics. In their work focused on linking social concerns with technical material, Friedman & Kahn (1994) reason that an integrative approach of teaching ethics across the curriculum is the most powerful because it allows "social issues to emerge from students' own technical work" (p. 67). They argue that to teach ethics in a stand-alone course conveys a message to students that social issues, such as ethics, do not really count when working on computing projects. In a similar argument, Cohen & Cornwell (1989) contend that integrating ethical awareness into most, if not all IS classes shows students that this is not just another subject area, but

instead implies that it is a form of pervasive thinking that should be applied in all aspects of computing.

Bishop (1992) suggests that ethics should be integrated across the curriculum in a manner that reinforces foundations built in earlier course work. At his institution, ethics is taught as one-third of the curriculum in the *Principles of Management* course, in compliance with AACSB expectations. McDonald and DonLeavy (1995) also recommend an integrated approach across each functional area of study in business because this allows students to get relevant exposure to specific applications of ethics in all business disciplines. An additional advantage, they add, is that the responsibility for imparting ethical awareness is spread out among many professors, and not isolated to just a course or instructor.

Greening, Kay, & Kummerfeld (2004) also argue in favor of an integrated approach speculating that the danger in not doing so “may result in a lack of student ability to integrate ethics into their professional life” (p. 91). These researchers maintain that is the preferred method for ethics teaching, but it is not always the most pragmatic, citing reasons such as faculty qualifications and reluctance. They note that when ethical content is implemented in this fashion, it is often done as an attachment to the end of the course curriculum, and not necessarily as ongoing integration. Greening, Kay, & Kummerfeld provide two concerns about this approach (1995, p. 92). First, they believe that it is detrimental to students because they may be left with the impression that ethical thinking is an afterthought to the profession, and not a natural part of the process of technology analysis and implementation. Second, they reason that when ethics is left to the end of the agenda, its coverage is frequently truncated by the end of the semester rush

to complete the course. Coldwell (2001) echoes this concern indicating that “not all faculty members are comfortable discussing ethics and ethical issues are often the first subjects dropped from a course when there is a time constraint” (p. 76).

One university in Australia provides a model that uses both an integrated approach to teaching ethics as well as the inclusion of it as its capstone course for students majoring in an assortment of computing disciplines such as computer science, software development, information systems, and multimedia technology (Goold & Coldwell, 2005). These researchers claim that by teaching a capstone ethics course, students are able to draw from their previous studies more effectively and that “they also appear to be more committed to understanding the profession and the responsibilities of that profession as they approach graduation” (Goold & Coldwell, 2005, p. 232).

Teaching ethics as part of one class or as an entire class is not frequently discussed as the preferred option in the literature, but is frequently implemented that way due to the computer science curriculum model requirements. In IS ethics is most frequently taught as part of a senior capstone course, but not as a self-sustaining course. Brabston (2003), for example reports teaching ethics as a module in the capstone Information Resource Management (IRM) class for IS majors. Gerhardt (2001, 2005) reports teaching an ethics module in a required Systems Analysis and Design course; this is either a junior or senior level IS or computer science class, depending on the school at which it is taught.

Trevino and McCabe (1994) offer an alternative resource for learning business ethics and values that is complementary to both the integrated and single course options. Referring to it as the “meta-learning” approach, they claim that the hidden curriculum of

the business school provides insight into ethics and values learning outside of the classroom.

Why teach ethics?

There is some skepticism as to *why* we should be teaching ethics. One frequently seen argument in the literature (Bishop, 1992; McDonald & Donleavy, 1995) is that college students learn their value system earlier in life and it is therefore futile for professors to attempt to change that. Bishop (1992) argues that a person's values are not as static as some would believe it to be, but instead, is somewhat fluid and impressionable. He further contends that the goal of ethics courses is not to teach right and wrong, but instead to show them how to use their value systems in decision-making. His final argument is that for those whose value systems are weak, the teaching of ethics may actually "reinforce the expectation that ethical business behavior is the preferred – or even demanded – mode of operation" (Bishop, 1992, p. 294).

McDonald & Donleavy (1995) acknowledge that a one semester course in ethics will have minimal impact on student's values unless the objectives of the ethics teaching are made clear in advance. The aim should not be to change how students act, but to make them aware of ethical dimensions in business decision-making (1995).

Trevino and McCabe (1994) deconstruct the criticism that ethics cannot be taught by reasoning that an erroneous assumption is often made that people are inherently ethical or unethical, regardless of context and can therefore handle complex professional dilemmas just as easily as personal ones. They assert that a good disposition is not enough to handle complex, occupation-specific decisions and that additional education is needed to "prepare an individual to recognize conflicts of interest, to prioritize the

conflicting claims of multiple stakeholders, or to respond to differing cultural norms” (Trevino & McCabe, 1994, p. 406).

Evaluating Ethics Teaching

Once content and teaching techniques are selected, the effectiveness of teaching ethics should also be evaluated. Multiple researchers (Botting, 2005; Brabston, 2003; Byrne & Staehr, 2004; Gerhardt, 2001 & 2005; Glenn, 1992; Wu, 2003) describe approaches used to evaluate their ethics teaching in business or computer courses, and in most cases their teaching techniques appear to be effective. The three types of assessments mentioned in the literature to evaluate ethics teaching include using established/validated instruments, instructor-developed surveys, and informal qualitative measures such as observations and written text analysis

Established/Validated Instruments

Several researchers report use of an external, validated assessment test to evaluate the effectiveness of ethics instruction. Byrne & Staehr (2004), for example, used an instrument known as the *Defining Issues Test (DIT)* which has been repeatedly validated in over twenty five years of literature (King & Mayhew, 2002). The *DIT* (Rest, Cooper, Coder, Masanz, & Anderson, 1974), and more recently, the *Defining Issues Test, Version 2* or *DIT2* (Rest, Narvaez, Thoma, & Bebeau, 1999) were developed by several researchers at the University of Minnesota. The *DIT* and *DIT2* instruments are designed to measure moral judgement based on Kohlberg’s theory of moral development (Kohlberg, 1969) and were developed for general use, and not specifically for the computing discipline or ethics evaluation. These assessments are constructed using

ethical dilemmas followed by a listing of issues that the respondent must rate and rank in order of importance (Rest et. al, 1974).

Byrne & Staehr (2002) used the DIT in a pre-test/post-test format with a control group. In this study, information technology students were exposed to four weeks of computer ethics, including a discussion of the six stages of Kohlberg's theory. Their results indicate an overall increase in moral judgement of the students in the experimental group due to their exposure to computer ethics teaching (Byrne & Staehr, 2002). These results are in agreement with King & Mayhew's (2002) analysis that formal education in ethics while in college has been shown to make a positive contribution towards ethical sensitivity among students. The concern in using the DIT with students in the computing discipline is that it does not provide dilemmas or an assessment of professional-specific or computing-specific issues and is therefore not directly measuring the impact of computer ethics teaching (King & Mayhew, 2002). Consequently, the DIT is not routinely used to evaluate computing students' learning in ethics courses. For example, King & Mayhew (2002) indicated its use in only one IS ethics course (Paradice & Dejoie, 1991). The DIT instrument, however, was used in 172 previous investigations.

In a search to find a validated instrument that would specifically measure ethical issues of computing, Gerhardt (2001, 2005) identified only one; she subsequently used it to evaluate her course, using a pre-test, post-test format along with a survey instrument that she designed. The established instrument she used is a 41 question survey created by Porfirio Barroso of Spain that is reportedly used in several universities worldwide. No supporting data is provided by the author (Gerhardt, 2005) and quick search on the Internet yields no references to the instrument as being validated or readily available.

The results of her assessment, however, are positive and show an overall increase in the students' awareness of ethical issues. One question (item 32) in particular (Gerhardt, 2005) indicated a 24% rate of change increase when asked about the "obligation to fulfill ethical-professional code" (p. 119). Gerhardt (2005) summarizes that if you can teach it, you can measure it, but the literature review seems to indicate a lack of validated instruments that measure computer ethics teaching, and thus many instructors are developing their own tools.

Instructor Developed Surveys

The literature (Athey, 1993; Botting, 2005; Cohen & Cornwell, 1989; Glenn, 1992; Goold & Coldwell, 2005; Greening, Kay & Kummerfeld, 2004; Wu, 2003) indicates that instructor-developed surveys are commonly used to evaluate ethics teaching. Glenn (1992) and Wu (2003) evaluated teaching techniques used in business ethics courses, while the remaining researchers (Athey, 1993; Botting, 2005; Cohen & Cornwell, 1989; Goold & Coldwell, 2005; Greening, Kay & Kummerfeld, 2004) evaluated teaching methods in computer specific courses. Only three investigations (Cohen & Cornwell, 1989; Glenn, 1992; Wu, 2003) used a pre-test/post-test format and only two researchers (Cohen & Cornwell, 1989; Glenn, 1992) used a control group to assess the impact of ethics instruction.

All of the studies identified in the previous paragraph report positive outcomes and attribute this to the ethics instruction that students received. Cohen & Cornwell (1989) for example, surveyed 299 Information Systems students using a 19-item instrument that asked for student opinions on ethical statements. The same instrument was used before and after the ethics instruction in the course. They conclude that their

means of teaching ethics by using case studies and class discussion appear to be effective. In addition to survey instruments, some researchers report the use of qualitative forms of assessment to further support their findings.

Informal Qualitative Analysis

Using surveys and tests are not the only means for assessing the effectiveness of ethics instruction. Other approaches are often constructed using informal qualitative research techniques such as student observations, interviews, and text analysis of student assignments. Various researchers (Myers & Avison, 2002; Trauth, 2001) have argued that one advantage to using qualitative methods is that they help to validate a survey instrument.

McDonald and DonLeavy (1995) and Bishop (1992) make a case for assessing students using methods such as case analysis and essay questions, where the professor can look for transference of basic knowledge and application to an ethical dilemma. Bishop (1992), in particular, makes a clear distinction on how this assessment should take place by stating:

...the focus of measurement of the learning of ethics should be on the ability of students to recognize ethical issues and to logically incorporate those issues into their analytical processes and decisions. At no point should measurement of ethics learning take the form of assessing whether students choose the right solution. (p. 298)

Bishop (1992) asserts that when using written student responses as part of the assessment, faculty should focus on the process of how the student analyzed the material and not just the decision they have made.

Botting (2005) indicates positive learning outcomes to ethics teaching after evaluating student essays. As part of his course, students were regularly asked to write a thirty minute structured essay during class on the ethics topic for the day. The essays were graded using a holistic process, which is described by Botting (p. 343), but he expresses some concern about the technique citing that most students wrote well enough to earn an “A” according to established criterion. Overall, the professor seems pleased that student evaluations were very positive about the computer ethics course and he feels that learning objectives were achieved (Botting, 2005).

Brabston (2003) took a different approach and assessed her teaching model by conducting an informal student evaluation, observing students debating the issues, and soliciting input from another colleague who also watched the student debates. She reports success with the ethics activities, but no specific framework or data is provided to support this assessment.

Summary of Literature Review

This chapter was designed to examine the research literature regarding teaching ethics in the information systems curriculum. The chapter includes a look at computing ethics in curriculum theory, in the business curriculum, and finally in the information systems curriculum. The discussion pages also review the accreditation standards and recommendations as provided by the *IS2002* report, in addition to AACSB and ABET organizations to determine where ethics should be taught in the curriculum. All of this is helpful in establishing a need to include ethics in the information systems discipline.

The next phase of the literature review investigates the various techniques used to teach ethics to computer students which include discussing professional codes of ethics,

corporate policies, case studies, and books. The final part of this chapter reviews the practices of assessing the ethics teaching in the classroom.

The next chapter of this dissertation will take some of the recommendations and discussions provided in this chapter and outline a prescriptive curriculum that will be used to teach ethics in a senior level information systems course at a regional university in the southeast.

CHAPTER 3

CASE STUDY TEACHING METHODS

Methods Used to Teach Ethics

The instructional methods outlined in this chapter will be used to teach ethics awareness and understanding in a senior level Global Information Resource Management (Global IRM) course offered at a regional university in the southeastern United States. The Global IRM course is a senior level capstone course and differs from other core courses in the Information Systems curriculum in that it is not considered a technical course, but instead covers some of the softer, conceptual, and managerial issues of computer systems in business and organizations. The course content traditionally includes discussions of technology policies, practices, and trends in the international environment, and uses numerous case studies to highlight the experience of various corporations.

One of the many teaching objectives of this course is to help students understand the ethical responsibilities of technology professionals working in a global environment. In order to meet this objective and to address the potential for students not taking this topic seriously, the instructor will use a non-traditional approach to teaching ethics in conjunction with some of the more established techniques for teaching ethics and other course content.

The literature review in the previous chapter provided many alternatives for instruction of ethics and some of those approaches will be used in the proposed teaching model. Brabston (2003) reports success in her instruction of ethics in a similar course, using some, but not all of the same techniques that will be used here. The specific

requirements and activities that will be included are: the reading of a historical narrative, examining professional codes of ethics, focusing on contemporary business issues and hypothetical case studies using in-class discussions, extensive weekly online discussions, and the application of an “SDLC ethics grid” to the required reading. Each of these assignments will be discussed at length in the next few paragraphs.

Historical Narrative

The historical narrative that has been selected as part of this instructional approach is Edwin Black’s (2001) book, *IBM and the Holocaust*. As mentioned in Chapter 1, this book recounts the compelling story of IBM’s alliance with the Nazi party. IBM leased thousands of Hollerith machines during the 1930’s and 40’s, which were used to identify millions of people who were eventually murdered during World War II. The Holocaust is not normally a topic included in the Information Systems curriculum, but the book outlines many examples of unethical decision-making regarding information technology that resulted in deadly consequences for millions of innocent people.

There are several streams of discussion in the book that make it a good choice for IS educators to consider. For example, the book enables students to consider the primitive nature of the punched card Hollerith system, as compared to today’s general purpose computers such as the desktop PC. Throughout the book, the author provides sufficient detail about what IS professionals would call the hardware and software components of the system. During this time period, from 1933 – 1945, the punched card systems were not yet considered “computer” technology due to the lack of complete electronic makeup of the system; the first authentic computer is considered to be the ENIAC, released in 1946 (ENIAC, 2005). The punched card systems, however, were

considered to be information-producing forms of technology and they consisted of several machines. For example, the systems included a key punch device, a verifier, a sorter, a collator, a tabulating machine, a reproducer, an interpreter, and eventually an alphabetizer device is mentioned frequently in the book and is illustrated in pictures on *The Patton Society website* (IBM Punched Cards, 2005). The alphabetizer was of particular importance because it helped with the speedy creation (or what Black called the “blitzkrieg efficiency”) of the infamous list of names the Nazis used to identify people, whose lives were to be terminated.

Each of these hardware devices was custom made and maintained exclusively by IBM employees; they were on site in locations such as the statistical offices, train stations, and concentration camps. In addition to the hardware devices, the punched-card system required custom made cards for each of the different types of tasks they could perform, and similar to the hardware, customization could only be done by IBM employees. These facts will be used to help students understand the in-depth level of involvement of IBM in Nazi activities and that the corporation undoubtedly knew what their punched card systems were being used for.

Another stream of discussion that is highlighted throughout the book is how IBM was able to keep all this from public knowledge. This will be addressed in student discussions, As Black points out in considerate detail, IBM was able to fly under the radar by operating under their foreign subsidiary names, including the German subsidiary called Dehomag. On the surface, Dehomag does not reflect an IBM connection, but it is an acronym for *Deutsche Hollerith Maschinen Gesellschaft*, which in English translates as the *German Hollerith Machine Corporation* (Black, 2001a, p. 30). As many

computer historians will know, Hollerith was the inventor of punched-card machines in the 1890's, and after a successful run with his business, he sold it and the name of his company was changed to *International Business Machines* (IBM). Black provides some details about Hollerith and the historical development of IBM in the opening chapters of the book.

In Chapter 5 of the book Black details the elaborate 1937 party honoring IBM's contributions, and the Nazi medal that was personally presented by Adolf Hitler to Thomas Watson, Sr., the head of IBM, as a symbol of gratitude for all of his assistance to the cause. This medal, the Merit Cross of the German Eagle with Star, was considered the highest medal that Nazi Germany "could confer on any non-German" (Black, 2001a, p. 131). His reception of this award was subsequently revealed in the media, and Watson eventually returned the medal under public pressure while still secretly maintaining business ties with the Nazis.

The implementation of the reading assignment in the course will require students to read one or two chapters of the *IBM and the Holocaust* book each week, and for many of the students this will also be the first real learning experience they have regarding the Holocaust. The intent of this approach is to teach ethical awareness and sensitivity by appealing to the "human" consciousness of students. Typically, it is not possible to read this book, or any detailed work about the Holocaust, and not arouse emotions of anger, sadness, and disbelief. In this book however, students get a chance to realize the consequences of technology and ethically-oriented business decisions intertwined in an international tragedy. As the students read the book, they will be asked to view it not

only for its historical and ethical significance but also through the lens of an IS professional. In doing so the students will be asked to consider the following questions:

1. Did IBM know what they were doing?
2. Did they know what their punched card systems were being used for?
3. Did IBM make a profit?
4. What was the significance of IBM leasing the machines to the Nazis, versus selling it to them?
5. How long did this take place?
6. Did IBM have the opportunity to sever ties with the Nazis?
7. Were there other competitors of IBM who made similar systems? What role did they play?
8. Would the Holocaust still have occurred? Did the punched-card system make a difference in speeding up “blitzkreiging” the process?
9. Considering systems theory in IS, what roles did the people, policies, procedures, programs, and peripherals make in one country versus another?
10. Compare and contrast the sophistication of today’s IS technology with this era’s technology. What are the strengths and weaknesses of each? What level of involvement was needed by IS professionals then vs. now, given the complexity of that time period’s machine-specific devices vs. today’s general purpose machines?
11. Do you think IBM was complicit in the murder of millions during the Holocaust? Why or why not?

12. If so, do you think they should be held accountable? How?

13. What can ethical lessons can you, as future IS professionals, learn from reading this book?

These questions are just some of the things students will be asked to discuss in the course. As they read each chapter, additional questions will be posted online by the professor via the discussion tool of WebCT for required responses. This is done in part to highlight the chapter, and also to give the students a forum for responding and creating dialogue with their classmates.

Question numbers 7 and 8 in the discussion list are significant because they help the students understand two things: first, that the system did make a difference, and second, that it was not so much the technology, but the people, policy, and procedures using the Hollerith system that made the difference. In Chapter 11 of the Black's book, he illustrates these concepts by discussing the difference of the punched-card system being aggressively used in Holland versus how it was sabotaged in France by the members of the French resistance. The difference, as the author points out on the last page of the chapter (see excerpt below) is tremendous. For clarity, Lentz and Carmille were the local individuals responsible for maintaining the system in each of their respective countries.

“Holland had Lentz. France had Carmille. Holland had a well-entrenched Hollerith infrastructure. France's punch card infrastructure was in complete disarray. The final numbers: Of an estimated 140,000 Dutch Jews....a death ratio of 73 percent. Of an estimated 300,000 to 350,000 Jews living in France....25 percent.” (Black, 2001a, p.332)

Additional detailed information about the book can be retrieved from the book's website (www.ibmmandtheholocaust.com) or by reading an excerpt from the introduction published on the Nikor project website (Black, 2001b).

SDLC – Ethics Grid

The final aspect of the ethics instruction involves what I refer to as the SDLC-ethics grid. In this task, students will be asked to keep a journal of their reading and document examples from the book that outline IBM's involvement using each phase of the Systems Development Life Cycle (SDLC). The SDLC is the foundation framework from which Information Systems professionals complete their jobs. It provides several stages or phases of systems development that completes a project from beginning to end.

A project is typically directed by a project manager, and IS professionals will be involved at one or more phases of the life cycle of the project. Because of the complexity and size of today's systems development, it is unlikely that one individual will be involved in all phases, with the exception of the project manager. Instead, tasks are separated into teams of individuals who consistently complete one or more phases of development.

There are various models of the systems development life cycle that are adopted by IS professionals, and they usually include similar phases such as analysis, implementation, and maintenance of a computer system project. Some of the models available for the SDLC process include waterfall, spiral, fountain, and rapid prototyping (Kay, 2002). For this case study, I will ask students to adopt the waterfall method for application of their SDLC-ethics grid. I have selected this technique because it is the original SDLC model and the most commonly used in industry (Altwies, 2005). In

addition, this particular SDLC process reviews systems development in a sequential order, which will be helpful to the students in analyzing decision making. The waterfall model consists of the following phases: analysis, design, development, implementation, training, and maintenance.

The students will be asked to specifically indicate what decisions are made at each phase of the SDLC process that could be considered an ethical issue and will affect the overall outcome of the success of the project. These decisions are to be placed in the SDLC-ethics grid and should show the involvement of one or more IBM employees in each phase of the SDLC, with particular emphasis on an ethical dimension being highlighted. The examples that they will find for each stage are to be placed in a two-column table grid using a word-processing program of their choice. The first column indicates the stage, and the second column provides their example with citation, page number, and justification for choosing that text. Table 1 below provides an empty outline of the example grid that students will be asked to complete.

SDLC phase	provide citation, page #, and justification for each example
analysis	
design	
development	
implementation	
training	
maintenance	

Table 1: Example SDLC-Ethics Grid

The purpose for using this technique is to enable students to have a framework for thinking about ethical dilemmas in the work place. As they work in the information systems industry, they will be involved in any or all phases of software development. This grid provides them with a starting point for consideration, and helps them categorize ethical decisions into their relevant phase(s) of the systems development life cycle. When trying to deconstruct a problem, it will allow them to figure out who has certain responsibilities, and at which phase in the life cycle, does a decision take place.

Another purpose of this exercise is for students to understand the depth and extent through which IBM was involved when leasing their equipment and that it was not just a matter of selling some software or hardware to a nameless client and washing hands of any responsibility of what is done with the technology. The examples they choose are to reflect IBM's involvement and unethical decision making using each phase of the SDLC. For each stage the students are to cite at least two examples.

Professional Codes of Ethics

Another ethics related assignment for the course will require students to go online and review AITP and ACM Codes of Ethics and Standards of Conduct, posted on each of these professional organizations' respective websites. As discussed in the literature review in Chapter 2, many researchers (Cohen & Cornwell, 1989; Cougar, 1989; Ghafarian, 2002; Hanchey, 2002; Martin & Martin, 1990) encourage the use of this technique as part of their ethics instruction.

The students will be asked to discuss the value of each code, and consider the strengths and weaknesses of what each includes. After familiarizing themselves with these codes, students will then be asked to identify and document (using excerpts from

the IBM book) each ACM or AITP code of ethic or standards of conduct violated by IBM, keeping in mind that both professional codes were implemented after World War II and thus IBM could not technically be held accountable for violating either of them.

An additional assignment that will be given to the each student is to retrieve a link from another professional organization's code of ethics and lead a discussion comparing and contrasting it to the computing professional codes. There are numerous professional organizations such as those for physicians, lawyers, teachers, journalists, and realtors; and students will be allowed to select any group they are interested in discussing. The value of this teaching task is that it will highlight even more the strengths and weaknesses of professional codes of ethics. The discussion will make students aware of the binding nature of some professional codes, such as those outlined for doctors and lawyers, and the voluntary or non-binding nature of others, such as ethics codes for the computing professionals.

At the completion of these discussions, the students will be asked to complete a final task that involves creating their own personal and professional code of ethics and then sharing their codes with the class. The lists should be quite interesting and helpful in letting the students know the importance of establishing policies and procedures within an organization in reference to their IT resources.

Hypothetical Case Studies

In addition to the book, students will be asked to review and discuss a few hypothetical case studies that highlight ethical decisions regarding modern information systems. One particular item that will be used is the mini-case text provided on the ACM website called *Using the New ACM Code of Ethics in Decision Making* (Anderson et al,

1993). This document, created by a multiple ACM professionals provides nine mini-cases focusing on realistic IS dilemmas that the students might face during their careers. These dilemmas include issues of privacy, confidentiality, quality of professional work, liability for unreliable systems, software risks, conflicts of interest, and unauthorized access. In each instance the students will identify which codes of ethics and standards of conduct are being violated.

Contemporary Case Studies

The course will not focus exclusively on the IBM text for its source of teaching ethics. As mentioned earlier, students will also be introduced to the professional codes of ethics and hypothetical case studies. Additional ethics topics that will be discussed include information privacy, digital surveillance, the implications of the Patriot Act and technology, the national ID initiative, and the merging of various agency databases to form a national database.

One topic in particular that has created lengthy discussions in the past, and will be used again for this case study, is the presence of what are called “hate websites” on the Internet. Students will be provided links to such websites and will be shown how technology can be (mis)used today by various individuals and groups.

To balance some of the negative aspects of technology, the students will also be required to visit the Gates Foundation website (www.gatesfoundation.org) and find out what Bill Gates is doing with his billions of dollars. Most of the students will be pleasantly surprised to learn that he gives a significant amount of money to various causes.

In-class/Online Discussions

The students will be expected to read one or two chapters in the IBM book every week throughout the semester (a normal 16-week term), and then provide frequent feedback both in class and online through a web-based discussion board (WebCT). The web discussions will be set up with a discussion thread for each chapter as well as a thread for any additional topic discussed in class, including the codes of ethics, and mini-cases. Each thread will begin with a posting by the professor asking leading questions for the student to respond to. Each student will be required to post a minimum 100 word response to each chapter for a total of seventeen chapters, and numerous other threads. In addition they will have to respond to at least one other student's posting for that thread, so that they create a back-and-forth virtual conversation with another student in the class.

Points toward their grade for each posting will be awarded based on timeliness, content, and analysis of the chapter (not merely for summarizing the chapter). This technique has been used in the past, and at the beginning of the semester there is some expected student concern about this requirement, but as the semester progresses students are typically posting very lengthy responses, well beyond the minimum word length, and at the same time responding to one another's postings as though they were discussing it in person. Some of the discussions take place in class, but due to time constraints needed for other topics in class; most discussions will be directed online. Another reason for using online discussion is to provide an opportunity for each student to contribute in the class. My experience as an educator has shown me that typically there are a handful of students who will dominant an in-class discussion, leaving the others in silence. Online

web discussion open up the conversation of a topic to all students, and it is interesting to read what some of the “quiet” students will post on the Internet.

Summary of Ethics Instruction

Some of the approaches for teaching ethics such as examining codes of ethics, and using case studies is not new and has been used in IS and other types of classes in the past, as indicated in the literature review. The systems development life cycle is also not new to the IS curriculum and is usually taught in a one to two course sequence model of classes called Systems Analysis and Design. This course is usually taught as a junior level information systems class, and thus the students are very familiar with its aspects before coming into this capstone course.

There are two components to this ethics instruction that are most likely new to the IS curriculum, because they have not been mentioned to date in the research literature. These items include the use of Black’s *IBM and the Holocaust* book as the real-life case example, and the application of the SDLC-ethics grid to the ethical dimensions of the case. Both of these items will be major parts of this ethics teaching model and are selected and developed by the instructor of the course.

Table 2 provides a summary of the techniques and topics that will be used in this class to discuss ethics and information systems development. The next chapter will outline a methodology for assessing the usefulness of this ethics instruction.

<ul style="list-style-type: none"> • Read & discuss 1-2 chapters a week of the <i>IBM and the Holocaust</i> book for entire semester until book is finished • Post a 100+ word response online to WebCT discussion board after each chapter • Read & discuss the ACM and AITP code of ethics & other professional codes of ethics • Document the specific AITP and ACM code of ethics that IBM may have violated • Read & discuss the mini-cases provided online in the <i>Using the New ACM Code of Ethics in Decision Making</i> text • Document examples from the book of IBM's involvement during each phase of systems development using the SDLC-ethics grid • Discuss current case scenarios in the news (from TV, <i>Fortune</i>, <i>Business Week</i>, <i>WSJ</i>, etc.) • Discuss positive aspects of technology such as what the Gates Foundation is doing (www.gatesfoundation.org) • Brainstorm & create personal codes of ethics & corporate policies • Summarize lessons learned from IBM text

Table 2: Summary of Ethics Instruction

CHAPTER 4

METHODOLOGY

This chapter of the dissertation provides a detailed methodology of the intended research project to assess the ethics instruction in the information systems course. Included in this section is a summary of the research questions, identification of the participants involved, a design discussion of the three phases of the research plan, a detailed description of the questions on the survey instrument, and a brief summary of how the data will be analyzed. The methodology in general is designed to assess the appropriateness and effectiveness of ethics instruction in the IS curriculum as addressed by the research questions.

Research Questions

In conducting this study, I would like to consider the following research questions, as mentioned earlier in Chapter 1:

1. Does the teaching model used in this course sufficiently meet the criteria for teaching ethics in the IS curriculum as outlined by IS 2002, AACSB, and ABET?
2. Is the teaching model effective in helping IS students comprehend the importance of ethics and professional responsibility? Specifically:
 - a. Do the students find the discussion on professional codes of ethics helpful?
 - b. Do the students learn the importance of IS ethics from reading the IBM book?
 - c. Are specific pedagogical materials used in the course, such as the SDLC-ethics grid, helpful in mapping out IS ethical decision making?

- d. Do the students find the discussion of current business examples from news media helpful in learning about ethics in IS?
- e. Are substantive online discussion postings helpful in reflecting on ethics topics?
- f. Is the combination of instructional approaches effective in changing the way IS students will think about their future job responsibilities in regards to ethics and professionalism?
- g. Do students recommend this combination of teaching methods for future use? Do they think it is useful enough to recommend its use for all IS majors?

Participants

The participants in this study will consist of approximately 30-60 Information Systems seniors enrolled in a capstone Global Information Resource Management (IRM) course that is taken within their last two semesters prior to graduation. The students will self-select into the course which is offered in one or two sections each semester. Each section of the course typically accommodates 30 students, and thus the exact number of students participating will depend on the how many sections are offered when the study is approved by IRB and implemented. All of the students attend a regional university in the southeastern United States, where many of the students are first-generation college students.

Design

The study will be implemented in three phases. The first phase of this research consists of implementing the ethics instruction discussed in detail in Chapter 3, into at

least one section of the Global IRM class for one semester. In addition to the regular curriculum agenda for the class, the instructor will incorporate the ethics instructional activity outlined in Chapter 3. This will include having the students read the *IBM and the Holocaust* (Black, 2001a) narrative, respond to discussion questions, examine professional codes of ethics, review and react to hypothetical and contemporary case studies, participate in class discussions, contribute posting to weekly online discussions on WebCT, and complete the SDLC-ethics grid.

The second phase consists of a brief comparative analysis of the case study teaching methods outlined in Chapter 3 with the criteria outlined by the IS2002, AACSB, and ABET curriculum guidelines. The content of the ethics instructional activities in the senior level class will be compared to the recommended outcome capabilities, expected student knowledge, and placement of ethics instructions within specified curricula.

The third phase of the research study will evaluate students' perception of the effectiveness of this teaching method. This phase of the study will involve two types of data collection: quantitative data from a questionnaire and qualitative data from the SDLC-ethics grid activity and online student discussions. The survey/questionnaire instrument [see Appendix B] will be administered during the last week of the semester. The students will contribute to web discussions throughout the semester and the completed SDLC-ethics grid will be collected by the instructor during the last week of class.

Instrumentation

The survey instrument that will be used is a 12- item survey designed by the researcher to assess the effectiveness of the ethics instruction [see Appendix B]. This

instrument will be distributed during a one hour class period after the students have completed all assignments throughout the semester. The questions focus on evaluating the effectiveness of the IBM book, professional codes of ethics, the SDLC-Ethics grid, online discussions, hypothetical dilemmas regarding privacy, identity theft, etc., and contemporary news media reports, as ethics instructional approaches.

The design of the survey begins with two questions (Items 1 and 2) about the student's prior experience with ethical instruction. The first question asks if they have had been exposed to ethics teaching prior to this course in any of their other college classes. A simple yes or no choice response format is provided for this item.

The second question is a follow-up for those who responded "yes" to Item 1 by requesting the information about the type of class that the ethics was taught in. It provides four choices for the student to choose from:

- a) another IS class prior to this one
- b) another business core class
- c) another IT or CS class
- d) other class ---- with a blank space for them to list the name of the class.

The options are set up this way to determine where else in the university, business, or IS curriculum they have been exposed to ethics teaching. Since this is generally one of the last classes they take in the IS course major it is possible that they may have been exposed to ethics instruction in an earlier IS course. The second choice is for those students who are business majors. The Global IRM class is required for all IS majors, and optional for CS and IT majors. Only the IS majors are considered business students, while IT and CS students can elect to take business courses if they so desire.

The majority of the students taking this course are IS students, and on a rare occasion, an IT or CS student will be enrolled. It is the understanding of the researcher that business students are traditionally taught ethics in either a sophomore-level business law class or a junior-level management course, as recommended by AACSB guidelines. Since the majority of the students are IS students, and thus business majors, it is expected that most of the responses will be yes to Item 1 and that most will indicate that prior experience to ethics instruction occurred in another business course.

The next two questions (Items 3 and 4) on the survey instrument seek to capture the student's perceived importance of ethical issues in Information Systems *before* versus *after* reading the IBM book. Each of the questions is formatted with a scale of 1 to 10 responses, with a 1 response considered to be "not important" and a 10 response as "very important". The research expectation is that the mean of the *after* responses will be higher than the mean of the *before* responses.

Item 5 on the survey instrument seeks to assess whether the IBM book has caused them to view their future job responsibilities differently. The expectation is that if the book is effective in teaching ethical awareness and understanding, most students will respond with a "yes".

Item 6 asks whether this book should be required reading for all of the students in the Information Systems discipline. This may seem like an unusual question, but personal experience suggests that most students do not have an interest in reading traditional textbooks, let alone a historical novel, for a college course. In this university's IS program, it is unusual to have any materials in class other than a traditional textbook, a technical manual, and a computer. The length of the book and the difficulty of reading

about the Holocaust can be a challenge, but the researcher expects the majority of the students will respond “yes” indicating that the book made an impression on their ethical thinking.

The second half of the survey instrument (Items 7 through 12) asks students for their assessment of the effectiveness of the other ethical instructional methods used in the course. A five-item Likert (1932) scale is used for each question with the response choices ranging from strongly agree to strongly disagree. The specific teaching techniques that students will be asked to evaluate include:

- Item 7: discussing professional codes of ethics and standards of conduct
- Item 8: discussing hypothetical dilemmas regarding privacy, identity theft, surveillance, etc...
- Item 9: discussing current examples of business dilemmas from the news media
- Item 10: reading & discussing the IBM book for learning about ethics and understanding the job responsibilities of IS professionals
- Item 11: creating the SDLC-Ethics grid
- Item 12: online discussions format used for talking about the IBM book and other ethics topics

Collectively, responses to these questions will be used to address this study’s research question and to determine which teaching techniques, if any, are considered helpful in learning about ethical decision-making and responsibilities of the IS professional. Recall that the primary research questions for this dissertation are:

1. Does the teaching model used in this course sufficiently meet the criteria for teaching ethics in the IS curriculum as outlined by IS 2002, AACSB, and ABET?
2. Is the teaching model effective in helping IS students comprehend the importance of ethics and professional responsibility?

Procedures

Once the survey is complete, it will be collected by the instructor and analyzed using descriptive and inferential statistics in Microsoft Excel and SPSS. In addition, the student's SDLC-ethics grid and WebCT discussion postings will be collected, content analyzed, and summarized in respective tables. The results of the data analysis will be presented in Chapter 5.

CHAPTER 5

RESULTS

The ethics instruction outlined in Chapter 3 was implemented identically into two sections of the Global Information Resource Management (IRM) course during the same semester. A total of 54 students self-selected into the course and both sections met on the same days of the week. For the WebCT discussion portion of the class, students from both sections were grouped together in the same WebCT session, and were therefore able to post and communicate with all fellow students enrolled that semester. At the end of the semester only 48 students remained in the class and completed all assignments, discussions, and survey. The results of both the quantitative and qualitative analyses of data collected from students are discussed in this chapter.

Quantitative Data Analysis of Survey Instrument

A 12-item survey [see Appendix B] was used to gather quantitative feedback from the students during the last week of the course regarding the effectiveness of the ethics instruction. There were 48 students who completed the survey. No demographic information such as gender and race were collected as this was not deemed relevant to the present study's research questions. A combination of both descriptive and inferential statistics techniques were employed using SPSS and Microsoft Excel software tools. The results for each of the 12 survey items are provided over the next few paragraphs.

Question 1 from the survey asked students if they have discussed ethics in a previous class. The response for that was limited to a simple yes or no response. A frequency analysis of the results [see Table 3] shows that 87.5% (42 of 48) of the students reported that they had discussed ethics in a previous class.

	# of responses	%
No	6	12.5%
Yes	42	87.5%
Total	48	100%

TABLE 3: Results of Previous Ethics Instruction

Question 2 is a follow-up question to item 1 in that it allowed students to indicate in which type of class they have had previous ethics instruction: Business, Information Systems, Information Technology/Computer Science, or some other course offered by the university. The students could select more than one of the options. Only those students who provided a yes response on question 1 responded to item 2.

The majority of students (37 of 48) indicated that their previous ethics instruction took place in another business course, while a few indicated having learned about ethics in another information systems course (N=3). These results are not surprising given that all students in the class are Information Systems majors, which is a program within the Bachelor of Business Administration. All business majors are required to take the Business Law class which traditionally includes some coverage of ethics and professional conduct topics. What is a little surprising is that all 48 students did not indicate that they had ethics in one of their business classes, such as business law, because it is assumed that when a student takes the Global IRM class as a senior that they have already

completed the Business Law course. The leading conclusion is that some students in this study either forgot that they had previously covered ethics, or that the instructors of the Business Law class did not cover the topic as expected. A summary of the results for question 2 is shown in Table 4.

	# of responses	% of all responses	% within yes responses
Business	37	77.1%	89%
Information Systems	3	6.3%	7%
IT/CS	1	2.1%	2%
Other (Criminal Justice)	1	2.1%	2%
No responses	6	12.5%	----
Total responses	48	100%	

TABLE 4: Course Where Ethics was Previously Taught

Items 3 and 4 are related and ask the student to respond to their perceived level of importance to ethical issues in Information Systems, both before and after reading the IBM book. A scale of 1 to 10 is used for the responses of both questions, with 1 representing “not important” and 10 as “very important”.

A frequency analysis shows that the mode response prior to reading the book is a 7 and that the modal responses of 8 and 10 are present after reading the book. Of the 48 responses, 0 students showed a decline in importance, 4 students stayed the same, and the remaining 44 students showed an increased level of importance of ethical issues after reading the book. The results reflect that after reading the IBM book, the majority of the students increased their opinions on the importance of ethics in Information Systems (showing higher degree of importance). Figure 1 provides a bar chart illustrating the frequency of responses to each possible answer both before (item 3) and after (item 4) reading the book.

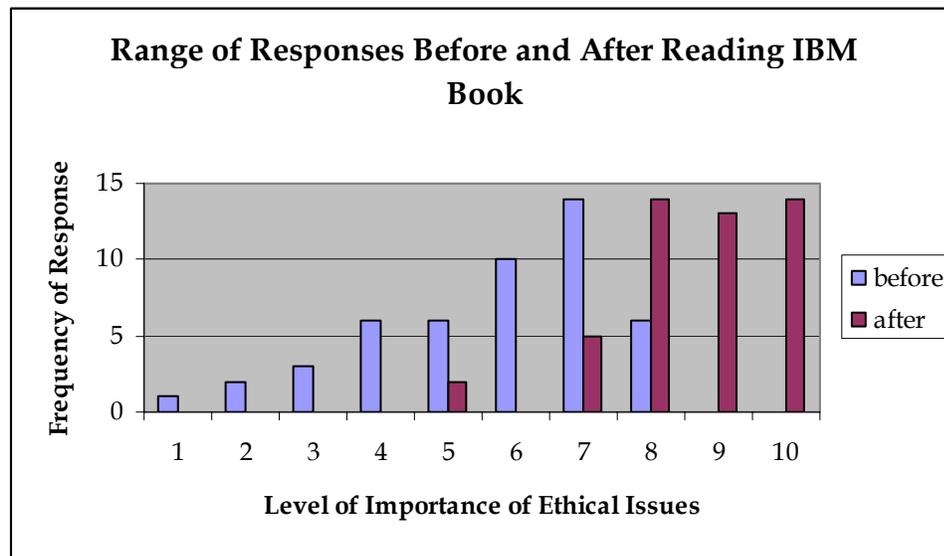


FIGURE 1: Range of Responses Before and After Reading Book

The descriptive results for items 3 and 4 indicated that the level of perceived importance was a mean of 5.71 with a standard deviation of 1.77 and a median of 6 prior to reading the IBM book in this class. After reading the IBM book the mean response is

8.63 with a standard deviation of 1.25 and a median of 9. All of these values are represented in Table 5.

A paired t-test is used to assess the significance of the before (reading the book) and after mean values. The results return a test statistic of 2.92 which has a p-value < .000. This indicates that the mean response (for item 4) after reading the book is statistically different from the mean response prior to reading the book (for item 3). This suggests that reading the IBM book did make a significant difference in the students' perceived level of importance of ethics.

	Importance of Ethics <i>before</i> reading the IBM book	Importance of Ethics <i>after</i> reading the IBM book	Difference	t – test p-value
Mean response	5.71	8.63	2.92	.000**
Std. Dev.	1.77	1.25	-----	---
Median response	6	9	3	---
Response Mode(s)	7 (N = 14)	8 and 10 (N=14)	---	---
<i>** significant at the .01 level</i>				

TABLE 5: Student Perceptions Before and After Reading Book

Item 5 on the survey asks the student if reading the book will change the way they will approach their job responsibilities in the future. The response choices are limited to a simple yes and no, with 87.5% (42 of 48) indicating that the book is likely to influence how they approach their job responsibilities in the future. Table 6 provides a brief listing of the results for this item. This pattern of responses suggests that as a result of reading the book, students are beginning to realize that their job responsibilities are far greater than knowing just the technical side of computers.

	# of responses	%
No	6	12.5%
Yes	42	87.5%
Total	48	100%

TABLE 6: Change Approach to Job Responsibility

Item 6 on the survey instrument asks students if they thought the IBM book should be required reading by all Information Systems majors. As indicated in Table 7, the majority (34 of 48) of the students provided a yes response.

	# of responses	%
No	14	29.2%
Yes	34	70.8%
Total	48	100%

TABLE 7: Required Reading for all IS students

Items 7 through 12 on the survey ask students to indicate their perception of the effectiveness of each of the ethics instructional methods used in the course. Each item employed a five-point Likert scale with the response choices ranging from “strongly agree” (1) to “strongly disagree” (5).

The mean response, standard deviation, and modal response for each instruction method is summarize in Table 8. Because the IBM book receives the lowest mean average of 1.2083, the student responses suggest that they perceive this technique as the most effective ethics instruction method in the course. In addition to the means, Table 8 also provides the frequency of responses for each response option: strongly agree (SA: 1), agree (A: 2), undecided (U: 3), disagree (D: 4), and strongly disagree (SD: 5).

Instructional technique	Mean	Std. Dev.	Mode	SA (1)	A (2)	U (3)	D (4)	SD (5)
Professional Codes of Ethics	1.6250	.6399	2	21	25	1	1	0
Hypothetical Case Studies	1.8958	.5921	2	10	34	3	1	0
Actual Business Case Studies	1.9375	.6327	2	10	32	5	1	0
IBM and Holocaust book	1.2083	.4593	1	39	8	1	0	0
SDLC – Ethics grid	1.4583	.7426	1	30	16	1	1	0
WebCT Journal discussions	1.5833	.5773	2	22	24	2	0	0
Total Response per Category	---	---	---	132	139	13	4	0

TABLE 8: Statistics for Q. 7 – 12: Effectiveness of Instructional Technique

Table 8 indicates that students were favorably disposed to each of the ethics instructions methods used in the course. The majority of responses fall into the “strongly agree” or “agree” categories. There are some “undecided” and “disagree” responses, but relatively few, and no “strongly disagree” selections.

The descriptive statistics for items 7 through 12 reveal that the IBM book and the SDLC-Ethics grid are viewed most positively with each having a mode or most frequent response of a 1 (strongly agrees). The other instructional techniques are viewed favorably as well, although not as strongly, with each of the remaining methods receiving

a modal (most frequent) response of 2. Figure 2 provides a stacked bar chart illustrating the relative frequency of responses for each instructional method.

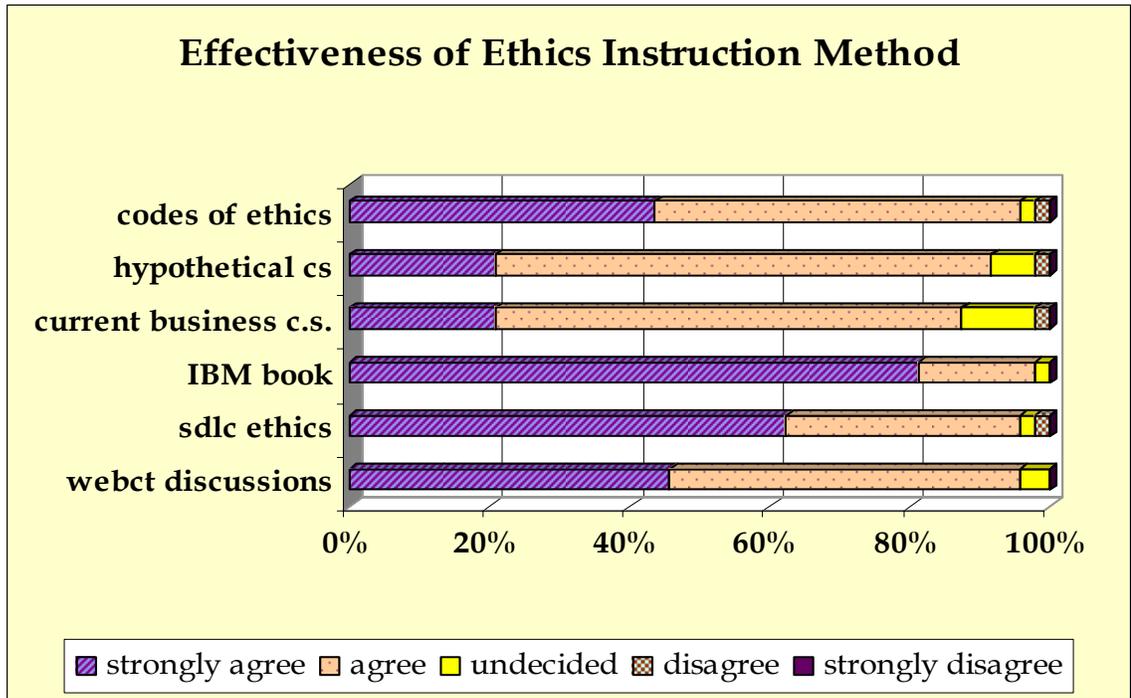


FIGURE 2: Frequency Response Percentages for Instructional Methods

The results collectively suggest that the ethics instruction techniques used in this class are effective. The students seemed most impacted by the IBM book and the use of the SDLC-Ethics framework. These approaches, in conjunction with weekly WebCT journal postings, and a familiarization of professional codes of ethics, appear to have made students more aware of their future job responsibilities and change the way they think about computers and society.

Qualitative Analysis of Web Discussions & SDLC-Ethics Grid

In addition to the survey, students were also asked to voluntarily submit some of their work for qualitative analysis. These items include a copy of their SDLC-Ethics grid and their weekly WebCT online journal postings. All 48 students who remained in the class at the end of the semester submitted something, with most of the students providing a complete set of materials. These items are summarized and discussed over the next few pages, and provide additional insight into the effectiveness of the instructional methods used in the course beyond that observed in student response to the survey items.

WebCT Journal Discussions

As part of this course, students were expected to read one or two chapters in the IBM book every week throughout the semester, and provide frequent feedback online through a web-based discussion board (WebCT). Each student was required to contribute a minimum 100 word posting for each of the 17 chapters in the book. At the beginning of the semester there was some student concern about this requirement, but as the semester progressed students were contributing very lengthy postings, well beyond the minimum word length, and at the same time were responding to one another's postings.

The weekly WebCT postings will be summarized using excerpts from multiple students' writings for illustration. This summary will show a progression of thought as the students begin linking ethical issues with technology and information processing.

The students provided a significant amount of feedback about what they were learning through their weekly online discussion comments. The responses not only show that they were actively engaged in learning the ethical and technology dimensions of the

narrative, but also in the historical details of the Holocaust itself. The responses were numerous, lengthy, emotional, and surpassed the expectations the instructor had of this activity.

During the first few weeks of the class, students were asked to reflect on reading the Introduction and Chapter 1. This was an unusual request as most Information Systems students are not accustomed to reading an historical narrative for class, but instead are used to digesting IT concepts including programming projects and other hands-on computer oriented tasks. As a result, students initially met this assignment with resistance, but after reading the first chapter, the students seemed immediately intrigued with the book as can be seen in some of the students' reflections for the first week's postings (see Table 9).

Student comments
<ul style="list-style-type: none"><li data-bbox="302 1182 1317 1287">• “The first chapter was an eye opener for me because I did not know that the killings were as organized.”<li data-bbox="302 1362 1365 1833">• “The introduction captured my interest in the book immediately. This is sure to be the best book I’ll read this semester. It might be the only book I read this semester. The author’s explanation of his research is brain numbing. How Black was able to orchestrate such a large, international research project is awesome. A few of the previous discussion postings suggested that Mr. Black may not have been completely objective in his writing because of his personal stake in the Holocaust. I cannot agree with that assumption. Why

would you write a book about a topic that was not of personal interest to yourself? His research seems so thorough that I doubt there is much room for bending facts or coloring evidence. He states several times that he is able to back up every sentence of this book with documents.”

- “Although extremely short, I think that chapter one was very descriptive, and meant to give the reader an insight on what it was like to be in an actual concentration camp. I must admit, I do have a problem with reading this material. Although interesting and informative, subjects such as this upset me. But, I think that the book will be a good one and provide some information about the holocaust that was obviously overlooked when taught in high school.”
- “...the introduction of this book by the author is very easy to read and understand. The explanation of why he wrote the book and his personal feelings to the whole situation is exceptional in the fact that he is able to place you in his shoes in some sense. He tells the story of his mother and father’s triumph over such a tragic and devastating venture. I was surprised to find out that IBM didn’t sell the machines to Hitler and the Nazis, but they leased them.”
- “Prior to this class, I thought I had a pretty good idea of what happened during the Holocaust. It never crossed my mind as to how Hitler and Nazi Germany identified who was a Jew and knew exactly where they were located. In my opinion just by reading what the author has written so far, Thomas Watson sounds to me like a power hungry individual who valued profits over ethics. The introduction caught my attention much like the IBM logo caught Black’s

attention in the museum.”

- “Within the introduction....the author writes many disturbing facts about the Holocaust and IBM’s shocking involvement. First it amazes me that Mr. Black would be inspired to find the many connections....by the recognizing of the IBM Hollerith card sorting machine at the US Holocaust Museum.....Black paints a graphic example of how systematic the Nazi’s plan was and the need for a device to expedite the process on pg. 8.”

TABLE 9: WebCT Postings by Students after Chapter 1

The opening chapters provide a good foundation for students to rethink their perspective on the Holocaust, IBM as a corporation, and how powerful the information generated by “information systems” can be. For many students, this is the first real examination of the Holocaust, for others there was already a casual familiarity. One student in Table 9 indicated that she thought she already knew a lot about this era, but acknowledged that her perspective might be limited. One researcher attributes this to being place-bound. In her work Morris (2001) contends that there are many different kinds of representations of Holocaust history and that “where we live has much to do with how we remember the Holocaust” (pg. 14), suggesting that what is taught in the American curriculum about the Holocaust is different from other cultural representations of the same time in history.

In the Introduction, Black (2001a, p. 11) provides the source of investigation that led to writing the book. As mentioned in some of the student’s writings, he was visiting

the U.S. Holocaust Museum in Washington, D.C., when he noticed an IBM sorting machine in the first exhibit. He then goes on to narrate the story of his parent's survival during this era, and how much research it took to write the book.

Chapter 1 of the book is short and is written as a day in the life of one prisoner at the Bergen-Belsen concentration camp. It also provides a glimpse into the details of the punch card layouts, the codes used for different identifying demographics, the machines, and how prominently all of it was used inside the concentration camp to process information about the prisoners.

After reading these opening chapters, and being prompted to consider the author's background, some of the students expressed concern about the author's objectivity as seen in some of the comments listed in Table 10. This in itself is milestone for the students because it demonstrates that a few are already beginning to think about ethics while reading a book that showcases the lack of ethical dimensions of a major corporation.

It also reveals a need to consider the source of whatever you are reading. Everything that is written has some subjectivity in it. It is impossible to avoid, particularly when writing anything related to history. As some curriculum theorists (Pinar et. al, 2000) maintain, history is an impossible undertaking because there is an attempt to "capture an original past reality which cannot be captured" (p.468). In this instance Black (2001a) is attempting to deconstruct the Holocaust and IBM's role while writing this text, and in the process, has influenced the written history with his subjective disposition as the child of Holocaust survivors. It is difficult to remove the author from the text, and the students have jumped into one of the foundations of curriculum, and that

is to ask about whose knowledge we are reading. History is not limited to one meta-narrative, but instead is the compilation of pluralistic historiographies.

Student comments
<ul style="list-style-type: none"><li data-bbox="302 527 1380 993">• “My first question arising from the introduction paragraph is not exactly pertaining to the main idea of the book, but is questioning the exaggeration potential of the author. I am not saying that Black is not telling the truth in telling the storyall I am saying is that Black’s portrait of IBM’s involvement may be biased. He certainly has it out for Watson and may have manipulated the story to look worse than it really was, but don’t get me wrong I do think that the Holocaust was an awful thing and anyone involved in it was immoral.”<li data-bbox="302 1073 1380 1392">• “I happen to agree with one of the previous posts I’ve just read -- the author does have many reasons to portray a rather biased view.... That doesn’t mean that he’s wrong about any of the factual information in the book; it simply serves as a caveat to the reader. It’s our job to try to look at the facts of the book objectively.”

TABLE 10: Student Comments Questioning Author’s Objectivity

The next few chapters of the IBM book are as equally captivating as the first few. Chapter 2 provides a historical background of two key characters in IBM’s history: Herman Hollerith and Thomas Watson, Sr.

The first gentlemen, Herman Hollerith, is the inventor of the punched card machines in the 1890's that were initially used for census taking in the United States. His namesake is attached to each subsequent generation of Hollerith machines as well as the Hollerith punched card. He is also credited with jumpstarting one of the most prominent companies in the world, IBM; as Black states, "Herman Hollerith invented IBM" (2001a, pg. 24). The explanation is simple. The punched-card tabulating machine company that Hollerith created was eventually sold and the name was changed to International Business Machines, or IBM. The Hollerith name also enabled IBM's activity to go undetected during WWII primarily because many of the IBM subsidiaries in Europe did not use IBM in their name but instead used Hollerith. For example, the German subsidiary name whose employees are the central cast of characters in the book was Deutsche Hollerith Maschinen Gesellschaft or Dehomag (Black, 2001a, pg. 30).

The second individual introduced in Chapter 2 is Thomas Watson, Sr., the first CEO of IBM. His background, character, and rise to power at the top of IBM are also revealed in the chapter. The nature of these two individuals (Hollerith and Watson) sets the tone for the rest of the book. This did not escape the thoughts of many of the students, as they comment on the business leaders of this era. Table 11 details some of their reflections.

Student comments
<ul style="list-style-type: none"> • “Watson was always focused and concerned with making the sale, even at the first of his career,So, when he was offered the opportunity to profit from Hitler’s and Nazi Germany’s actions, he did so, ignoring all moral principles.” • “Both of these people seemed to have a natural instinct for business, but unfortunately both had a misconception of ethics. In addition, who would have thought that in the early 20th century those individuals would be so self-centered?” • “*WHEW* what a chapter, I see what the author is trying to get across, that Watson was a bad guy with some questionable ethics.”

TABLE 11: Student Perceptions about Watson and Hollerith

The leading question now addressed in the book is what was IBM and Dehomag’s role with the Nazis? Page after page is revealed beginning with the basic premise that the machines were used to process information, and that the leaders and employees of IBM knew what was taking place. Black describes this in one section as follows:

The Nazis wanted fast answers about their society and who among them was Jewish. ...The Nazis knew prior censuses were plagued by three to five years of hand sorting, rendering the results virtually useless for enacting swift social policies. ... Nazi planners wanted all 41 million Prussians processed and preliminary results produced within a record four months. The Prussian

government was incapable of launching such a massive undertaking. But IBM's Dehomag was. The company offered a solution. ...Dehomag would design a census package counting and classifying every citizen. Dehomag would recruit, train, and even feed the hundreds of temporary workers needed.... (Black, 2001a, pg. 55)

The efficiency of the punch-card system was IBM's niche, and chapter after chapter outlines the swiftness that the Nazi's were able to collect population statistics with during each invasion of a country. One of the questions students were asked to consider as they read the book was whether or not IBM knew what their punch card systems were being used for? Black makes it very clear that they did. In Chapter 5 of the IBM book, Black indicates that Watson, Sr., the senior executive of IBM during this time, not only had knowledge of what was taking place, but was also rewarded by Hitler himself with a lavish party in Berlin on June 28, 1937, where he received Germany's second highest honor, the "Merit Cross of the German Eagle with Star" (Black, 2001a, pg. 131). The students' reactions are interesting as they began to view Watson in the same distasteful limelight as Hitler, as illustrated in Table 12.

Student comments
<ul style="list-style-type: none"><li data-bbox="302 1549 1382 1801">• "I find it funny how Hitler respected and honored Watson...and the whole time Watson was running around with accountants trying to figure out a way to obtain the frozen profits.....I was also surprised to find out that Watson had actually seen first hand the torment of the people, I had hoped that he just read about

torture and figured it was exaggerated by the media, but he saw the whole thing....”

- “...the author continues to point out that Mr. Watson knew exactly what his Hollerith machines were used for. ...In addition, the author conveys how IBM NY and Dehomag were making a fortune in profits, and that they were trying to hide them, so the US and Germany would not tax. Not only did they assist in the killing of the Jews, but also defrauded the US and German governments.”
- “He spent a lot of money on that one party just to give Watson a medal,... that shows how important Watson was to Hitler.”
- “...yes Watson is starting to realize his involvement in the Holocaust as the book progress, but he does nothing to stop it. ...Watson felt as if he could not say anything dishonoring to his second largest money maker.”
- “If Watson had been to the places that made the machines, seen what machines were needed from IBM NY, seen the cards that were Hitler’s minions wanted, even sent IBM employees to help maintain the machines, how could he not know what the Nazis were using his machines for? Watson would have to be as dumb as a brick to not see what misuse was going on, and as he has shown in the past with NCR and turning CRT into the multi-million dollar IBM, Watson was pretty smart. ...”
- “Finally, I would like to say that Watson is a cold blooded MF, excuse my acronym. ... His friends in Germany were a target of the holocaust, and he

continued to do business with Hitler. ... This should have given Watson a better insight on what he was really becoming a part of, but he continued to get even further involved. He was crooked in every way. It seemed to me that he would have join the Nazi party if he could.”

TABLE 12: Comments Reflecting Watson Receiving Hitler’s Medal

This section of comments also answers another question students were asked to consider. Did IBM knowingly make a profit, and how could they have done so given the economic climate of the time? As seen in student comments, and in continued documentation in the book, IBM did profit, they hid the profits in the local economy, and attempted to defraud both sets of government. This represents another compelling example of unethical decision-making.

The portion of the book that provides perhaps the most teachable moment for Information Systems students is Chapter 11, titled “France and Holland” (Black, 2001a, pg. 292). In this chapter the author primarily distinguishes between identical punched card systems that were operating in the two distinctly different environments of France and Holland, leading to vastly different outcomes in regards to information collected about the Jewish people.

In this chapter Black details how the punched card system in Holland was overseen by a zealous Dutchman who aggressively helped the Nazis fulfill their mission. In contrast, the identical machinery was being used in France, overseen by a gentleman who was secretly part of the French Resistance. His policies and practice deliberately

sabotaged the data collection. In the end, the numbers were staggering and illustrated how much impact the system had towards the mission. Black comments on this very eloquently:

Holland had Lentz. France had Carmille. Holland had a well-entrenched Hollerith infrastructure. France's punch card infrastructure was in complete disarray. The final numbers: Of an estimated 140,000 Dutch Jews ... a death ratio of approximately 73 percent. Of an estimated 300,000 to 350,000 Jews living in France, both zones..... The death ratio was approximately 25 percent. (Black, 2001a, pg. 332)

The concepts that are especially relevant to IS students are the notions that an information system is not just about the hardware and software components, but also includes the people, policies, and places collectively operating to make an efficient system. An Information System is a system of many parts that work together to provide the right output or information. It is the broader term that integrates information technology (hardware, software) within its organizational setting and not just limits it to the computer programs and machines. On simpler terms, it is equivalent to the same PC being purchased by two different people. It is what they do with the system that makes the difference, not the specification potential of the machine itself. In this instance, the decision making that took place in both France and Holland had different consequences because of the ethics of those individuals involved in implementing the information system in the respective countries.

In the France and Holland chapter, students were better able to answer the question of whether or not the punched card system made a difference in the Holocaust.

They know that the Holocaust would have still occurred, but not on the same scale of tragedy that it did, had it not been for the use of the punched card information system by the Nazis and the willingness of IBM to aggressively participate and profit from the situation. Their responses, as shown in Table 13, clearly indicate that they now comprehend that an information system cannot be divorced from the ethics, policies, people, and corporations using the system.

Student comments

- “...the two dissimilar situations that plagued France and Holland described were fascinating...it is nice to read that someone is stepping out to fight against the evil regime.”
- “This chapter really shows how powerful the punch card machines can be....the last paragraph showing death ratio percentages really shows how proficient the machines can be. The 73 percent in Holland is really sickening. That number alone tells how brutal the Nazis are and when compared to the 25 percent in France tells how dependent the Nazis are on the machines working for them.”
- “Chapter 11 was a great chapter! Without the punch card machines the Nazis could not maintain domination. It’s obvious now that IBM machines were the key to the identification and exportation of the Jews.”
- “This chapter amazed me in many ways. ...I was pleasantly surprised by the French Resistance. ...I especially liked the fact that the Germans’ technology was

used against them to organize the Resistance itself.”

- “Oh, here comes the good stuff! The most interesting part of this chapter is of the intelligent and brave Carmille. He created a pin code system that the Reich thought would be useful.... In reality he aided the army that was victorious in North Africa over Hitler. I give Carmille 2 thumbs and 2 big toes up for his bravery... With taking a stand for what you believe in comes taking a fall. Carmille was captured. He didn’t cooperate even when tortured, but did end up dying....”

TABLE 13: Comments on the France and Holland Chapter

I would like to conclude this section with some summary comments from a few students, as to the importance of reading and discussing this particular book while learning about ethics. This reflects the sentiments of many of their classmates and shows increased awareness and ability of the students to reflect on the essence of an information system.

Student comments
<ul style="list-style-type: none">• “I have concluded that IBM had a huge part in the war, but the machines did not kill people. They gave the power to track, sort, ECT. But the Germans and their wicked outlook were the ones to blame. Throughout the book Black presents numerous accounts that highlighted IBM’s

involvement in one of the largest mass killings in the world's history.

Should anything be done to IBM? My answer is no, it already has. By creating this detailed documentary of IBM's involvement, personally questioning IBM, and publishing this book in multiple countries, languages, and regions, Black has handed out a huge punishment. I like the book and I think that you should continue to use it."

- "After World War II, most of the continent was destroyed and millions of people were killed. The only thing that was not destroyed was Dehomag business. Dehomag was not bothered by the war, they had profits that were preserved and machines that had been salvaged. IBM NY was able to capture all of its profits and recover most of its machines. ...Finally IBM gained 100% control over Dehomag and there new motto was "The Solution Company". ...This book was very informative on what went on during the Holocaust. I enjoyed reading this book and I really think you should continue to assign this book to your class next semester."
- "This book proves that you can do anything if you know the right people and are willing to throw all morals to the wind. I am glad that Black wrote this book. He says that millions of people would never know how the Nazis were as organized as they were and how they knew who to go after. Hopefully with this book more people will be educated. I think that this book should be kept for this class. It not only educates

people about a little known fact, it also shows a good application of technology combined with bad morals can be a very bad thing.”

- “The end of the book is not your normal happy ending type. It left the reader questioning themselves and others....as time went on, IBM reestablished it’s dominancy in the world market and announced that their new slogan would be ‘The Solutions Company’. If there was a problem your company was having, IBM would find the solution. Quite fitting in retrospect, although horribly. The Nazis had a problem, and IBM found their solution.”
- “...I am glad that I read this book. It has shed a different light on something that, in my opinion, my generation really hasn’t felt the impact of or anything like it. You really get a feel for the power of information systems, even primitive ones used by the Third Reich. It goes to show that knowledge is power and information can be the ultimate weapon. ...To sum up, I would never call this book a page-turner, but I would agree that it’s worth a reader’s time. As far as changing books is concerned, I would have to say that I’m against the idea. While there are many good books concerning technology and ethics, I believe this book really gives substance to the idea that information systems and technology in general has a negative side.”
- “We have finally reached the end and have been filled with a lot of good info.

... I hope everyone learned something.”

TABLE 14: Final Comments about the Book

The last student’s comments in Table 14 reflect the desires of most teachers and that is that they hope everyone learned something. Instructional methods on ethics are done so that students will learn something, so that they will learn that there are consequences to actions, even when you don’t perceive there are any. Hopefully the students learned that integrity and ethics affects everyone, and that even technology and the use there of, is not immune to ethical consequences. Many of the students commented that they did not enjoy reading the book, but were glad that they did because of the valuable lessons it taught them. As one student indicated, it was not a happy ending, and they are right, there is no happy ending to any representation of the Holocaust. Morris (2001, pg. 10) suggests that “representations of the Holocaust should not be made comfortable”. The students were not made comfortable, but they found that reading this book was valuable.

Overall, the students’ comments reflect a level of analysis about issues beyond simple regurgitation of facts cited in the book. They demonstrate the ability of the students to synthesize through the reading and apply their understanding of technology to the narrative. The students also appear to comprehend the level of responsibility that they will have as Information Systems professionals. In some instances, the students indicate signs that they will question the processes of decision making, which is a good

thing, because we should never blindly follow our leaders. It is not a sign of disrespect to question a decision, but an indication of conscientiousness and ethical responsibility.

SDLC-Ethics Grid

In addition to the weekly WebCT online discussions, students were asked to keep a journal of their reading and document examples from the book that outline IBM’s involvement using each phase of the Systems Development Life Cycle (SDLC): analysis, design, development, implementation, training, and maintenance. As mentioned in an earlier chapter, the SDLC is an iterative process for managing an information systems project from beginning to end.

The purpose of this exercise was for students to understand the depth and extent through which IBM was involved when leasing their equipment and that it was not just a matter of selling some software or hardware to a nameless client and washing hands of any responsibility of what is done with the technology. The SDLC-Ethics grid also provided a framework for the students to review the book through the lens of managing an information systems project. It allowed them to categorize the portions of the reading into each phase of the Systems Development Life Cycle and think about the ethical decisions that could take place by IBM. Table 15 provides an example SDLC grid along with an assortment of responses from different students.

SDLC-Ethics grid outlining IBM’s involvement	
<i>analysis</i>	<ul style="list-style-type: none"> • “The book states on page 209, “...every order was different. Each set was meticulously designed for the

	<p>client’s specific assignments...an intense collaboration. It began with an intense investigation of precise data records of the project as well as people, items, or services being tabulated. “</p> <ul style="list-style-type: none"> • The book also states, that “Field engineers undertook invasive studies of the subject being measured, often on site (209).” • These quotes demonstrate IBM’s involvement within the analysis phase of the SDLC. They had to carefully analyze the situations at hand, so they could develop punchcards as well as machinery to meet the Nazi’s needs.
<p><i>design</i></p>	<ul style="list-style-type: none"> • The following information proves that IBM was involved in the design phase of the SDLC. On page 210, the author states that “they [IBM and the Reich] jointly designed mock-up punched cards to be compatible with the registration forms...” and that “...sets of custom-designed punched cards bore its [own] distinctive look for its specialized purpose.” <p>In addition, on page 211, the author states that to make the cards readable by machines, “...all decisions about precisely which column and which row could be punched in order to properly record, tabulate, and sort any portion of data were studiously determined in advance by Hollerith engineers.”</p>

	<ul style="list-style-type: none"> • Obviously, the design of the cards is probably one of the most important steps of the entire “information system” development. The cards had to be properly designed to ensure that failure would not occur. In addition, the cards needed to contain the necessary information required for the Nazis to continue the extermination process.
<p><i>development</i></p>	<ul style="list-style-type: none"> • The Reich continued to conduct various censuses as the Hollerith systems developed. Nazi Germany not only wanted to count and track human beings, but also livestock, butter, cars, planes, bullets, clothes, and even raw materials. For example, “As each month advanced, Hollerith machines became more involved in each and every move of the German forces. Eventually, every Nazi combat order, bullet, and troop movement was tracked on an IBM punch card system.”(207) • In this particular case, I can only interpret “development” as IBM physically building system components. This would involve the building of machines, factories, and construction of paper punched cards. On page 297, the author states that “Watson in 1942 approved the construction of two new factory sites.” In addition, on pages 97 and 98, the author states that “IBM [card] production specifications were rigorous...” and that “Only IBM could make and sell the unique punch cards

	<p>for its machines.” Of course, this allowed IBM to become a paper monopoly.</p>
<p><i>implementation</i></p>	<ul style="list-style-type: none"> • The following information proves that IBM was involved in the implementation step of the SDLC. Implementation primarily involved the installation of machines along with the actual “punching” of information onto cards. On page 351, the author states that “in some camps, such as Dachau and Storkaw, as many as two dozen IBM sorters, tabulators, and printers were installed...” In addition, on page on 353, the author states that “Hollerith departments at camps could not be operated by miscellaneous labor. They required so-called Hollerith experts trained by an IBM subsidiary.” • Hollerith machines were employed throughout Europe. They were present in Poland, Czechoslovakia, Switzerland, Holland, Romania, and so on. The machines and punch cards were implemented in concentration camps, railroads, statistical offices, training schools, ghettos, military units, and the list goes on and on. By the time the alphabetizers were put to use, census-taking became the key for destruction. “Never before had so many been counted so thoroughly and quickly...The census yielded exactly the data Nazi Germany needed, including data for the areas beyond Germany.” (171-

	172).
<i>training</i>	<ul style="list-style-type: none"> • There were many instances of the training phase. For example, as IBM expanded its punch card systems to numerous countries, the need for trained experts was crucial, yet, drafts were taking place in several countries thus causing a shortage of supervisors and punch operators. To relieve this shortage Schotte stated, “We hurriedly started training schools for key punch operators and supervisors, and of course servicemen who would be exempted from military service due to age or physical condition.” (204) This shows that the operation of these machines was so valuable that one could be exempt from the military draft to become trained in punch systems. Schotte then added, “Europe’s militarists had finally realized the indispensable advantages Hollerith instilled into modern warfare...Punch cards freed up manpower.” (204)
<i>maintenance</i>	<ul style="list-style-type: none"> • Punch cards were the most essential commodities for the Reich. The different types of cards included Luftwaffe cards, ghettoization cards, railroad cards, slave labor cards, and many more. However, it took special training to make the cards readable by the machines and moreover to maintain their operability. “The subsidiary or its authorized local dealers

	<p>would then continuously train the Nazi or other personnel involved to use the equipment....The delicate machines, easily nudged out of whack by their constant syncopation, were serviced on-site, generally monthly...”(213). This constant maintenance was provided so that every machine worked, regardless of its location.</p> <ul style="list-style-type: none"> • The following information proves that IBM was involved in the maintenance step of the SDLC. Obviously, Hollerith machines had moving parts and did break down from time to time. That is why the paper specifications had to be so perfect. In addition, who else besides IBM would know how to repair the machines or would be authorized to repair them? After all, the machines were <i>leased</i> therefore they actually belonged to IBM. On page 211, the author proves my point by stating that by “...making the cards readable by IBM sorters required special settings on machines that only company engineers could adjust. The delicate machines, easily nudged out of whack by their constant syncopation, were serviced on-site, generally monthly.”
--	---

TABLE 15: SDLC-Ethics Grid Example

The example SDLC-Ethics grid in Table 15 provides a glimpse of a few comments from the students in the course. Each student completed this process and in some cases there was consistency among the students in some of the categorizations for each phase. There were numerous citations and comments, too many to put in this study.

In reviewing their assignments collectively, the majority of the students were able to analyze the book and provide clear examples. They were able to exhibit their familiarity with the project development phases, and their ability to identify a task into its appropriate category. There were a handful of the students out of the 48, however, who provided weak answers that did not quite demonstrate a level of comprehension, effort, or complete reading of the book.

In addition, the students were able to provide documentation that IBM knew what the punched card information systems were being used for, that they still maintained ownership and control, and that they participated in each phase of the project, after all, as one student stated “the machines were leased”. To some students this assignment sealed the deal that IBM was at least partially complicit in the Holocaust. To other students, it simply made them aware of the significance of the deliverables from each phase of systems development, and that there is no neutrality to technology.

CHAPTER 6

CONCLUSION

This chapter provides a summary of the data analysis and some conclusions in regards to the research questions posed in Chapters 1 and 4. There are also some thoughts on the limitations of this project and some recommendations for future research included over the next few pages.

Discussion

As shown in this investigation and as presented by other researchers (Kerr & Smith, 1995), students respond to innovative teaching of ethics. They not only need to explore ethical dilemmas they may have in their profession, but also appreciate appropriate ethical behavior. The innovative instructional techniques and supporting results presented in this study seem to be effective for teaching ethics. Chapter 5 provides both quantitative and qualitative results that help address some of the investigator's research questions. They all suggest that the approaches used for teaching ethics used in this course are effective. In particular, the following are the findings from the study for each research question.

Findings Related to Research Question 1

Research Question 1 asked: Does the teaching model used in this course sufficiently meet the criteria for teaching ethics in the IS curriculum as outlined by IS 2002, AACSB, and ABET? The literature review summarized the directives of each entity and indicated where, if anyplace, ethical instruction of Information Systems should take place. Table 16 provides a quick reminder of these guidelines.

	Directive	Where it should be taught
AACSB	<ul style="list-style-type: none"> • Recommends that ethics education be included in the business curriculum as an “essential requirement” 	<ul style="list-style-type: none"> • Somewhere in the business curriculum; no specifics
IS2002	<ul style="list-style-type: none"> • Included in the criteria for analytical and critical thinking are the knowledge areas of ethics and professionalism • Identify the topics in this category as codes of conduct, ethical theory, leadership, legal and regulatory standards, professionalism, societal and ethical issues, professional codes of ethics, and behavioral aspects of project management 	<ul style="list-style-type: none"> • <i>IS 2002.1: Fundamentals of Information Systems</i> • <i>IS 2002.3 Information Systems Theory and Practice</i> • <i>IS 2002.7: Analysis and Logical Design</i> • <i>IS 2002.10: Project Management and Practice (implied)</i>
ABET	<ul style="list-style-type: none"> • Additional areas of study under section IV-15 • There must be sufficient coverage of global, economic, social and ethical implications of computing to give 	<ul style="list-style-type: none"> • Somewhere in IS curriculum; no specifics

	students an understanding of a broad range of issues in these areas	
--	---	--

TABLE 16: Summary of Ethics Curriculum Directives by Organization

Using these directives as a framework for analyzing this investigation indicates the following:

- ◆ The AACSB expectations are such that ethics be taught somewhere in the business curriculum, but no specifics are given. In this study, ethics was taught in the Global Information Resource Management class, which is a capstone course in the Information Systems curriculum at Georgia Southern University. All core classes in this discipline are part of the business curriculum for Information Systems majors, so the answer to the research question would be yes, the use of ethical instruction in this course satisfies AACSB expectations.
- ◆ The IS 2002 Curriculum Model specifies four particular classes where ethics should be taught and provides a list of topics for guidance in teaching the content. In this study, ethics was taught in a Global IRM course that would be considered to closely match the IS 2002.3 model course, Information Systems Theory and Practice. Many of the suggested topics listed in the IS 2002 curriculum model were covered in the Global IRM course. These include a discussion of codes of ethics, leadership, professionalism, societal and ethical issues, and behavioral aspects of

project management. The teaching approach used in this study therefore conforms to the guidelines for the IS 2002 Curriculum Model.

- ◆ The ABET accreditation body also recommends the inclusion of ethics instruction but does not specify which course, other than that it should be in the Information Systems curriculum. The suggested topics include global, social, economical, and ethical implications of technology. An argument could be made that the teaching approach used in this study conforms to these expectations because it dealt with incidents in an international war that included an assortment of social, economic, and ethical implications.

Returning to the research question at hand, does the combination of instructional techniques used in this study sufficiently meet the directives of all three organizations? The opinion of this researcher is yes. Future research polling other Information Systems faculty familiar with these three sets of guidelines would be an effective means of demonstrating the extent to which this assessment of the instructional methods used are viewed as conforming to the guidelines.

Findings Related to Research Question 2

The second research question for this study asked if the teaching methods are effective in helping Information Systems students comprehend the importance of ethics and professional responsibility. There were many subparts to this particular question especially when trying to address the effectiveness of various instructional techniques used, as well as the overall impression of the entire collection of instructional approaches.

The first part of research question 2 seeks to determine if the students found the discussion of professional codes of ethics helpful. In looking at the survey results regarding the effectiveness of the codes of ethics as a teaching tool suggests that the students thought that this approach was useful. The majority of the students (46 of 48) agreed that this approach was helpful. The mean response for this instructional method is a 1.62 and thus indicates a positive perception of this instructional approach.

Another part of the second research question wanted to know if the students learned the importance of ethics in Information Systems from reading the IBM book. Several items on the survey provide insight relevant to this question. First, items 3 and 4 on the survey instrument measured the students perceived level of importance of ethical issues before and after reading the book. The mean responses to these questions statistically demonstrate that the book did make an impression on the students. In addition, the mean response to a question regarding the effectiveness of the book as an instructional technique for teaching ethics suggests that the IBM book was viewed as the most effective instructional method used in the course. Qualitative feedback from online journal entries and discussion postings also attest to the effectiveness of this approach. Having students rank order the effectiveness of the various instructional approaches in a future study would help verify these findings.

The third part of the second research question asked if the SDLC-Ethics grid was helpful in understanding ethical decision making processes. There are two sources of data that address this question. First, survey item 11 solicited the students' feedback about the effectiveness of the SDLC-Ethics grid. The mean student response was 1.4583, indicating that they viewed this approach favorably. In addition, the majority of the

students provided quality answers to each section of the SDLC-Ethics grid indicating a thorough understanding of its framework and purpose as an instructional method.

The fourth part of the second research question inquired about the use of case studies to teach ethics. Items 8 and 9 on the survey addressed this question and the mean response from the students is a 1.8958 and 1.9375, respectively. While these results indicate a favorable perception, the means were not as high as those for the book or SDLC-Ethics grid. Among the six different techniques used to teach ethics, the various case studies produced means suggesting that they ranked toward the bottom of the instructional methods used in the course.

The fifth part of the second research question specifically questioned the use of online discussions as being helpful to the ethical instruction. Question 12 addressed this issue and the mean response from students was a 1.5833, with 46 of the 48 students either agreeing or strongly agreeing that this approach was effective. The qualitative data also supports this result, as can be seen from the lengthy comments provided by students. The majority of student Internet postings were engaging and authentic, and this approach appeared to provide a solid forum for students to dialog with each other when not in the classroom. It was the equivalent of having an online book club.

The sixth part of the second research question asked if the course's ethics instruction overall was effective in changing the way IS students will think about their future job responsibilities (in regards to ethics and professionalism). The survey data indicated that it did, with 87% of the students enrolled in the course responding with a yes to Item 5 on the survey which directly addressed this question. This seems to provide

a strong sentiment among students toward the collective set of instructional approaches used in the course.

The last part of the second research question specifically wanted to know if students would recommend this teaching method for future classes. Item 6 on the survey instrument addressed this question in part by asking the students if they thought the IBM book should be required reading. More than 70% of the students were in support of using the book in the Global IRM course in the future. In addition, several online journal entries provided support for the book and strongly recommended its continued use.

In conclusion, it appears that the various approaches to teaching ethics in this course were well received by students and that they were especially impressed by the IBM book, the SDLC-Ethics grid, and the use of WebCT discussions to reflect on the ethical issues that they were exposed to in the book. The combination of approaches used seemed to have broadened their understanding of the importance of ethics in Information Systems.

Limitations

There are multiple limitations to this study that must be considered. First, the sample size (N=48) of this case study could be considered too small for reaching definitive conclusions. Other limitations include that the instructional approaches were used by a single instructor at a single university. Would similar patterns of results be observed if the same methods were employed by other instructors? Would similar patterns be observed at other institutions? Would similar results be found in a larger class size? Would graduate students demonstrate the same perceptions of the instructional techniques as undergraduate students? Would students with considerable

exposure to ethics instruction in previous courses have the same perception of this set of instructional methods as students who lacked previous exposure to ethics instruction? Exploring each question in future investigations would address the robustness of this study's finding.

Another limitation is the use of a single post-test survey in this class, instead of a pre-test/post-test model. The use of a pre-test and the inclusion of pre-test/post-test analyses could provide more compelling evidence of the effectiveness of the various instructional methods.

Another related limitation is not using a validated instrument that measures the attitude of students in regards to ethics and technology. One such measure identified in this study's literature review is the Defining Issues Test. It's inclusion in a future investigation could be useful despite arguments that this particular test is more general in nature, and does not specifically address information systems ethics.

Recommendations

While insight is provided by this study, there are additional areas that could be explored that would enrich its findings. There are also two directions to consider when providing recommendations. The first set of recommendations discuss future research on ethics curriculum in IS courses. The second set of recommendations is directed towards faculty who may be seeking ideas on how to teach ethics to Information Systems students.

Future research with regard to ethics in the IS curriculum can and should consist of the following:

- Review syllabi from IS programs in AACSB schools and other universities to see what content and curriculum approaches they are using to teach ethics.
- Investigate the current business curriculum to see in which classes ethics is currently be taught, and determine the content, as well as the approaches being used.
- Survey other faculty for their perceptions about their particular teaching methods to see if they feel that they meet accreditation requirements and expectations of each of the major stakeholders in the IS curriculum
- Survey faculty at other institutions about the techniques they use to teach ethics in the IS curriculum.
- Survey faculty to determine whether there should be a single IS ethics course or if ethics instruction should be included in multiple courses. If multiple courses, which ones?
- Create a research instrument for students that can gauge their disposition towards ethical decision making, which can then be used as a pre-test/post-test tool when teaching ethics in the Information Systems curriculum.
- Have other researchers use the SDLC-Ethics grid with their students to test the results of this investigation which suggests that it is a useful tool for evaluating ethical behavior while studying project management situations

- Redesign the survey instrument so that it includes items such as a ranking of the instructional techniques, and a space for additional feedback such as why they choose the response they made.

In addition to future research, some faculty might have more of an interest in the practical side of how exactly should they teach ethics in their Information Systems courses. Recommendations that can be gleaned this study and its literature review conclude that there are a variety of techniques that can be used to teach ethics including discussing professional codes of ethics, case studies, online discussion, and reading the IBM book (or other books). The challenge for some faculty is the time constraint in offering certain content. For example, some faculty might only have one day to present ethics content, in which case having students read a book like Black's (2001a) narrative would not be practical. Others might have a whole week or even the entire semester, in which case a combination of approaches can be used, including some combination of the methods used in this study.

It is also worth noting that it takes a certain amount of effort and background to use some of the ethics instructional techniques. As an example, including coverage of the philosophical frameworks for ethical decision making would be one possibility, but it was not used in this instance in part because of the lack of confidence on behalf of the instructor in presenting it. Other faculty might have a different comfort zone with teaching classical schools of ethical thought.

The same could be said about using the *IBM and the Holocaust* book. Not everyone would feel comfortable intertwining a discussion about the Holocaust in the technology classroom. It is not an easy topic for anyone to discuss, and some might

avoid doing so because of its focus. If it is done however, Morris (2001, pg. 11) suggests “educators approach the Holocaust without repressing grief and suffering”. To do so would be tragic to those who suffered. Please note that it is not the purpose of this study to recommend a particular book, but instead to offer it as one suggestion. There are other options, as indicated in the literature review, such as using Epstein’s fictional text, the *Case of the Killer Robot*. Additional examples could include a book that focuses on any technology company such as Microsoft, Apple Computers, Oracle, or any of the other software, hardware, and IT companies in existence.

Concluding Thoughts

In closing, the importance of ethics in the Information Systems curriculum is the primary focus of this study. Information Systems faculty must provide students with more than technology skills. The discipline should also emphasize the social, political, and ethical dimensions of how information systems and technology affect society. It is important that Information Systems faculty and Business faculty in general, commit to teaching ethics in their curriculum and investigate the best approaches and content that can be used at their institution.

This recommendation however is not suggesting that we return to the Puritan driven religious curriculum of early America as our dominant discourse, but instead it is meant to advocate that ethics be included as one component of the technology curriculum.

This investigation has shown that students appear to be receptive to ethics teaching and that it can potentially impact their decision making in the workplace. The

method of ethics instruction is relatively important in reaching the student and a combination of options are available to choose from. Which ever technique the instructor uses must be appropriate and effective for the students to engage in a discussion. It is also recommended that a tool, such as the SDLC-Ethics grid be implemented to provide a framework for analyses of ethics decision making in Information Systems projects.

Overall, this dissertation project has been a challenge, but it has also been a rewarding experience. It would be negligible of me to talk about teaching ethics to students without indicating the lessons that I have learned in the process. I have learned that students can inspire you to be a better teacher and individual. I believe that most of the students in this study learned the same of themselves, not just in the professional realm, but in the personal one as well. I have also learned that technology is not always about programming the computer to provide the correct output or information, but that it includes the added dimension of producing it for the right individual or organization. Information is power, and if it is left in the wrong hands, it can be detrimental. As faculty we have an obligation to teach ethics, directly and indirectly to our students. The major stakeholders of the Information Systems curriculum expect it, and perhaps unknowingly society does as well.

And finally, I appreciate the insight I have gained from studying curriculum theory and the ethicality of always questioning what we are teaching our students, both in the classroom and in the culture of society. I do not necessarily see myself as a curriculum theorist along the same levels of Pinar, Weaver, Morris, and many others, so I am not sure if this will contribute much to the reconceptualist discussions, particularly since my mode of inquiry resembles that of a traditional researcher using qualitative

and/or quantitative methods to answer curriculum questions. I would think, however, that the exploration and discussion surrounding the research would contribute in some way to the conversation.

A discussion of ethics and technology in the curriculum has taken place in this dissertation. Anytime a scholar questions or critically examines an issue, they are in a sense, examining the ethics of what we are doing in the curriculum. In this particular instance my desire to investigate ethics in the technology curriculum resulted in a framework of questioning some aspects of the essence of technology as a foundation for emphasizing the need for ethics to be more inclusive in the information systems discipline.

REFERENCES

- AACSB: Association to Advance Collegiate Schools of Business (date unknown).
AACSB International website. Retrieved June 7, 2005 from
<http://www.aacsb.edu>.
- ABET: Accreditation Board of Engineering and Technology (2004, November 1).
*Criteria for accrediting computing programs: Effective for evaluations during the
2005-2006 accreditation cycle*. Abet, Inc., Baltimore, MD. Retrieved July 23,
2005 from www.abet.org.
- Ahmed, M. M. , Chung, K. Y. & Eichenseher, J. W. (2003). Business students'
perception of ethics and moral judgement: A cross-cultural study. *Journal of
Business Ethics*, 43(3), 89-102.
- Altwies, D. (2005, August 8). *Effective use of software development life cycle*. Retrieved
August 23rd, 2005 from
[http://www.informit.com/guides/content.asp?g=it_management&seqNum=55&rl
=1](http://www.informit.com/guides/content.asp?g=it_management&seqNum=55&rl=1).
- Anderson, P. & Sanzogni, L. (2000). Wisdom and the IS curriculum: Is ethics necessary?
*Proceedings of the 15th Annual Conference of the International Academy of
Information Management*, 87–95.
- Anderson, R.E., Johnson, D.G., Gotterbarn, D. & Perolle, J. (1993). Using the new
ACM code of ethics in decision making. *Communications of the ACM*, 36(2), 98-
106. Retrieved May 15th, 2004, from <http://www.acm.org/membership.html>

- Aoki, T.T. (1987). Toward understanding “computer application”. In W.F. Pinar (Ed.) (1999) *Contemporary curriculum discourses: Twenty years of JCT.*, 168-176. New York: Peter Lang.
- Athey, S. (1993). A comparison of experts’ and high tech students’ ethical beliefs in computer-related situations. *Journal of Business Ethics*, 12(5), 359-370.
- Athey, S. (1996). A comparison of pedagogies to teach ethical issues in information systems. *Journal of Education for MIS*, 4(1), 43-46.
- Banerjee, D., Cronan, T. P., & Jones, T. W. (1998). Modeling IT ethics: A study in situational ethics. *MIS Quarterly* 22(1), 31-60.
- Benbunan-Fich (1998). Guidelines for using case scenarios to teach computer ethics. *ACM Special Interest Group on Computers & Society*, 28(3), 20-24.
- Bernard, S. C. & S. Mondale. (2001). *School : The story of American public education*. Boston, MA: Beacon Press.
- Bishop, T. R. (1992). Integrating business ethics into an undergraduate curriculum. *Journal of Business Ethics*, 11(4), 291-299.
- Black, E. (2001a). *IBM and the Holocaust: The strategic alliance between Nazi Germany and America’s most powerful corporation*. New York: Crown Publishers.
- Black, E. (2001b). *The Nizkor Project: IBM and the Holocaust (Introduction)*. Retrieved May 28, 2004, from <http://www.nizkor.org/hweb/people/b/black-edwin/ibm-and-the-holocaust.html>
- Blasi, A. (1983). Moral cognition and moral action: A theoretical perspective. *Developmental Review*, 3, 178-210.

- Bommer, M., Gratto, C., Gravander, J., & Tuttle, M. (1987). A behavioral model of ethical and unethical decision making. *Journal of Business Ethics*, 6, 265-280.
- Borrus, A. (2004, January 15). A new school of thought on ethics. *Business Week Online*. Retrieved May 17, 2004, from Academic Search Premier Database.
- Botting, R. J. (2005). Teaching and learning ethics in computer science: Walking the walk. *ACM SIGCSE Bulletin, Proceedings of the 36th SIGCSE technical symposium on Computer science education*, 37(1), 342-346.
- Bowers, C.A. (1988). *The cultural dimensions of educational computing: Understanding the non-neutrality of technology*. New York: Teachers College Press, Columbia University.
- Bowers, C.A. (2000). *Let them eat data: How computers affect education, cultural diversity, and the prospects of ecological sustainability*. Athens, GA: The University of Georgia Press.
- Brabston, M. (2003). Teaching information ethics a new way: Making computer ethics interesting. *Proceedings of the 18th Annual Conference of the International Academy for Information Management*, 108-111.
- Bromley, H. (1998). Introduction: Data-driven democracy? Social assessment of educational computing. In H. Bromley & M. Apple (Eds.), *Education/Technology/Power: Educational computing as a social practice*. Albany: State University of New York Press.
- Bromley, H. & Apple, M. W. (Eds.). (1998). *Education/Technology/Power: Educational computing as a social practice*. Albany: State University of New York Press.

- Byrne, G. J. & Staehr, L. J. (2004). The evaluation of a computer ethics program. *Journal of Issues in Informing Science and Information Technology*, 931-939.
- CC2001 (2001). *Computing Curricula 2001: Curriculum Guidelines for Undergraduate Degree Programs in Computer Science*. The Joint Task Force on Computing Curricula, IEEE Computer Society, and the Association for Computing Machinery.
- Cohen, E. & Cornwell, L. (1989, June). A question of ethics: Developing Information Systems ethics. *Journal of Business Ethics*, 8(6), 431-437.
- Coldwell, J. (2001). It is possible to teach computer ethics via distance education! *Selected papers from the second Australian Institute of Computer Ethics Conference*, 1, 73-80.
- Cole, B. C. & Smith, D. L. (1996). Perceptions of business ethics: Students vs. business people. *Journal of Business Ethics*, 15(8), 889-896.
- Cole, Carol S. (2003). An investigative analysis of teaching business ethics in Tennessee community colleges (Doctoral dissertation, East Tennessee State University, 2003). UMI ProQuest Digital Dissertations. (UMI No. 3118981).
- Cougar, J. D. (1989, June). Preparing IS students to deal with ethical issues. *MIS Quarterly*, 13(2), 211-218.
- Cuban, L. (2001a). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.
- Cuban, L. (2001b). Why are most teachers infrequent and restrained users of computers in their classrooms? In J. Woodward & L. Cuban (Eds.), *Technology, curriculum, and professional development*. Thousand Oaks, CA: Corwin Press, Inc., 121-137.

- Cuban, L. (1980). *Teachers and machines: The classroom use of technology since 1920*.
New York: Teachers College Press.
- DeGeorge, R. T. (1987). The status of business ethics: Past and future. *Journal of Business Ethics*, 6, 201-211.
- ENIAC (2005, September 11). Electronic Numerical Integrator and Calculator:
Wikipedia, the free encyclopedia. Retrieved September 14, 2005 from
<http://en.wikipedia.org/wiki/ENIAC>.
- Epstein, R. G. (1989). The case of the killer robot. Retrieved July 26, 2005 from the
Online Ethics Center for Engineering Science at Case Western Reserve University
at <http://onlineethics.org/cases/robot/robot.html>.
- Epstein, R. G. (1994). The use of computer ethics scenarios in software engineering
education: The case of the killer robot. *Software Engineering Education:
Proceedings of the 7th SEI CSEE Conference*, 429-440.
- Epstein, R. G. (1995). Latest developments in the “killer robot” computer ethics
scenario. *Proceedings of the twenty-sixth SIGCSE technical symposium on
Computer science education*, 27(1), 111-115.
- Epstein, R. G. (1997). *The Case of the Killer Robot*. John Wiley & Sons, New York NY.
- Ethics Education Resource Center (date unknown). Retrieved June 7, 2005 from
http://www.aacsb.edu/resource_centers/EthicsEdu/default.asp.
- Fensham, P. J. (1992). Science and Technology, in P. Jackson (Ed.), *Handbook of
research on curriculum*, 789-829. New York: Macmillian Publishers.

- Ferneding, K. (2004). Stepping through the looking glass: Education, with space between modernity and postmodern in the life world, the body and technology, *Journal of Curriculum Theorizing*, 18(3), pp.53-64.
- Ferneding, K. (2003). *Questioning technology: Electronic technology and educational reform*. New York: Peter Lang.
- Ferneding, K. (2004). Understanding teachers' technological pessimism through the eyes of Mary Shelley. In J. A. Weaver, K. Anijar, & T. Daspit (Eds.), *Science fiction curriculum, cyborg teachers & youth culture(s)*. New York: Peter Lang.
- Forsyth, D. R. (1980). A taxonomy of ethical ideologies. *Journal of Personality and Social Psychology*, 39(1), 175-184.
- Gehringer, E. F. (2001). Building an ethics in computing website using peer review. *2001 ASEE Annual Conference and Exposition, American Society for Engineering Education, Albuquerque, June 24-27*.
- Gerhardt, J. (2001). Put ethics and fun into your computer course. *Journal of Computing Sciences in Colleges*, 16(4), 247-252.
- Gerhardt, J. (2005). If you can teach it, you can measure it. *Journal of Computing Sciences in Colleges*, 20(3), 114-120.
- Ghafarian, A. (2002). Integrating ethical issues into the undergraduate computer science curriculum. *Journal of Computing Sciences in Colleges*, 18(2), 180-188.
- Glenn, J. R. Jr. (1992). Can a business and society course affect the ethical judgment of future managers? *Journal of Business Ethics*, 11(3), 217-223.

- Goold, A., & Coldwell, J. (2005). Teaching ethics in a virtual classroom. *Proceedings of the 10th annual SIGCSE conference on Innovation technology in Computer science education*, 232-236.
- Gorgone, J. T., Davis, G. B., Valacich, J. S., Heikki, T., Feinstein, D. L., & Longenecker, H. E. Jr. (2002). *IS 2002: Model curriculum and guidelines for undergraduate degree programs in information systems*. Retrieved June 2nd, 2005 from <http://www.aisnet.org/Curriculum>.
- Gotterbarn, D. (1994). Comments on the feature article: Who should teach Computer Ethics and Computers & Society? *ACM Special Interest Group on Computers & Society*, 24(2), 12-13.
- Greening, T., Kay, J., & Kummerfeld, B. (2004). Integrating ethical content into computing curricula. *Proceedings of the sixth conference on Australian computing education*, 30, 91-99.
- Grodzinsky, F., Gehringer, E., King, L. S., and Tavani, H. (2004). Panel: Responding to the challenges of teaching computer ethics. *ACM SIGCSE Bulletin*, 280-281.
- Hanchey, C. M. (2002). Yes, you can teach ethics! *Journal of Computing Sciences in Colleges*, 17(4), 145-153.
- Haraway, D. (1997). *Modest_witness@second_millennium. Female-man_meets_oncomouse: Feminism and technoscience*. New York: Routledge.
- Harris, J., Cummings, M., & Fogliasso, C. (2002, February). Statements of core values and corporate codes of ethics for IT related firms. *The Journal of Computing Sciences in Colleges*, 17(3), 219-230.

- Heidegger, M. (1977). *The question concerning technology and other essays*, translated by William Lovitt. New York: Harper & Row. (original work published in 1954).
- Hilton, T. (2000). Information systems ethics: A practitioner survey. *Journal of Business Ethics*, 28(4), 279-284.
- Huff, C., & Martin, C. D. (1995, December). Computing consequences: A framework for teaching ethical computing. *Communications of the ACM*, 38(12), 75-84.
- IAC: Industry Advisory Council (1999). Improving Ethics Awareness in Higher Education. *Issues of Accreditation in Higher Education*, 1(1), 3-4.
- IBM Punched Card Systems in the U.S. Army (last updated May 14th, 2005). *The Patton Society website*. Retrieved May 21st, 2005 from <http://www.pattonhq.com/ibm.html>.
- Johnson, D. (1994). Feature Article: Who should teach Computer Ethics and Computers & Society? *ACM Special Interest Group on Computers & Society*, 24(2), 6-7.
- Johnson, D. (2004). Proactively teaching technology ethics. *Library Media Connection*, 22(4), 24-25.
- Kaufmann, W. (1968). *Basic Writings of Nietzsche*, translated and edited by Walter Kaufmann. New York: Random House, Inc.
- Kay, R. (2002). *Computerworld quickstudy: System development life cycle*. Retrieved August 23rd, 2005 from <http://www.computerworld.com/developmenttopics/development/story/0,10801,71151,00.html>

- Kimery, K. M. (2005). Perceptions of professional ethics among undergraduate information systems students. *Proceedings of the 2005 Southern Association of Information Systems Conference*, 155-161.
- King, P. M., & Mayhew, M. J. (2002). Moral judgement development in higher education: insights from the Defining Issues Test. *Journal of Moral Education*, 31(3), 247-270.
- Kreie, J., & Cronan, T. P. (1998). How men and women view ethics. *Communications of the ACM*, 41(9), 70-76.
- Kreie, J., & Cronan, T. P. (2000). Making ethical decisions: How companies might influence the choices one makes. *Communications of the ACM*, 43(12), 66-71.
- Laudon, K. C. (1995). Ethical concepts and information technology. *Communications of the ACM*, 38(12), 33-39.
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, p. 140.
- Maner, W. (1994). Comments on the feature article: Who should teach Computer Ethics and Computers & Society? *ACM Special Interest Group on Computers & Society*, 24(2), 10-11.
- Martin, C. D., & Martin, D. H. (1990). Professional Codes of Conduct and Computer Ethics Education. *Social Science Computer Review*, 8(1), 96-108.
- Mason, R. O. (1996). Four ethical issues of the information age. *MIS Quarterly*, 10(1), 5-12.
- McDonald, G. M. & Donleavy, G. D. (1995). Objections to the teaching of business ethics. *Journal of Business Ethics*, 14(10), 839-853.

- Morris, M. (2001). *Curriculum and the Holocaust: Competing sites of memory and representation*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Myers, M. D., & Avison, D. (2002). *Qualitative Research in Information Systems*. London, UK: Sage Publications.
- O'Boyle, E. J. (2002). An ethical decision-making process for computing professionals. *Ethics and Information Technology*, 4(4), 267-277.
- Oz, E. (1992). Ethical standards for information systems professionals: A case for a unified code. *MIS Quarterly*, 16(4), 423-433.
- Oz, E. (1993). Ethical standards for computer professionals: A comparative analysis of four major codes. *Journal of Business Ethics*, 12(9), 709-727.
- Paradice, D. B., & Dejoie, R. M. (1991). The ethical decision-making processes of information systems workers. *Journal of Business Ethics*, 10, 1-21.
- Pearson, J. M., Crosby, L., & Shim, J. P. (1997). Measuring the importance of ethical behavior criteria. *Communications of the ACM*, 40(9), 94-100.
- Peterson, D. K. (2002). Computer ethics: The influence of guidelines and universal moral beliefs. *Information Technology & People*, 15(4), 346-361.
- Phillips, S. (2004, June) – *Ethics education in business schools: Report of the ethics education task force to AACSB International's board of directors*. Retrieved June 10, 2005 from http://www.aacsb.edu/resource_centers/ethicsedu/default.asp.
- Pierce, M. A. & Henry, J. W. (1995). Perspectives on computer ethics: CS/IS educators and practicing computer professionals. *Journal of Education for MIS*, 3(1), 25-31.

- Pierce, M. A. & Henry, J. W. (2000). Judgements about computer ethics: Do individual, co-worker, and company judgements differ? Do company codes make a difference? *Journal of Business Ethics*, 28(4), 307 -322.
- Pierce, M. A., & Henry, J. W. (1996). Computer ethics: The role of personal, informal, and formal codes. *Journal of Business Ethics*, 15(4), 425-437.
- Pinar, W. F., Reynolds, W. M., Slattery, P., & P. M. Taubman (2000). *Understanding Curriculum*. New York, NY: Peter Lang Publishing.
- Polack-Wahl, J. A. (2000). *Actively learning computer ethics*. *Journal of Computing Sciences in Colleges*, 15(5), 299-304.
- Purpel, D. (1989). *The moral and spiritual crisis in education: A curriculum for justice and compassion in education*. South Hadley, MA: Bergin & Garvey.
- Rariden, R. L. (2004). Applied ethics in a pluralistic society: The conundrum of professional ethics. *Proceedings of the 2004 International Conference on Informatics Education Research, Washington, DC*, 1 – 5.
- Rest, J. R., Cooper, D., Coder, R., Masanz, J. & Anderson, D. (1974). Judging the important issues in moral dilemmas – An objective measure of development. *Developmental Psychology*, 10(4), 491-501.
- Rest, J. R., Narvaez, D., Thoma, S. J., & Bebeau, M. J. (1999). DIT2: Devising and testing a revised instrument of moral judgement. *Journal of Educational Psychology*, 91(4), 644-659.
- Robin, D. R., Reidenbach, R. E., Forrest, P. J. (1996). The perceived importance of an ethical issue as an influence on the ethical decision-making of ad managers. *Journal of Business Research*, 35, 17-28.

- Sanders, A. F. (2005). A discussion format for computer ethics. *ACM SIGCSE Bulletin, Proceedings of the 36th SIGCSE technical symposium on Computer science education*, 37(1), 352-355.
- Sanford, J. T. (2002). Teaching ethics in business in the community college: A comparative study (Doctoral dissertation, Northern Illinois University, 2002). UMI ProQuest Digital Dissertations. (UMI No. 3055465).
- Schlenker, B. R., & Forsyth, D. R. (1977). On the ethics of psychological research. *Journal of Experimental Social Psychology*, 13, 369-396.
- Searls, D. E. (1988). Teaching computer ethics. *ACM SIGCSE Bulletin*, 20(3), 45-48.
- Siponen, M. T., & Vartiainen, T. (2001). End-user ethics teaching: Issues and a solution based on universalization. *Proceedings of the 34th Hawaii International Conference on System Sciences*, 1-10.
- Slattery, P. (1995). *Curriculum development in the postmodern era*. New York, NY: Garland Publishing, Inc.
- Spinello, R. A. (2003). *CyberEthics: Morality and Law in Cyberspace*, 2nd edn., Jones and Bartlett, Sudbury MA.
- Staehr, L. and Byrne, G. (2003) Using the Defining Issues Test to Evaluate Computer Ethics Teaching. *IEEE Transactions on Education*, 46(2), 229-234.
- Strike, K. & Soltis, J. F. (1998). *The Ethics of Teaching* (3rd ed.). New York: Teachers College Press.
- Taylor, G. S., & Davis, J. S. (1989). Individual privacy and computer-based human resource information systems. *Journal of Business Ethics*, 8, 569-576.

- Trauth, E. M. (2001). *Qualitative Research in IS: Issues and Trends*. Hershey, PA: Idea Group Publishing.
- Trevino, L. K. (1986). Ethical decision making in organizations: A person-situation interactionist model. *Academy of Management Review*, 11(3), 601-617.
- Trevino, L. K. (1992). Moral reasoning and business ethics: Implications for research, education, and management. *Journal of Business Ethics*, 11(5), 445-459.
- Trevino, L. K., & McCabe, D. (1994). Meta-learning about business ethics: Building honorable business school communities. *Journal of Business Ethics*, 13(6), 405-416.
- Turkle, S. (1995). *Life on the Screen: Identity in the Age of the Internet*. New York: Simon & Schuster.
- Tyler, R. W. (1949). *Basic Principles of Curriculum and Instruction*. Chicago: The University of Chicago Press.
- Victor, B. & Cullen, J. B. (1988). The organizational bases of ethical work climates. *Administrative Science Quarterly*, 33, 101-125.
- Wahl, N. J. (1999, March). YAATCE – Yet another approach to teaching computer ethics. *ACM SIGCSE Bulletin*, 31(1), 22-26.
- Weaver, J. A. (2004). Curriculum theorists as spawns from hell. In J.A. Weaver, K. Anjar, & T. Daspit (Eds.), *Science fiction curriculum, cyborg teachers, & youth culture(s)*. New York: Peter Lang.
- Weiss, E. A. (1990). Self-Assessment Procedure XXII. *Communications of the ACM*, 33(11), 110-132.

- White, G. (1994). Comments on the feature article: Who should teach Computer Ethics and Computers & Society? *ACM Special Interest Group on Computers & Society*, 24(2), 11-12.
- Wu, C. F. (2003). A study of the adjustment of ethical recognition and ethical decision-making of managers-to-be across the Taiwan Strait before and after receiving a business ethics education. *Journal of Business Ethics*, 45(4), 291-307.
- Zlatarova, F. (2004). Introducing computer ethics in extra class activities. *Proceedings of the University of Texas Ethics Conference*, April 15-17, Austin, TX, 1-10.

APPENDIX A

GLOSSARY OF TERMS

The glossary table is provided to assist in defining the many terms and acronyms used in writing this dissertation study. The discipline of Information Systems is very technically oriented and has some terminology that may not be known outside of the major.

AACSB	Association to Advance Collegiate Schools of Business
ACM	Association for Computing Machinery
AITP	Association for Information Technology Professionals
IS	Information Systems
IT	Information Technology
SDLC	Systems Development Life Cycle
ABET	Accreditation Board for Engineering and Technology

Table A1: Glossary of Terms

APPENDIX B

SURVEY ON ETHICS TEACHING

**Ethics in Information Systems Curriculum
Survey**

This survey is designed to gather feedback on the teaching of ethics in this course and the information collected will be helpful in making future curriculum decisions. Please take a few minutes to give me your opinion on the teaching of ethics in this course. All responses are completely voluntary and confidential. If you choose to participate, please return this survey to me when you have completed it. All references to the IBM book are referring to the *IBM and the Holocaust* (by Edwin Black) book we read in class. Thank you for your assistance!

1. Prior to this class, have you discussed ethics in another class?
 - a. yes
 - b. no

2. If you answered “yes” to Q#1, was it in a(n) _____ class?
 - a. Information Systems
 - b. another business
 - c. another technology (IT/CS) class?
 - d. other _____ (please list)

3. On a scale of 1 to 10 (**1 – not important, 10 – very important**) how much consideration/importance did you give to ethical issues in information systems/information technology *BEFORE* reading the IBM book?

1 2 3 4 5 6 7 8 9 10

4. On a scale of 1 to 10 (**1 – not important, 10 – very important**) how much consideration/importance did you give to ethical issues in information systems/information technology *AFTER* reading the IBM book?

1 2 3 4 5 6 7 8 9 10

5. Has reading the IBM book changed the way you will approach your job responsibilities as an IS professional?
 - a. yes
 - b. no

6. Should this book be required reading for all IS majors?
 - a. yes
 - b. no

Please rate your opinion of the following items based on your experience in this semester's class. Circle the appropriate response using the following scale:

SA = Strongly Agree	D = Disagree
A = Agree	SD = Strongly Disagree
U = Undecided	

- | | |
|--|--------------------|
| 7. Examining & discussing professional codes of ethics/standards of conduct was a very effective technique for learning about ethics. | SA A U D SD |
| 8. Discussing hypothetical dilemmas regarding privacy, identity theft, surveillance, etc..., was a very effective technique for learning about ethics. | SA A U D SD |
| 9. Discussing current examples of business dilemmas from the news media was very effective in learning about ethics | SA A U D SD |
| 10. Reading the IBM book was a very effective technique for learning about ethics and understanding the job responsibilities of IS professionals | SA A U D SD |
| 11. Creating the SDLC-Ethics grid was an effective tool in learning about the role ethics has in information systems development and implementation. | SA A U D SD |
| 12. The online discussions format was helpful for discussing the IBM book and other ethics issues in this class. | SA A U D SD |