

Case-based Learning as Pedagogy for Teaching Information Ethics Based on the Dervin Sense-Making Methodology

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The purpose of this mixed methods study is to determine the effectiveness of case-based pedagogy in teaching basic principles of information ethics and ethical decision-making. Study reports results of pre- and post-assessment completed by 49 library and information science (LIS) graduate students at a Midwestern university. Using Creswell's (2014) convergent mixed methods strategy, the assessment instrument collected both quantitative and qualitative data in the pre- and post-assessment instrument, analyzed data separately, and compared it to better understand the problem. Pedagogy providing the context for this study is an example of a deliberate shift away from static lecture and memorization methods of instruction, to instruction involving a dynamic, interactive learning process. Curriculum and instruction is influenced by Dervin's (1983) seminal sense-making theory, in particular Dervin and Clark's (2003) dynamic, two-dimensional communication-as-procedure model used to overcome communication gaps and inequities. Students focused on cases, authentic situational dilemmas related to privacy; intellectual freedom; intellectual property; intercultural ethics; and professional ethics. Findings suggest that case-based pedagogy resulted in students' improved (1) abilities to describe basic principles of information ethics; (2) abilities to apply a model for ethical decision-making; (3) opportunities to practice flexible communication behavior; (4) awareness of behaviors relevant to tolerance of others, privacy rights, authors' and artists' rights, and treatment of co-workers; and (5) self-reported interest in the study of information ethics and satisfaction with case-based learning. It is suggested that case-based instruction using the sense-making methodology holds much promise as an effective way to operationalize information ethics education in LIS as well as in traditional social science disciplines. It offers a framework for development of students' abilities to inform themselves efficiently and effectively about choices information professionals must make in today's pluralistic world.

Introduction

With the influx of contemporary information and communication technology, information ethics education around the world is increasingly important as issues of privacy, intellectual property, and intellectual freedom increase and become more complex. Today, the once highly valued American legal privilege of selectively revealing information about one's self is debated in light of new awareness and allegations that national programs without individual permission collect metadata on phone calls in efforts to thwart terrorism (Harding, 2014). Facebook, a popular online social networking service that operates as though a permanent billboard in the public domain, is reason to question use of social media, particularly the ownership and safety of personal e-messages (Shaffer, 2011; Bolton, Parasuamen, Hoefnagels, Migchels, & Kabadayi, 2014). In an economy driven by information, what is the best way to preserve and utilize one's intellectual property including emoticons, original narrative, musical compositions, or a secret recipe for cupcakes? How can rights of library users to read, seek information, and speak freely as guaranteed by the First Amendment to the United States Constitution be protected in today's libraries in light of the public's growing fears that access to information makes easier the assembly of handmade bombs or the illegal purchase of guns? These are only a few issues suggesting that information ethics education must be operationalized as an immediate priority in traditional disciplines as well as in quickly growing, new academic areas such as library and information science (LIS).

Discourse about principles of information ethics including where, when, and how these principles are taught has intensified in recent years in the Association for Library and Information Science Education (ALISE). ALISE members in their 2007 (ratified in 2008) *Position Statement on Information Ethics in LIS Education*

stated that "Information ethics should be included in study and discussion across the library and information curriculum" (para. 2, item 3). The Information Ethics Special Interest Group of ALISE strongly advocates that student learning outcomes include 1) recognizing and articulating ethical conflicts; 2) developing responsibility for consequences of individual and collective interactions; 3) knowledge and skills for intercultural dialog; 4) awareness of relevance to everyday information work; and 5) ethical reflection, critical thinking, and ability to use information ethics in professional life (ALISE, 2007, para 2, item 1). Advances in teaching information ethics were emphasized at the 2014 ALISE Information Ethics Special Interest Group program in Philadelphia, PA. The 2015 ALISE Innovative Pedagogies Special Interest group in Chicago, IL emphasized current and innovative teaching strategies, practices, and curriculum ideas that reflect social justice issues. Teaching information ethics has also been emphasized by other LIS organizations such as the Association for Information Science and Technology (ASIST, 2001) and American Library Association (ALA, 2009).

Purpose and Research Questions

In the context of this study, case-based pedagogy is viewed from the perspective of Tomey (2003) as a form of instruction wherein "students are presented with authentic scenarios developed with a storytelling quality, interesting characters, controversial topics, and dilemmas to engage students and stimulate conversations about multiple issues and various stakeholder perspectives" (p. 35). The central purpose of this study is to investigate in a preliminary effort to determine whether case-based pedagogy as currently designed is effective in teaching basic principles of information ethics. This purpose and the researchers' interests in Dervin's Sense-Making Methodology (Dervin, 1983), in particular the Dervin and Clark (2003),

communication-as-procedure model, were used to formulate two questions:

1. How does case-based learning facilitate sense-making through situation-defining strategies and tactics to accomplish communication tasks relevant to solving information ethics dilemmas?
2. How does case-based pedagogy enable students to inform themselves efficiently and effectively about a pluralistic world?

Discussion and Implications

This study is an example of shifting pedagogical thinking theoretically and practically to a new approach to teaching and learning. Sense-Making Methodology (Dervin, Foreman-Wernet, & Lauterback, 2003) was used in an explicit attempt to move beyond any instructional remnants of rigid or mindlessly applied instructional procedures such as those traditionally involving over use of lecture, memorization, and drill to a dynamic process for teaching information ethics with particular attention to the how's of communication. This is important given recent directives by professional organizations to teach future librarians and information professionals principles of information ethics and to emphasize innovative teaching strategies, practices, and curricula that reflect and address social justice issues. This investigation provides a summative evaluation that can be used to improve future instruction and design of research for evaluating instruction.

The investigated instruction began with two assumptions. First, unless humans, in this study, graduate LIS students, are forced to change, they will continue to repetitively and rigidly repeat habits of communication that mirror earlier education and prior-learned communication practices. The second assumption was that it is often prior-learning that stands in the way of effectively applying new knowledge of

basic principles of information ethics to today's complex information problems. By focusing on moments of behaving, we moved to "communication-as-procedure and the idea of procedure as the energizing link between the macro and the micro as well as the micro and the macro" (Dervin *et al.*, 2003, p. 171) levels of communicating.

While this is only one instance of using case-based instruction for teaching information ethics, a study strength is that it builds on the experience of the professors whose LIS education and resulting college teaching included knowledge of the theoretical work of Dervin.

Accumulation of opportunities and efforts to read and use Dervin's theory influenced the professors' selection of course content and design of learning activities that utilized communication-as-procedure concepts. Weakness in the investigation results from the constraints of course scheduling and related difficulties associated with the execution of pre- and post-assessments to students who do not attend class in-person except during two disbursed weekends (10 hours each) during the semester. In the future, we plan to administer the pre- and post-assessments at the beginning and end of the course rather than what was done for this study at the beginning and end of the second 10 hour in-person weekend intensive class. We will conduct a purely quantitative study, such as a cross-case comparison beyond two classes including a second semester of teaching, or a purely qualitative study to learn from students what they say to describe the learning process rather than using a mixed methods design as is in this our first study about case-based learning.

Literature Review

The researchers, five doctoral students and their professor, in this study participated in a systematic, thorough literature review focused on 1) the impact of new information and communication technology

on information ethics issues; 2) case-based learning as it is developing as a pedagogical practice in many disciplinary areas; and 3) ethics education for information professionals. Following are selected empirical studies determined relevant to the identified focus of this study and useful to understanding cognitive consequences of using case-based instruction to teach information ethics.

Case-based Learning

Ethical reasoning. In an investigation of the relationship between ethical decision-making and ethical reasoning in information technology (IT) studies, Woodward, Davis & Hodis (2007) used Kohlberg's theory that "ethical reasoning is not static, but can move along a developmental trajectory" that ranges from making decisions based on personal interests, through "maintaining norms," to a moral state of making decisions based on "universal principles" (p. 194). Using two standardized instruments to question IT students, Woodward *et al.* found that many students are unable to distinguish criminal actions from unethical behavior, and the majority of students reflected the state of "maintaining norms" (p. 194). This suggests the need to create instruction that includes real-life scenarios and encourages students to know and use higher levels of ethical reasoning.

Ethical reflexivity. According to Stahl (2011), information systems educators are concerned about the nature of rapidly developing disciplines making it difficult to know what skills students will require by the time they graduate. LIS is an example of a rapidly developing academic area as described by Stahl. Considering the steady stream of new information communication technology (ICT), and the potential ethical issues new technologies introduce, one skill that Stahl asserts will always be pertinent and valuable is ethical reflexivity, which he defines as the ability for individuals to "understand their own position

and . . . reflect explicitly on their views and analyze them from different positions" (p. 258). Stahl further states that it is not possible to teach students about ethics by telling them what is right and what is wrong, since these are personal decisions that shift over time. Instead, he stresses that case studies allow for a discussion of and engagement with multiple levels of normativity, including moral intuition, explicit morality, "ethical justification and reflection" (p. 254) that leads to a broader understanding and appreciation of ethical discourse and reflexivity.

Comprehension. Mayo (2004) investigated the effectiveness of case-based instruction (CBI) among students studying the psychology of adjustment. He notes that CBI encourages active learning and problem-solving skills and predicts that CBI method should allow students to "better comprehend and apply adjustment theories and concepts than those who only received lecture-based instruction" (p. 139). Mayo encourages wider use of CBI and suggests incorporating more technology in the case methods for discussion and engagement.

Concentration. Baeten, Dochy, and Struyven (2013) investigated first-year teacher education students in terms of three types of learning: deep, surface, and strategic. Using the Approaches to Learning and Studying Inventory as a pre- and post-test, Baeten *et al.* (2013) tracked changes to students' learning approaches. They found that students in a "gradually implemented case-based setting adopted less surface approaches, worked in a better organized way and spent more effort and concentration than students who experienced only case-based instruction" (p. 329). They concluded that combining lecture- and case-based teaching methods through gradual implementation is more effective than to only rely on case-based methods.

Authentic situations. Carbo (2008) conducted a case study at the University of Pittsburgh to determine what content is best taught in a course on information eth-

ics. Focused on the school’s introductory, required course, Carbo indicates that there is a section devoted to the topic of information ethics. She notes that while there are a number of frameworks and teaching method options to encourage ethical reflection, the case-study method allows students to “test models on ‘real-world’ situations,” and encourages engagement and discussion (p. 22).

Teaching and learning efficacy. To examine how case-based instruction is utilized Bilica (2004) interviewed three experts recognized by the National Center for Case Teaching in Science. A number

of themes appeared in the three interviews: implementing case studies does not require “revolutionary shifts in . . . instructional approach” (p. 276). Courses will cover less material but the students will have a stronger understanding of the material; case teaching requires practice and time; and there are many types of case studies that highlight and align with different styles of instruction (pp. 276–7). Bilica (2004) concluded by emphasizing “in every case, the experts determined that case teaching added significantly to their own teaching efficacy as well as to their students’ success” (p. 278).

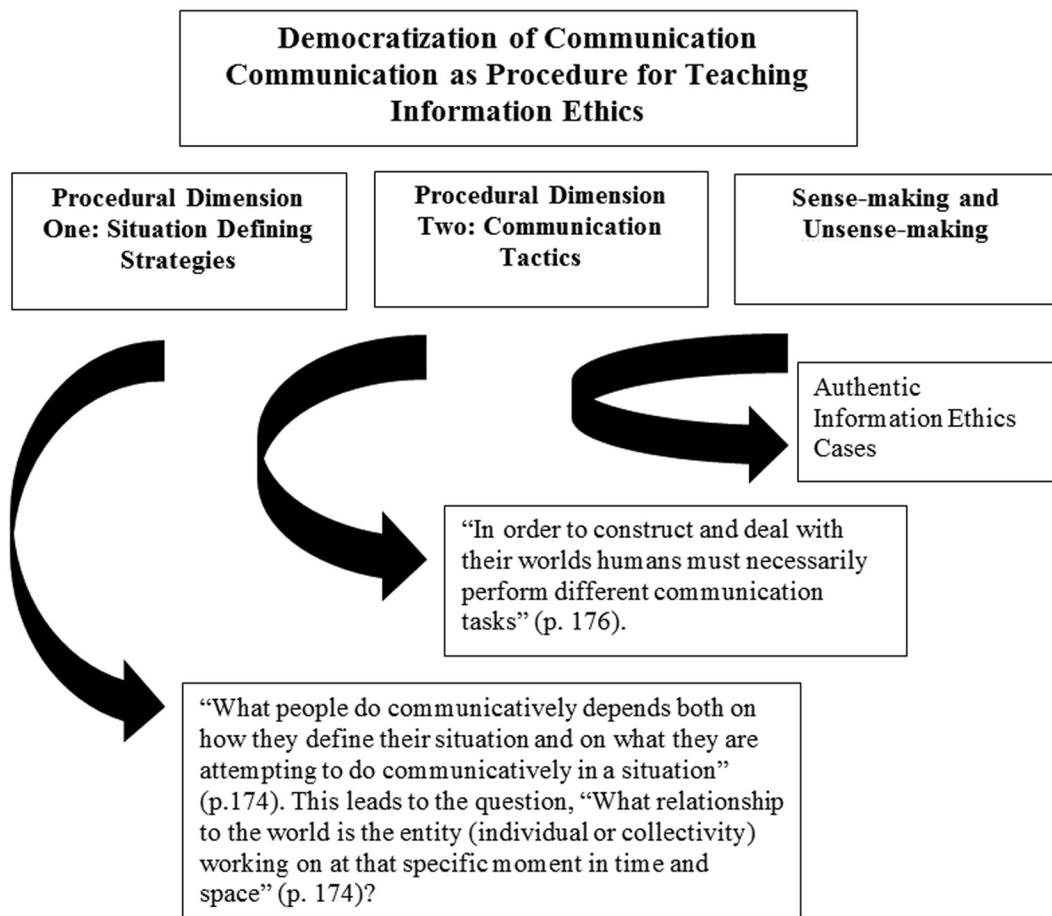


Figure 1. Flow of communication in information ethics case-based instruction.

Figure 1 illustrates Dervin and Clark’s (2003) recommendation in *Communication and Democracy: A Mandate for Procedural Invention* that democratic communication can be achieved when individuals use communication procedures that circle phenomena from different perspectives at different times and link macro- and micro-levels of discussion. This model focuses on communication transmission rather than communication dialogue. It illustrates a pedagogical approach focused on the learner’s need to develop new communication behaviors rather than only on the teacher’s knowledge and points-of-view.

Theoretical Framework

In response to the need for authentic, problem-based teaching and learning revealed in the literature review, Sense-Making Methodology (Dervin, Foreman-Wernet, & Lauterbach, 2003) is used as the theory-base to guide the design of these LIS case-based learning activities and to support the researchers' claim that case-based learning can be a useful instructional strategy for teaching information ethics, especially when the ultimate goal is developing leaders in a democratic society. Sense-Making Methodology, Dervin's (1983) theory that gap-building is a mandate of the human condition, provided the basis for a deliberate philosophical and pedagogical shift from the traditional concept of communication as a one-way transmission of information from a teacher (sender) by a student (receiver). Dervin's (2003) "two-dimensional communication" (p. 176) procedure was used to inform a new pedagogy involving dynamic, interactive learning activities using authentic information ethics cases.

Dervin and Clark (2003) provide a lens for rethinking communication that can guide teachers' and students' philosophy of the nature of dialog necessary for democratization of communication. They point out the potential for many inadequacies in communication when the focus is only on power and resources, both macro-level structures in society, rather than on actual acts of communicating, micro-level procedures by which communication is done in society. This theory asserts that when the micro-level of communication is ignored, individuals as communicating members of society with culturally transmitted norms, rules, and understanding are likely to be ignored robbing individuals of a pluralistic perspective that is the mandated focus of democratic communication (pp. 166-167). When applying Dervin's circling process concept (Foreman-Wernet, 2003) to case-based pedagogy, the

teacher provides the means for students to consider different perspectives related to complex, ethical scenarios. Students' consideration of human differences is accomplished through dialog structures including teacher-student, student-student, student-public, and student-organization to arrive at comprehensive, informed, and potentially a more useful set of understandings of human choices that can result in ethical dilemmas.

Course Curriculum and Delivery

The faculty at the school where this study took place accepts the ALISE position on teaching information ethics, which is integrated into its graduate LIS curriculum. While there is on-going engagement with information ethics across the curriculum, basic principles of information ethics are taught in the first, required foundational course. To achieve recommended ALISE (2007), ALA (2009), AASL (2007) and other state-based teacher licensure competencies, faculty members apply case-based learning strategies wherein graduate students are introduced to basic principles of information ethics (Rubin, 2010; Buchanan & Henderson, 2009) and develop the ability to apply a model for ethical decision-making (Severson, 1997) when faced with an ethical dilemma.

Foundational Course Delivery

This foundational course investigated in this study was delivered in a blended course model wherein students were instructed throughout the semester (16 weeks) using an electronic course management system (Blackboard) and attending two intensive class weekends. Students attended face-to-face class (10 hours/class) during a total of two intensive class weekends, which for this class were scheduled nine weeks apart.

First face-to-face class. Time in class was devoted to discussions and other learn-

ing activities related to content reading that was assigned before coming to class. While together, in small groups, students began a series of steps to discuss and apply Severson's (1997) Four-Step Method of Principled Ethics (p. 18) to an assigned information ethics case dilemma published in the Buchanan and Henderson textbook.

Between face-to-face classes. Students worked in their assigned small groups (using Blackboard discussion threads, e-mail, telephone, or in-person meetings) continuing to discuss the assigned cases, apply the decision-making model, and create a presentation wherein application of the decision-making model was discussed and explained and a newspaper based on an imaginary community. The newspaper served as another activity for identifying potential stakeholders in the dilemma and for students to again describe the information issue (situation), express opinions, and debate the controversy identified in the assigned information ethics case. Each member of the small groups wrote articles for the newspaper identifying individual stakeholders in the dilemma and expressed various views of the case situation.

Second face-to-face class. During the second face-to-face class (10 hours), students delivered their presentations and newspapers to the class. Students not only presented their own work but also heard nine other presentations on topics including intellectual freedom, privacy, intellectual property, professional ethics, and intercultural ethics. At the end of each presentation, the student audience served as members of the public to discuss whether or not the decision by the small group would hold up to public scrutiny. This culminating step provided opportunity for a very substantive, and at times, spirited discussion.

Examples of Communication Procedures

Dervin and Clark (2003) propose two procedural dimensions of communicating: situation defining strategies and communi-

cation tactics. Situation defining strategies include "the individual relating to self; individual relating to other individuals; individual relating to collectivity; collectivity relating to self; collectivity relating to individual; and collectivity relating to other collectivity" (p. 174). Communication tactics include "attending; creating ideas; finding direction; expressing; finding connectedness; confronting opposing; mediating; recalling; and undoing rigidities" (pp. 176–177). Following are examples of these communication procedures involving individuals relating to self, other individuals, and the collectivity and collectivity relating to self, other individual, and other collectivity as embedded and used in case-based learning activities that students participated in during their face-to-face time together.

Individual relating to self. Students were encouraged to recall their own moral upbringing and to think of specific examples in response to these questions: From whom and how was your sense of morality learned? What did you learn about right and wrong? How does that influence your beliefs today?

Individual relating to other individuals. Recalling developmental years, students were encouraged to take turns sharing stories about their own moral upbringing with an open-minded approach as each student distinguished self from other members of the small group by sharing ideas; making decisions; expressing; confronting and/or opposing; and mediating concepts of morality. Students were reminded of the polarizing effects of close-mindedness to others' stories and experiences.

Individual related to collectivity. Students were encouraged to consider and express their own ideas about membership in the library and information profession. Students learned core values of librarianship and how leadership in the information profession requires avoiding the tendency of traditional leaders to present her/his own ideas as absolute truth. Students were encouraged to embrace the ideas of other

members of their class, the public, and ideas relevant to professionalism.

Collectivity relating to self. Students were reminded that a variety of views should be voiced, heard, and mediated rather than dominated and controlled by what Dervin and Clark (2003) refers to as a “collective mind” (p. 184). The struggle of contesting viewpoints and trying to understand each other in discussion of assigned cases was expected and encouraged.

Collectively relating to individual. Students were directed to imagine their leadership role and responsibilities as members of library and/or information agencies or organizations (collectivity) and to focus on an organization’s relationship to the individual. To an assigned information case, students applied a four-step decision-making model (Severson, 1997): “1) get the facts straight; 2) identify the moral dilemma; 3) evaluate the moral dilemma in light of the basic principles of information ethics to decide which side has the most ethical support; and 4) test the solution to see if it will hold up to public scrutiny” (p. 18). Students were encouraged to discuss and make decisions based on sustaining the organization while meeting the needs of individuals. They were cautioned *not* to ask or answer: What of the things the library has do users need? Which of the things the library has have been used? What of the things the library has will individual library users like?

Collectively relating to another collectivity. As students in small groups decided how to respond to the dilemma in their assigned case, they were asked to consider the communication relationship between libraries and other organizations and institutions within a given community, as well as the relationship librarians, libraries, and information organizations have from state-to-state; nation-to-nation; and alliance-to-alliance. Some assigned information cases specifically addressed intercultural information ethics involving exercising respect of others’ cultural values, particularly values different from those widely held in the Western world.

Method

Influenced by Creswell’s (2014) writing about the “convergent mixed methods strategy” (p. 133), the study collected quantitative and qualitative data using the same instrument, analyzed data separately, and then merged data to draw conclusions. The pre- and post-assessment instrument included a combination of objective questions (quantitative data) and short-answer questions (qualitative data). The quantitative data were used to test the theory that predicts that case-based pedagogy will positively influence graduate students’ learning and achievement. Quantitative data were in the form of objective questions to measure students’ knowledge of basic principles of information ethics and a four-step method for ethical decision-making and Likert items to assess interest and satisfaction. The qualitative data in the form of short-answer questions explored the central phenomenon in Dervin’s Sense-Making Methodology (Dervin & Clark, 2003), in particular the communication-as-procedure method and its potential as an instructional approach to positively influence student’s knowledge, interest in, and satisfaction with the study of information ethics.

SPSS software was used to analyze the quantitative data. The short answer responses (4 questions; approximately 75 words each) were analyzed using a team approach to coding narrative data adapted from the recommendations of Krathwohl (1998). Team members read and re-read responses to identify recurring themes and categories that emerged from the narrative responses. Coding followed an analytic, inductive process referred to by Lincoln and Guba (1985) as patterns or explanations that develop during naturalistic or qualitative research to organize the written statements.

Study Population

The study population was 49 first semester graduate students enrolled in a

LIS program in the Midwestern United States. Students were enrolled in two different sections of the same course, section one (M Group, N = 24) and section two (D Group, N = 25), with two different professors. Participants were 10 men and 39 women. Participants ranged in age from 21–61 years with an average age of 31.4 years. Three students identified themselves as non-English natives. Average undergraduate Grade Point Average for this group was 3.47. Students had some relevant knowledge of the course topic based on previous education. Eleven students hold master's degrees in another field, one holds a PhD, and one is a PhD student. Undergraduate degrees of the participants include: Anthropology (2); Art (1); Art Education (1); Biology (1); Business Administration (3); Communications (1); Elementary Education (5); English (15); Field Studies (1); Fine Arts (1); History (10); Information Resource Studies (2); Library Information (1); Political Science (1); Psychology (1); Secondary Education (2); Sociology (1); Special Education (1); and Theology (1).

Data Collection and Analysis

With permission from the Institutional Review Board, the professor-created pre-assessment (12 questions) was administered at the beginning of the second face-to-face class meeting and the post-assessment was administered at the end of the second face-to-face class meeting (approximately twenty-four hours apart). The second face-to-face class meeting was held on Friday evening (3 hours) and Saturday (7 hours) during week 9 of the sixteen week semester. The pre- and post-assessments were not administered by the class professor but instead in one classroom by a visiting professor and in another classroom by one doctoral student. When speaking to the students about the study, both assessment administrators used a pre-determined description of the study and the same (verbatim) invitation to partici-

pate. Informed consent forms were signed and collected. Student respondents were limited to 20 minutes for completion of the pre-assessment, and 20 minutes for completion of the post-assessment.

Findings

Among the 49 pre- and post-assessments collected, all were fully completed and included in the final analysis. Findings from quantitative and qualitative methods are kept separate.

Part I

Respondents answered one question about whether or not they had prior experience in study of information ethics. Yes/No responses to question one were counted and averaged.

Experience. In M Group 20/24 (83%) and in D Group 20/25 (80%) respondents indicated that the graduate LIS course they were enrolled in was their first time for formal study of information ethics.

Part II

A paired-samples t-test was conducted to determine if the mean of the difference between students' pre-instruction and post-instruction scores was significantly different from zero. The students in M Group and D Group did significantly better on a post-test as indicated by higher scores on multiple choice questions related to their knowledge of basic principles of information ethics and about steps in a four-step model for ethical decision-making. In addition, after the case-based learning session, the students in M Group as indicated by significantly higher scores on Likert item questions increased their interest in the topic of information ethics and their satisfaction with case-based learning. Students in the D Group did not have significantly higher scores on Likert item questions about their interest in the topic of information ethics or their satisfaction

with the case-based learning. Pre-assessment scores in D Group started out high and remained high in the post-assessment with few scores decreasing.

Part III

Each student provided written, descriptive responses (approximately 75 words/response) to each of four short-answer questions. The questions addressed: tolerance of others; awareness of privacy issues; author and artists rights; and treatment of co-workers.

Tolerance (15 response items). Pre- and post-assessment narrative responses for M Group and D Group to the question of tolerance of others' points-of-view indicates that respondents' self-assessed perceptions are primarily focused on sensitivity to others' opinions, beliefs, values, ideas, and culture. The post-test for D Group reveals some response items not indicated in M Group including respondents' sensitivity to: patrons' needs; making sure credit is given to others; excess of interference with other's opinions; personal statements; freedom of expression/speech; being fair; and listening.

Privacy (27 response items). Pre- and post-assessment narrative responses for

M Group and D Group to the short answer question concerning privacy issues indicates that respondents' self-assessed perceptions about dealing with privacy issues are most focused on how rights to privacy are protected; the nature of sensitive issues; and the importance of privacy in today's technologically modern world. For example, one respondent indicated that parents rather than the government or school should protect children from those who would exploit them. A frequent response indicated that respondents believe librarians should not infringe on privacy by sharing library records or with blocking software. Respondents frequently mentioned the sanctity of personal information.

Authors' and artists' rights (17 response items). Pre- and post-assessment narrative responses for M Group and D Group to the short answer question pertaining to an author's or artist's rights to her/his own creations, respondents indicated that they are willing to emphasize, explain, and obey copyright law; recognize ownership; respect creations; give credit where credit is due; use correct citations; and protect intellectual property rights. For example, respondents mentioned willingness to work with authors and artists to

Table 1. Results of a Paired-samples t Test.

Measures	Max. Pts.	M Group (N = 24)								p
		Pre-			Post-			t		
		M	SD	SEM	M	SD	SEM			
Knowledge	9	5.88	2.17	0.44	7.42	2.21	0.45	3.19*	0.0020	
Interest	5	3.88	1.08	0.22	4.42	0.58	0.12	2.72*	0.0123	
Satisfaction	5	3.71	1.16	0.24	4.38	0.71	0.15	2.81*	0.0100	
Measures	Max. Pts.	D Group (N = 25)								p
		Pre-			Post-			t		
		M	SD	SEM	M	SEM	SD			
Knowledge	9	4.84	2.34	0.47	6.48	0.45	2.26	3.94*	0.003	
Interest	5	4.00	0.96	0.19	4.20	0.21	1.04	0.84*	0.205	
Satisfaction	5	3.96	0.98	0.20	4.16	0.21	2.03	0.82*	0.211	

*At $p \leq 0.05$.

Table 2. Tolerance of Others.

Items (15)	M Group (N = 24)		D Group (N = 25)	
	Pre-	Post-	Pre-	Post-
Knowledge	1	1		1
Diversity	1	1		1
Opinions, beliefs, values, ideas	13	9	12	14
Culture	5	8	5	4
Own bias		2	1	1
Inclusion	1	1		
Making judgments	3			1
Patron's needs				1
Make sure credit is given				1
Excess of interference				1
What I say				1
Freedom of expression/speech			2	1
Being fair			1	1
Listen			1	1
Roles of MLS as neutral party			1	1
No response		2	2	
Total	24	24	25	29

Note: Some respondents stated more than one response item/question.

protect their intellectual property rights, willingness to pay authors and artists for creations, and desire to know and use fair use law and policies.

Treatment of co-workers (27 response items). Pre- and post-assessment narrative responses for M Group and D Group to the short answer question about treatment of co-workers were primarily focused on the respondents' inclination to treat others with respect and patience; showing respect for others' rights; being patient and polite; treating others in a professional manner; and engaging in and upholding ethical behavior. Respondents mentioned controlling tempers and emotions; looking for peaceful solutions rather than to cause conflict; solving problems objectively; and a work environment where a variety of opinions and points-of-view are openly expressed. The inclination to treat others as I want to be treated was expressed in pre- and post-assessment data in both groups (three times in M Group; two times in D Group).

Results

RQ1: How does case-based learning facilitate sense-making through situation-defining strategies and tactics to accomplish communication tasks relevant to solving information ethics dilemmas?

1.1 Case-based instruction provides the authenticity necessary for students to frame social issues as information problems.

Current dilemmas, or problem situations, such as those published by Buchanan and Henderson (2009) and used in this study define and describe information problems with real-life, everyday specifics. This is particularly important given that most new LIS graduate students in this study, while earning high grade point averages in significant undergraduate and graduate degrees, did not have prior experience in formalized study of information

Table 3. Awareness of Privacy Issues.

Response Items (27)	M Group (N = 24)		D Group (N = 25)	
	Pre-	Post-	Pre-	Post-
Many areas, rules, types, view of privacy			3	1
Importance of censorship; intellectual freedom			2	
Right to privacy, sensitive, important	9	15	13	15
Goal is access to all				1
Patriot Act				1
ALA Coded of Ethics, professional ethics		2		3
No source, give credit			1	
Right of patron to seek info and services	2		2	3
Company should have privacy notice			1	
Space and behavior				1
Balance, express ideas freely, without intrusion	1		1	
Right to do what one likes as long as not negatively effecting others	2			
Need for privacy	2	1		
Complication of privacy and safety		1		
Patron info should not be shared unless compelled by law	1			
Government intrusion	1			
Right protected by law		1		
Copyright law		1		
Hold own affairs in confidence	1			
Important in U.S., protected other's privacy	1	1		
Cannot disclose user if except to collection agency		1		
Patron won't seek info if privacy protected		1		
Others may not recognize privacy	1			
Government regulations to protect; filters on computers	2			
My privacy right as citizen being broken	1			
With technology comes temptation to invade privacy	1			
Rights of citizen may trump my own point-of-view		1		
No response			2	
Total	24	26	25	25

Note: Some respondents stated more than one response item/question.

ethics or framing social issues as information problems. Beginning students in this study were similar to those in the Woodward *et al.* (2007) study of IT students who did not have the necessary ability to distinguish criminal actions from unethical behavior. Neither did many students in this study fully understand their initial reading about basic principles of information ethics as was evidenced in the pre-assessment. Particularly apparent were

deficits in students' understandings of the mediating role of ethics between individual morality and the law. At the intersection of real-life and basic principles, LIS students discovered a new focus on information rather than on typical phenomena articulated in their background knowledge or prior educational experiences. Some begin to think and problem-solve beyond accepted norms and to use higher levels of ethical reasoning as evidenced in the

post-assessment. Individual abilities to problem-solve at high levels were more apparent in the project assignments (presentation and newspaper) than in the pre- and post-assessment results.

The approach to using assigned information cases was strategically designed by the professors, a task that is likely to be initially challenging but not impossible for new college teachers. Students experienced a combination of lecture and case-based learning activities that were coordinated over the course of the semester. Activities were outlined by the professors in instructional steps that highlighted Dervin and Clark's (2003) situation defining strategies and communicating tactics, and encouraged active learning and problem-solving. Learning activities in real-time between the pre- and post-assessment made it possible for students to practice in the presence of the professor who answered questions and facilitated the communication

process. Each member of the team spoke and listened. Brainstorming allowed for everyone to share creative input; no one was allowed to criticize others' ideas. The currency of the cases enabled students to recognize potential ethical issues created as new technologies are used, to address their own positions, and to analyze their position on some aspect of the dilemma in light of various positions and perspective of their classmates. Class presentations by students revealed that students conducted independent research to learn more about a given principle and to make reference to similar situations. This resulted in deep thinking about potential results of various choices. Students experienced evaluation of their project work for case-based assignments not on traditional criteria of having one correct answer but on the basis of broader criteria including: complexity (broad, multifaceted, interconnected); conscious awareness (consider current in-

Table 4. Authors' and Artists' Rights.

Response Items (17)	M Group (N = 24)		D Group (N = 25)	
	Pre-	Post-	Pre-	Post-
Let it be	1			
Cite sources; give credit where due; use correct citations	5	5	6	5
Uphold copyright	4	7		
Education about fair use	3	4		
Educate artists	1	1		
Ownership; respect creation; protect intellectual property rights	6	5	7	7
Pay them for creations	2	1		
Respect co-workers	1	2		
Follow law, study law, enforce law	1			2
Report those who steal	1			
Follow information property law			3	2
Emphasize, explain, obey copyright law			6	6
Address plagiarism				2
Facilitate access				1
Not censor or be biased				1
Let authors or artists express self			1	
Inform others			1	
No response			1	
Total responses	25	25	25	26

Note: Some respondents stated more than one item/question.

formation issues); depth of understanding (demonstrate comprehension and knowledge); coherence and logic (makes sense); communication (easy to follow, hear, and to see; two-dimensional); and overall quality (comprehensive, balanced, logical).

1.2 Case-based instruction provides the basis for learning basic principles of information ethics including intellectual freedom, intellectual property, privacy, professional ethics, and intercultural ethics.

While approximately 25% (D Group, 6/25; M Group 6/24) of student scores stayed the same or decreased, the majority of students in both classes earned higher scores on objective questions designed to test comprehension of basic principles of information ethics and a four steps for ethical decision-making. The objective questions in the pre- and post-assessments provided statistical evidence of learning, and the pre- and post-assessments short answer questions provided narrative evidence of learning through students' articulation of concepts in the form of short written responses. Taken together, quantitative and qualitative data indicates that the time students spent in a combination of lecture, guided practice, and substantive discussion and flexible communication resulted in intellectual growth over the course of the 10 hour intensive class.

RQ2: How does case-based pedagogy enable students to inform themselves efficiently and effectively about a pluralistic world?

2.1 Case-based instruction enables students to express substantive perceptions of being ethical.

Asking students to self-assess their own perceptions of being ethical is difficult, particularly if validity, reliability, and generalization are the goals. For this, it was the goal instead to see how students' short answers were the same or different in

terms of the language of information ethics used before and after a 10 hour intensive class devoted to case-based learning about information ethics. Dervin's (1983) sense-making theoretical framework chosen for this study allowed the researchers to recognize in the data students' human tendencies to sometimes be free and sometimes constrained, sometimes rigid and sometimes changing in their response to various situations. Student post-assessment short answer responses indicate some expressed new awareness of moral differences of opinion; understandings of privacy as an information issue; rights to protect authors' and artists' intellectual property; and new awareness of the sensitivity necessary for appropriate treatment of co-workers in professional work environments.

2.2 Case-based learning enables students to develop flexible communication behaviors and to engage in innovation thinking necessary for leadership in a pluralistic world.

Dervin and Clark (2003) point out that anytime individuals come to a communication moment, it is a new moment to be faced like never before. It will be approached with tactics and strategies from the past unless individuals are guided to do otherwise. Human ability to change depends on awareness of alternatives and opportunities to practice new behaviors over and over until behaviors become second nature. Case-based learning in this study deliberately attempted to diversify habits of graduate students through guidance, practice through multiple opportunities, and acknowledging frustrations, anxiety, and inefficiency that occurs with the communication behavioral change process. In addition, students were encouraged to adopt the strategies and communication tactics used in this course as their own for use in their future professional roles. Unfortunately, a few students continued to indicate in post-assessment an inclina-

Table 5. Treatment of Co-workers.

Response Items (27)	M Group (N = 24)		D Group (N = 25)	
	Pre-	Post-	Pre-	Post-
Treat others with respect, patience respect rights, be polite	10	9	17	11
Find peaceful solution	1	1		
Treat others in professional manner, uphold ethics	4	7	6	10
Equal treatment	1	1		1
Act cooperatively		1		
Comport myself with honesty, fairness generosity		1		
Treat others as they would like to be treated	3	4	2	3
Treat others as I want to be treated	2	1	1	1
Use objective problem-solving	1			
Be fair	3	3	5	5
Be positive	1			
Collaborate, cooperate		1		2
Comfortable workplace	1			
Consider backgrounds of others	1	1		
Do what is expected and correct	1			
Maintain high standards	1			
Listen, learn		1	1	2
Speak up against mistreatment	1			
Follow professional policy			1	
Professional work environment				1
Let them do their job their own way			1	1
Follow ALA and library policy			1	3
Attend workshops			1	
Understand co-workers' good intentions				1
Tolerant			1	
Understand my own perspective			1	
Function as a team			1	1
No response			1	
Total responses	30	30	40	42

Note: Some respondents stated more than one item/question.

tion to treat others as they would like to be treated, a clear indication of failure to recognize that everyone is not the same or to respond with acceptance to others' points-of-view or preferences that are different from one's own. This points out how one course is not likely to be enough if it is expected that future information professionals will become better communicators and more accepting of a pluralistic society. Students in this class had the opportunity to learn through focus on real-life ethical

dilemmas and to emphasize the diversity and interconnectedness of decision-making. They experienced planned learning about how their peers make ethical decisions, and how their peers' ethical decisions are influenced by diverse values and perspectives, all competencies necessary for leadership in a democratic society.

Conclusions

This study aimed to determine the ef-

fectiveness of case-based pedagogy using Dervin's (1983) Sense-Making Methodology, in particular the Dervin and Clark (2003) dynamic, two-dimensional communication as procedure model in teaching basic principles of information ethics and ethical decision-making. Despite a relatively short amount of time between pre- and post-assessment and the brevity of the pre- and post-assessment instrument completed by the graduate LIS students in this study, there is evidence that case-based instruction increased students' knowledge of basic principles of information ethics and enhanced the learning process. In analyzing the study data, we acknowledge that the amount of change in students' scores is not only an effect of the course materials and instruction but is also due to chance and other factors in- and outside the setting.

The study shows through a combination of quantitative (increased scores) and qualitative (detailed narrative responses) data that case-based pedagogy improves students' overall knowledge of basic principles of information ethics, their interest in the topic, and satisfaction in the study of information ethics. Moreover, the data reinforces the observations by the professors that students utilized ability to engage in civil communication with each other to reveal personal biases and morality, and to progress to new abilities to apply a model for ethical decision-making including getting the facts straight in a complicated scenario, considering a variety of options, and then proposing ethical solutions to information-related problems. It is noteworthy that this case-based interactive process was tolerated by students in this study without complaint at the time of the class or in final course evaluations. The only negative comments by students were only a few about failure of a team member to do her/his part of the assignment.

Teaching ethical behavior in today's information rich society is a challenge and opportunity for all educators, particularly those in information fields such as LIS who

make information ethics a high priority for teaching and learning. In this study, original case-based pedagogy incorporating sense-making strategies provides a means for re-conceptualizing information ethics education. It provides a means for improving students' communication behaviors by moving past traditional memorize and recite forms of instruction to instruction designed to encourage students' independent learning as well as to develop students' abilities to inform themselves efficiently and effectively about choices information professionals must make in today's pluralistic world. In sum, case-based instruction using sense-making methodology brought a new communication procedure and perspective to bear and made a positive difference in student learning. Case-based instruction that involves a combination of reflection, engagement, and instruction holds much promise as an effective way to operationalize information ethics education in LIS as well as in traditional social science disciplines, and is likely to enhance graduate students' knowledge, interest in, and satisfaction from learning and applying basic principles of information ethics in everyday information work. There is certainly room for a larger study on this topic.

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