

Experiential Learning and Research Ethics: Enhancing Knowledge through Action

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Abstract

How can instructors use experiential learning strategies to enhance student understanding of research ethics and responsible research conduct? In this article, the authors review literature on using experiential learning to teach research ethics and responsible research conduct. They present a three-step exercise for teaching research ethics and responsible research conduct using experiential learning strategies. Their primary teaching and learning objective is to broaden student understanding of ethical behavior beyond notions of “right” and “wrong” to a conception of ethical behavior involving thinking critically about all stages of the research process. The authors present assessment data that suggest that participation in the exercise increased knowledge about ethical guidelines and broadened understandings of ethical behavior.

Keywords

ethics, research methods, scholarship of teaching and learning, critical thinking skills, professionalization of students

Given increased attention to research ethics training by institutional review boards (IRBs), the National Science Foundation, and professional associations, it is important for sociology instructors to teach undergraduate and graduate students about research ethics. While the scholarship of teaching and learning about research ethics is expanding, few articles in sociology provide specific strategies for teaching about research ethics and responsible research conduct. In this article, we present a three-step exercise using experiential learning techniques to enhance student understanding of research ethics and responsible research conduct. Our primary goals are to engage students in an experience that expands knowledge of research ethics and enhances their ability to think critically about the research process. Critical thinking involves considering topics from multiple perspectives, identifying and evaluating assumptions, asking questions, and challenging ideas (Weast 1996).

We begin this article by reviewing literature on using experiential learning techniques to teach research ethics and responsible research conduct. Second, we describe how the three-step exercise incorporates the elements of Kolb and Fry’s (1975) model of experiential learning. Third, we summarize the teaching and learning objectives of the exercise. Fourth, we describe how to implement the exercise in the classroom. Finally, we examine whether participation in the three-step exercise resulted in student learning by presenting the results of qualitative and quantitative assessment data collected from undergraduate and graduate

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students who participated in the exercise. Results suggest that participation in the exercise increased knowledge about ethical guidelines and broadened understandings of ethical behavior. We conclude that the three-step exercise is one example of how experiential learning enhances student understanding of research ethics.

LITERATURE REVIEW

Experiential versus Traditional Learning

Traditional learning assumes that ideas are fixed, whereas experiential learning assumes that ideas are formed and reformed through experience; learning is an emergent process where experience modifies ideas (Kolb 1984). Traditional learning is consistent with the “banking” educational model, whereby instructors “deposit” information in passive students through teaching strategies, such as lecturing (DeMartini 1983; Freire 1973; Gelles 1980). Instead of depositing information in students, experiential learning minimizes instructors’ control over students who are treated as active learners by using teaching strategies, such as role-playing exercises (DeMartini 1983; Grauerholz and Copenhaver 1994). Experiential learning is a student-centered approach in which students learn through active involvement (Myers and Roberts 2004).

The benefits of experiential learning are well documented across disciplines (see Hake 1998 about physics, Trede and Andreasen 2000 about agricultural education, and McCammon 1999 about sociology). These benefits include increased student engagement in learning (Gray and Madson 2007), enhanced problem-solving ability (Hake 1998), improved communication skills, and realized linkages between academic study and “real-world” problems (Retallick and Steiner 2009). Despite these benefits, many instructors do not integrate experiential learning strategies in courses (Kelleher 1991; Wright 2000).

Experiential Learning and Research Ethics

Our review of articles published in *Teaching Sociology* across all years using Sociological Abstracts as the search engine and *ethic* as the

search term within titles produced eight results. Two articles were not directly related to research ethics (e.g., articles using the term *ethic* in reference to the “Protestant ethic” or ethical policies in higher education). Of the remaining six articles, Folse (1991) discusses the importance of providing training in general ethical issues to graduate students. Long and Lake (1996) highlight ethical issues inherent in the instructor-student relationship. These two articles emphasize the “ethical pedagogy” of instructor-student interactions but do not provide specific strategies for teaching research ethics.

Two other articles from our search articulate approaches to teaching about ethical issues. Green and Salem (1983) concentrate on applied sociology. They begin by asking students to discuss general ethical topics, such as defining an ethical dilemma. Second, students read case studies (e.g., John Dean’s [1976] *Blind Ambition*) and listen to experiences shared by interns or graduates. Third, students prepare four reaction papers in response to these case studies and participate in discussions about them. Green and Salem found that students provided thoughtful analyses of ethical practice in their reaction papers yet were reluctant to participate in discussions. To address this reluctance, they recommend that instructors actively facilitate discussion to engage students in the learning process.

Sweet’s (1999) approach uses experiential techniques to inform students about research ethics. Sweet asks students to read book chapters on general ethical issues and the American Sociological Association’s (ASA; 1999) Code of Ethics. Afterward, he presents brief descriptions of several research projects, asks students to raise questions about the projects, and then facilitates an interactive exercise to evaluate the projects. During this interactive exercise, Sweet serves as the IRB chair and students serve as the committee members. The committee members arrange their chairs on either side of the classroom, with those on the right side indicating that they support the project under review and those on the left side indicating that they oppose it. The committee members are allowed to move from one side of the classroom to the other as their opinion fluctuates on the project. After facilitating discussion on the project, the chair requests that the members voice their opinion

on it. Unfortunately, Sweet does not assess the effectiveness of his approach or its appropriateness for graduate students.

Two additional articles from our search address problems associated with experiential techniques. Grauerholz and Copenhaver (1994) identify ethical problems that may arise when instructors use experiential techniques to discuss controversial subjects, such as violence, sexuality, and inequality. While this article does not address teaching research ethics, it identifies the risks that accompany teaching strategies, such as role-playing or journaling. The final article from our search, by Meisel (2008), cautions instructors that experiential learning can cause unintended harm to participants or other negative consequences if it is enacted prematurely or without thoughtful consideration of student and nonstudent participants (e.g., gawking at prison inmates). Meisel argues that among experiential learning techniques, case studies may be especially useful and do less unintentional harm. Parker (2008) provides a complementary perspective by recommending that instructors use case study, project-based, and contextual learning to motivate and engage students. House and Sterns (2003) agree that instructors should employ case studies regularly, especially when preparing graduate students to understand ethical issues. Well-designed active-learning case studies address topics such as service learning (Robinson and Torres 2007), conservation (Dunning 2000), racial discrimination (Bordt 2004), and stratification (McCammon 1999; Wetcher-Hendricks and Luquet 2003).

Three-step Exercise to Teach Research Ethics Using Experiential Learning

In the first step, we provide students with an overview of selected ethical guidelines. Second, we present students with a fictional case study about the conduct of a researcher and a specific project that involves alleged violations of ethical guidelines. Third, we facilitate an interactive exercise for students consisting of a role-playing activity and a structured conversation. The steps of the exercise integrate the four elements of Kolb and Fry's (1975) model of experiential learning. In the role-playing activity, students apply selected ethi-

cal guidelines to the fictional case study (concrete experience). We organized the role-playing activity so that students adopt the roles of different actors in the case study. We encourage debate among the different actors in the case study, thereby enabling students to reflect on the case study from multiple perspectives (reflective observation) and begin to conceptualize the ethical implications of the case study (abstract conceptualization). Following the role-playing debate, we facilitate a structured conversation outlining the connections between the ethical guidelines and the case study. In this structured conversation, we challenge students and critique the information about alleged ethical violations in the case study. Oftentimes, students realize that ethical issues are not clear-cut and that it is the responsibility of researchers to think critically about all stages of the research process (active experimentation).

Teaching and Learning Objectives

Our first objective is to expose students to social science research that is not easily identified as ethical or unethical and to challenge students to consider the complexities involved with responsible research conduct. Recognizing that ethical guidelines inform responsible research conduct, our second objective is to familiarize students with selected ethical guidelines and to encourage students to apply these selected ethical guidelines to social science research that is not easily identified as ethical or unethical. Our third objective is for students to enhance their understanding of ethical behavior beyond "right" and "wrong" and to begin broadening their definition of ethical behavior to involve critically thinking about all stages of the research process. In our previous teaching experiences, undergraduate and graduate students were often unable to provide examples of unethical research in the social sciences and often employed narrow definitions of ethical behavior. For instance, undergraduate and graduate students often described ethical behavior as doing the right or moral thing. These teaching experiences suggest that students may not be adequately equipped to evaluate complex ethical issues.

Experiential learning theorists identify experience as fundamental to forming and reforming

ideas (Kolb 1984). We examine whether participation in the three-step exercise enhances ideas about research ethics and responsible research conduct. Before and after participation in the three-step exercise, we request that students identify ethical guidelines in social science research and provide a definition of ethical behavior. By comparing these data, we evaluate whether students increase their familiarity with ethical guidelines and broaden their understanding of ethical behavior beyond right and wrong.

In summary, our approach contributes to the scholarship of teaching and learning by (1) expanding on existing literature on teaching and learning about research ethics in sociology, (2) using experiential learning techniques that actively engage students in the learning process, (3) offering an assessment of the effectiveness of experiential learning techniques in broadening ideas about responsible research conduct, and (4) providing a teaching strategy that is transferable to both undergraduate- and graduate-level students. Scholars note the importance of teaching research ethics throughout the undergraduate- and graduate-level curriculum (Folse 1991; see also the ASA Task Force on Teaching Ethics throughout the Sociology Curriculum 2010). Accordingly, we constructed a case study with sufficient complexity to engage both undergraduate- and graduate-level students.

DESCRIPTION OF THE THREE-STEP EXERCISE

Since familiarity with research ethics may vary, scholars recommend presenting students with an introduction to responsible research conduct. Scholars recommend that in this introduction, instructors address how researchers are bound by the ethical guidelines of their professional associations and their institutions (Folse 1991; Green and Salem 1983; Sweet 1999). Therefore, the first step of the exercise provides students with an overview of selected ASA ethical guidelines. Although the ASA Code of Ethics provides numerous ethical standards applicable to the research process, we chose to discuss four of these ethical guidelines: delegation and supervision, nonexploitation, reporting on research, and public communications. The ethical guideline on delegation and supervision describes how instructors should ethically

interact with students by offering adequate training and supervision and by assigning reasonable tasks to students. The ethical guideline on nonexploitation directs instructors not to exploit or abuse students. The ethical guideline for reporting on research states that researchers do not “fabricate data or falsify results in their publications” (ASA 1999:15). Researchers are accountable for accurately reporting their research, even when they unintentionally fabricate or falsify results. The ethical guideline on public communications requires that researchers employ appropriate measures to validate their findings, especially when communicating with the public.

We focus on these selected ethical guidelines for three reasons. First, these selected ethical guidelines are central to students’ roles as research participants. Classic examples of research misconduct reveal that students have been harmed while participating in faculty research. For instance, undergraduate students portraying prisoners and guards were harmed while participating in the Stanford Prison Experiment (Zimbardo 2007). Second, these selected ethical guidelines are fundamental to students’ roles as undergraduate and graduate teaching and/or research assistants. Students may learn about the research process under the direction of a faculty mentor without substantial knowledge of the expectations for mentorship relationships. Knowledge about ethical guidelines should assist students when they encounter ethical dilemmas when engaging in research with mentors. Moreover, students who may be engaging in a research project for the first time often require practical training on how to report research findings to diverse audiences. Folse (1991:345) cautions that pressures surrounding the “publish or perish treadmill” often compromise the quality of ethical training within the mentorship model. Third, while we acknowledge that faculty-student collaborations vary across institutions, we contend that these selected ethical guidelines are applicable to other professional relationships. For example, students who enter managerial positions may benefit from understanding how to delegate ethically responsibilities and supervise employees.

In addition to emphasizing ethical guidelines of professional associations, instructors should familiarize students with their institution’s academic integrity policies. According to University

of California–Berkeley (2009), students commit academic dishonesty when they engage in “any action or attempted action that may result in creating an unfair academic advantage for oneself or an unfair academic advantage or disadvantage for any other member or members of the academic community” (n.p.). By reviewing ASA ethical guidelines and institutional academic integrity policies, students may begin to understand the fundamental dimensions of research ethics and responsible research conduct.

In the second step, we present students with a fictional case study inspired by newsworthy events. This case study describes research conducted by a social science professor with the assistance of undergraduate students enrolled in his course. Fictional “Professor Jones” is contracted by a legal defense team to assess public perceptions of pesticide use and to determine bias among potential jurors about an alleged case of pesticide poisoning. As part of a course assignment, Professor Jones requires undergraduate students to collect these public opinion data about the incident. After analyzing these data, Professor Jones presents the results in court as an expert witness for the defense. Afterward, several students contact a local newspaper and admit to falsifying the survey results (see the appendix for the entire case study).

In the third step, we facilitate a role-playing activity and a structured conversation. Before beginning the exercise, we distribute handouts that outline the selected ASA ethical guidelines, the institutional academic integrity policy, and the case study. After students receive these materials, we organize students into groups. We ask each group to assemble in separate areas of the classroom. Next, we hand each group a role card, which assigns each group to an actor in the case study and presents several questions. For example, one role card may state the following:

Pretend that you are Professor Jones. The university is investigating whether you violated ethical guidelines. You need to defend yourself during this investigation to avoid sanctions from the university. To prepare your defense, please be able to respond to the following questions:

- (1) Do you think that you violated ethical guidelines? Please explain.
- (2) Do you think that your students violated ethical guidelines? Please explain.

Other role cards invite groups to imagine that they are undergraduate students in Professor Jones’s class, the chair of the IRB at Professor Jones’s university, the dean of academic affairs at Professor Jones’s university, or the ASA Committee on Professional Ethics. Each group reads, discusses, and answers the questions on the role card, drawing on the background information on ethical guidelines and the summary points of the fictional case study. After approximately 15 minutes, we transition the discussion from the within-group-level to the class-level. We begin the class discussion by first asking the group acting as Professor Jones, “From your perspective, do you think that you violated ethical guidelines?” After the group acting as Professor Jones responds, we provoke debate by asking whether groups role-playing as other actors agree or disagree.

After debate subsides, we facilitate a structured conversation outlining the connections between the ethical guidelines and the case study. For example, we raise questions about whether Professor Jones violated ethical guidelines regarding delegation and supervision, nonexploitation, reporting on research, and public communications. Students often struggle to determine whether Professor Jones actually violated ethical guidelines, because certain details of the case are purposively vague. For instance, did Professor Jones obtain IRB approval prior to engaging in research? Did Professor Jones’s course syllabus provide a detailed description of the assignment requiring students to conduct 20 telephone surveys? Did Professor Jones deliberately violate ethical guidelines? By examining the perspectives of multiple actors in the case study and questioning the unknown aspects of the case study, students learn that the research process is complex and that ethical behavior is a process rather than a single decision.

The three-step exercise overcomes the students’ reluctance to participate found by Green and Salem (1983) by actively engaging students in group- and class-level discussion and drawing on issues that are salient to students, such as the instructor-student

relationship. Students participating in research with instructors may be interested in learning about the expectations for and inherent power dynamics of mentorship relationships. Additionally, the three-step exercise avoids the unintended and negative consequences mentioned by Grauerholz and Copenhagen (1994) and Meisel (2008). When designing the three-step exercise, we reduced the potential for these consequences by carefully planning a step-by-step exercise that avoids controversial subjects, such as violence.

IMPLEMENTATION OF THE THREE-STEP EXERCISE

Instructors may incorporate this three-step exercise into social science courses that include research methods, research ethics, or responsible research conduct as part of course content. Specifically, instructors may integrate this exercise into syllabi when presenting the “science” of sociology. To prepare students to become responsible social scientists, it is ideal to use this three-step exercise as early as possible in the career of undergraduate and graduate students. In the past, we have used the three-step exercise in undergraduate courses in principles of sociology and social research methods. At our institution, the undergraduate social research methods course is one of the first opportunities to discuss research ethics after the introductory course in sociology. We also used the three-step exercise in a professional development seminar for graduate students in sociology. At our institution, this six-week course provides first-year graduate students in sociology with an introduction to departmental and professional expectations. These graduate students have diverse academic and professional backgrounds, though most have a master’s or bachelor’s degree in sociology.

Realizing that undergraduate and graduate students may differ in their prior knowledge of research ethics, instructors may need to be more proactive with undergraduate students than with graduate students. Undergraduate students may need more encouragement to engage in discussion, apply ethical guidelines to the case study, question the unknown aspects of the case study, and recognize the importance of critical thinking in all stages of the research process. While the case study was

sufficiently complex to engage both undergraduate and graduate students at our institution, instructors also may need to emphasize different aspects of research ethics to challenge advanced students with existing knowledge of research ethics. For instance, instructors can engage advanced students in a discussion of methodological techniques for minimizing harm. Alternatively, instructors can revise the case study to include details about whether the undergraduate students in Professor Jones’s course obtained informed consent from survey respondents. By introducing these details, instructors can encourage advanced students to consider the challenges associated with informed consent procedures, such as clearly communicating risks and benefits of the research protocol.

For a 75-minute course, we recommend allocating approximately 10 minutes for providing an overview of ethical guidelines, 10 minutes for presenting the case study, 5 minutes for organizing students into groups, 10 minutes for encouraging discussion within groups, 30 minutes for facilitating the role-playing activity, and 10 minutes for facilitating the structured conversation. Ideally, instructors should divide their classes into role groups of five to seven students. Although these arrangements worked well for our classes, we encourage instructors to adapt the time allocations and group sizes to the structure and size of their classes. For example, instructors may extend the three-step exercise across multiple days in 50-minute courses or increase time allocations in three-hour courses.

The three-step exercise should be conducted in a learning environment conducive to student interaction and discussion. This may pose a challenge for instructors working in small classrooms or instructors with large classes, but careful planning may alleviate some of these challenges. We suggest that instructors reserve rooms with moveable chairs to encourage students to move into groups and actively participate in the role-playing activity. We also recommend that instructors with large classes divide their students into smaller sub-classes or use virtual learning environments, such as Moodle or Blackboard, to facilitate the role-playing activity. The learning environment, whether in person or in virtual format, should encourage and maximize participation and interaction among students.

EVALUATION OF TEACHING AND LEARNING OBJECTIVES

We developed pretest/preexercise and posttest/postexercise evaluation instruments to assess the enhancing of ideas among undergraduate students in a sociology research methods course ($n = 39$) and among graduate students in a professional development seminar in sociology ($n = 12$). First, we requested that students complete the pretest/preexercise instrument, which asked students to identify ethical guidelines in social science research and provide a definition of ethical behavior. Second, we conducted the three-step exercise with students. Third, we requested that students complete the posttest/postexercise instrument that contained the same open-ended questions as in the pretest/preexercise instrument as well as a set of Likert-type items about the three-step exercise. This research was approved as exempt through our institution's IRB.

We report qualitative data from the pretest/preexercise and posttest/postexercise evaluation instruments on the enhancing of ideas among undergraduate and graduate students. Following Charmaz (2006), we initially analyzed the qualitative data by open coding (i.e., line-by-line coding) to reveal emergent patterns across questionnaires. Second, we engaged in focused coding to unearth additional patterns. Third, we organized these patterns according to families. For example, one graduate student defined ethical behavior as "thinking critically about the entire research process and its consequences" in the posttest. In the coding process, we included this response and other similar responses in the category "thinking critically about what constitutes ethical behavior." In addition to coding qualitative data, we analyzed quantitative data from the posttest/postexercise evaluation instrument using descriptive statistics. Although the qualitative and quantitative data are based on a small number of respondents, they demonstrate enhanced knowledge of research ethics among the participants in the exercise.

Undergraduate Students

Ethical guidelines in social science research. Before participating in the three-step exercise, about

one-fourth of undergraduate students were unable to identify ethical guidelines in social science research. The remaining undergraduate students tended to mention minimizing harm, which is fundamental to the general ethical principle of beneficence. Examples of responses relating to minimizing harm include "do not harm participants," "don't cause any unnecessary harm to subjects," and "no immediate risk." After participating in the three-step exercise, more than one-half of undergraduate students identified specific ASA ethical guidelines, such as nonexploitation, delegation and supervision, and reporting on research. Example of responses relating to specific ASA ethical guidelines include "Whether for personal, economic, or professional advantage, sociologists do not exploit persons" and "Sociologists must make sure everyone involved in the study has proper training." These results suggest that by participating in the three-step exercise, undergraduate students increased their familiarity with ASA ethical guidelines. These results have implications for the enhancing of ideas about responsible research conduct. Whereas undergraduate students demonstrated awareness of only general ethical principles before the three-step exercise, they acknowledged ethical guidelines of professional associations as resources for informing ethical behavior afterwards. (See Table 1.)

Definitions of ethical behavior. Before the exercise, one-half of undergraduate students defined ethical behavior as doing the "right" or "moral" thing. Examples of definitions of ethical behavior include "do the right thing" and "good, moral, right behavior." Additionally, about one-third of undergraduate students considered ethical behavior as minimizing harm or risk. Examples of definitions include "the humane treatment of human subjects in an experiment that minimizes risk to them" and "not acting in a way that harms other people, animals, or the environment." After the exercise, more than one-half of undergraduate students defined ethical behavior in terms of thinking critically about the research process. Examples of definitions include "thinking critically about any research that you are going to do," "sociologists must think through their research," and "thinking critically about your behaviors and actions and how they affect others." Also, about two-fifths of undergraduate students recognized that ethical behavior involves

Table 1. Ethical Guidelines in Social Science Research Identified by Undergraduate and Graduate Students by Type of Questionnaire

Type of Student/Ethical Guidelines	Percentage of Students	
	Pretest/Preexercise Questionnaire ^a	Posttest/Postexercise Questionnaire ^b
Undergraduate students		
Minimizing harm or risk	50.0	2.6
Providing informed consent	26.3	0.0
Unable to identify ethical guidelines	23.7	0.0
Protecting confidentiality or anonymity	18.4	0.0
Contributing to the greater good	7.9	2.6
Not plagiarizing	7.9	0.0
Not being biased	5.3	0.0
Promoting academic integrity	2.6	10.3
Not fabricating or falsifying data	2.6	10.3
Not exploiting others	0.0	71.8
Delegating reasonable tasks	0.0	53.9
Reporting on research responsibly	0.0	51.3
Complying with ASA ethical guidelines	0.0	10.3
Pursuing IRB approval	0.0	7.7
Other ethical guideline	5.3	5.1
Graduate students		
Minimizing harm or risk	75.0	8.3
Providing informed consent	58.3	8.3
Debriefing participants	25.0	0.0
Contributing to the greater good	25.0	0.0
Protecting confidentiality or anonymity	16.7	8.3
Pursuing IRB approval	16.7	16.7
Delegating reasonable tasks	0.0	50.0
Not exploiting others	0.0	41.7
Not fabricating or falsifying data	0.0	41.7
Reporting on research responsibly	0.0	41.7
Complying with ASA ethical guidelines	0.0	25.0
Promoting academic integrity	0.0	8.3
Other ethical guideline	50.0	0.0

Note: Some students provided multiple responses. ASA = American Sociological Association; IRB = institutional review board.

^aUndergraduate students, $n = 38$; graduate students, $n = 12$.

^bUndergraduate students, $n = 39$; graduate students, $n = 12$.

complying with ethical guidelines. Examples of definitions include “following all guidelines required for research studies” and “following all of the ASA guidelines in order to properly conduct research.” These results indicate that before the exercise, undergraduate students narrowly defined ethical behavior as either “right” or “wrong.” Undergraduate students did not acknowledge the

complexities involved with engaging in responsible research, perhaps because of their limited exposure to examples of unethical research in the social sciences (data not presented in this analysis). After the exercise, undergraduate students broadened their understanding of ethical behavior beyond right and wrong to involve critically thinking about all stages of the research process. (See Table 2.)

Table 2. Definitions of Ethical Behavior Provided by Undergraduate and Graduate Students by Type of Questionnaire

Type of Student/Definitions of Ethical Behavior	Percentage of Students	
	Pretest/Preexercise Questionnaire ^a	Posttest/Postexercise Questionnaire ^b
Undergraduate students		
Doing the "right" or "moral" thing	50.0	18.0
Minimizing harm or risk	31.6	5.1
Following the Golden Rule	21.1	7.7
Promoting academic integrity	5.3	7.7
Complying with ethical guidelines	5.3	38.5
Promoting fairness, justice, or objectivity	2.6	7.7
Thinking critically about what constitutes ethical behavior	0.0	51.3
No definition of ethical behavior provided ^c	0.0	5.1
Other definition of ethical behavior	10.5	0.0
Graduate students		
Following the Golden Rule	41.7	16.7
Promoting academic integrity	33.3	16.7
Minimizing harm or risk	33.3	8.3
Promoting fairness, justice, or objectivity	16.7	8.3
Doing the "right" or "moral" thing	16.7	16.7
Complying with ethical guidelines	8.3	16.7
Thinking critically about what constitutes ethical behavior	0.0	58.3
Other definition of ethical behavior	25.0	0.0

Note: Some students provided multiple responses.

^aUndergraduate students, $n = 38$; graduate students, $n = 12$.

^bUndergraduate students, $n = 39$; graduate students, $n = 12$.

^cTwo undergraduate students did not complete the posttest/postexercise questionnaire in the allotted time.

Graduate Students

Ethical guidelines in social science research. Before the exercise, all graduate students were able to identify ethical guidelines in social science research. Three-fourths of graduate students mentioned minimizing harm, which is foundational to the general ethical principle of beneficence. Examples of responses relating to minimizing harm include "don't hurt anyone physically or mentally," "do as little harm as possible," and "planning experiments or research to reduce any risk or harm to participants." About three-fifths of graduate students addressed providing informed consent, which is a research strategy for promoting the general ethical principle of respect for persons. Examples of responses relating to providing

informed consent include "full disclosure, briefing, debriefing, and transparency" and "getting consent from subject to participate in study." After the exercise, one-half of graduate students cited the ASA ethical guidelines relating to delegation and supervision. Examples of responses relating to delegation and supervision include "delegating tasks fairly" and "correct oversight of research process and research partners." Moreover, more than two-fifths named the ASA ethical guidelines regarding nonexploitation, reporting on research, and public communications. Examples of responses relating to other ASA ethical guidelines include "make sure that you do not take advantage of another person who you have authority over" and "validating collected data/results." These results indicate that

before the exercise, graduate students were informed about general ethical principles, such as beneficence and respect for persons. Additionally, graduate students demonstrated awareness of only general ethical principles before the exercise but acknowledged ethical guidelines of professional associations after the exercise. Before the exercise, we expected graduate students to be more familiar with general ethical principles and specific ethical guidelines of professional associations than undergraduate students. Although the results provide support for the former expectation, they do not support the latter. These results are based on a small number of respondents and must be interpreted with caution. (See Table 1.)

Definitions of ethical behavior. Before the exercise, more than two-fifths of graduate students conceptualized ethical behavior as following the Golden Rule. Examples of definitions of ethical behavior include “use the Golden Rule”; “the Golden Rule: do unto others as you would have them do unto you”; and “treat others as you want to be treated.” One-third of graduate students defined ethical behavior as promoting academic integrity or minimizing harm or risk. Examples of definitions include “using extreme caution to eradicate or minimize any risk of harm to participants” and “respecting subjects so that they do not face any negative consequences from your study.” After the exercise, the majority of graduate students considered ethical behavior as thinking critically about all stages of the research process. Examples of definitions include “thinking critically about what constitutes ethical behavior” and “critical thinking, discussing, and debating what constitutes ethical behavior.” Comparing the qualitative data, we found that a higher percentage of graduate students than undergraduate students changed their definition of ethical behavior by incorporating critical thinking. These results may reflect differences between graduate and undergraduate learners or specific selection biases related to who pursues graduate education. For instance, graduate students may more readily apply ethical guidelines to the case study, question the unknown aspects of the case study, and recognize the importance of critical thinking than undergraduate students.

Before the exercise, we expected graduate students to provide more sophisticated definitions of ethical behavior than undergraduate students.

Although graduate students defined ethical behavior as following the Golden Rule, they did not always clearly articulate their interpretation of it. We acknowledge that the Golden Rule is a universal ethical norm prevalent throughout theology and philosophy. Historical figures, such as Confucius, Aristotle, Kant, and C. S. Lewis, used the Golden Rule to determine whether an action was good or bad (Cunningham 1998). We suggest that the graduate student responses are consistent with the interpretation of the Golden Rule as treating others as you would have others treat you (Wattles 1987). We are satisfied that graduate students broadened their understanding of ethical behavior and considered the complexities involved with responsible research conduct. (See Table 2.)

Comparison of Undergraduate and Graduate Students

The qualitative data from the pretest/preexercise and posttest/postexercise evaluation instruments show that participating in the three-step exercise changed ideas about research ethics and responsible research conduct among undergraduate and graduate students. These data on ethical guidelines in social science research suggest that we achieved our second teaching and learning objective: to familiarize students with selected ethical guidelines and to encourage students to apply them to social science research that is not easily identified as ethical or unethical. These data on definitions of ethical behavior also indicate that we accomplished our third teaching and learning objective: for students to broaden their understanding of ethical behavior beyond right and wrong.

We refrained from audio or video recording the role-playing activities and structured conversations because we did not want the presence of these devices to influence or inhibit student participation. As a result, we do not have verbatim transcripts with quotes from undergraduate and graduate students who participated in the role-playing activities or structured conversations. Nevertheless, changes in student responses from the evaluations combined with our observations of the role-playing activities and structured conversations suggest that we accomplished our teaching and learning objectives by integrating the four

elements of Kolb and Fry's (1975) model of experiential learning.

Through the role-playing activity, students applied selected ethical guidelines to the case study (concrete experience), reflected on the case study from multiple perspectives (reflective observation), and began to conceptualize the ethical implications of the case study (abstract conceptualization)—thereby achieving our second teaching and learning objective. Our observations of the role-playing activity show that student participants enthusiastically portrayed multiple roles in the case study. In one class, graduate students portrayed Professor Jones as authoritative and uncompromising and sparked a heated debate with the graduate students portraying the undergraduate students in Professor Jones's course. Professor Jones argued that the assignment was within the scope of the course. The undergraduate students responded that they lacked the training and resources needed to complete the assignment in the time allotted.

Our observations also show that during the structured conversations, students acknowledged that ethical issues are not clear-cut, began to consider the complexities involved with engaging in responsible research, and began to broaden their definition of ethical behavior to involve critically thinking about all stages of the research process (active experimentation)—thereby achieving our first and third teaching and learning objectives. In our observation of the structured conversations, undergraduate and graduate students engaged in discussion about the general ethical issues and the vague aspects of the case study. Undergraduate students raised questions about possible sanctions for scientific misconduct and academic dishonesty. Additionally, undergraduate students considered the role of the IRB in monitoring faculty-student research. In contrast, graduate students argued that Professor Jones did not adequately verify the survey data by conducting follow-up calls with the survey participants interviewed by undergraduate students. By discussing general ethical issues and the vague aspects of the case study, undergraduate and graduate students considered the complexities involved with responsible research conduct and realized that ethical behavior requires thinking critically about all stages of the research process.

We also analyzed quantitative data from the posttest/postexercise evaluation instrument to assess whether participation in the three-step exercise enhanced knowledge about research ethics. Most undergraduate and graduate students strongly agreed or agreed that the exercise improved their knowledge about ASA ethical guidelines concerning delegation and supervision, nonexploitation, reporting on research, public communications, and scientific misconduct. Additionally, most undergraduate and graduate students strongly agreed or agreed that the exercise facilitated learning. Interestingly, graduate students found the exercise slightly less useful for improving their knowledge about academic dishonesty than undergraduate students. Perhaps graduate students were more informed about academic dishonesty prior to the exercise than undergraduate students because of teaching and research experiences. (See Table 3.)

CONCLUSION

In this article, we develop one example of how experiential learning enhances knowledge and understanding of research ethics and responsible research conduct. We expected significant differences in undergraduate and graduate student learning. Contrary to our expectations, we found that undergraduate and graduate students had similar knowledge about research ethics before the exercise. Additionally, we determined that undergraduate and graduate students experienced similar enhancements of ideas about research ethics and responsible research conduct after the exercise. Undergraduate and graduate students were challenged to consider the complexities involved with engaging in responsible research, to apply selected ethical guidelines from a professional association to a case study of alleged misconduct by a social science researcher, and to broaden understandings of ethical behavior beyond notions of right and wrong to conceptions of ethical behavior involving thinking critically about all stages of the research process.

It is necessary to mention that our assessment of the three-step exercise has several methodological limitations. First, we collected data from a limited number of undergraduate and graduate students enrolled in a limited number of courses. As a result, we do not know if unmeasured

Table 3. Mean Responses to Statements in the Posttest/Postexercise Questionnaire by Type of Student

Statement	Mean Response on Likert-type Scale	
	Undergraduate Students	Graduate Students
This exercise improved my knowledge of ethical guidelines concerning . . .		
Delegation and supervision	4.4	4.3
Nonexploitation	4.4	4.3
Reporting on research and public communications	4.3	4.4
This exercise improved my knowledge of . . .		
Scientific misconduct	4.3	4.1
Academic dishonesty	4.1	3.8
This exercise facilitated learning	4.3	4.5
This exercise was enjoyable	4.4	4.4

Note: The posttest/postexercise questionnaire asked participants to respond to statements by indicating whether they (1) strongly disagreed, (2) disagreed, (3) neither agreed nor disagreed, (4) agreed, or (5) strongly agreed. Undergraduate students, $n = 39$; graduate students, $n = 12$.

selection biases may have influenced our findings. Because of these factors, assessment results should be considered suggestive. Second, our evaluation does not enable us to determine whether similar outcomes could have been achieved using traditional teaching techniques. This lack of a control group is a significant limitation. Yet, previous literature suggests that traditional techniques do not actively engage students in learning compared to experiential techniques (Hake 1998). Third, we do not know whether learning outcomes vary according to the information provided in the case study. Different case studies may or may not produce similar critical thinking and engagement. Fourth, we did not audio or video record the role-playing activity or structured conversation, which would have allowed us to provide additional direct quotes supporting our findings about critical thinking.

Despite these limitations, we feel that the three-step exercise contributes to the scholarship of teaching and learning in many ways. First, we expand on existing literature on teaching and learning about research ethics in sociology by creating a teaching and learning strategy that extends the previous work of Green and Salem (1983) and Sweet (1999). Second, we use experiential techniques following the four elements of Kolb and Fry's (1975) model of experiential learning to create a teaching strategy that actively engages students in the learning process. Third, we assess

the effectiveness of experiential techniques in teaching and learning about research ethics using pretest/preexercise and posttest/postexercise evaluation instruments. Fourth, we provide a teaching strategy that is transferable to both undergraduate- and graduate-level students. Additionally, our teaching strategy reaffirms the goal of the ASA Task Force on Teaching Ethics throughout the Sociology Curriculum (2010), which is to provide instruction on research ethics throughout undergraduate- and graduate-level education.

In conclusion, we encourage instructors to adopt and adapt the three-step exercise in their own classes, thereby supplementing existing discussions of human participants research and IRBs. We also encourage instructors to develop their own fictional case studies by fictionalizing newsworthy events or drawing on existing resources (e.g., the ASA Task Force on Teaching Ethics throughout the Sociology Curriculum 2010; Collaborative Institutional Training Initiative Program 2010; OpenSeminar in Research Ethics 2010) to emphasize additional aspects of research ethics, such as confidentiality and informed consent. We believe that replication and adaptation of the three-step exercise will assist instructors in creating a productive learning environment where definitions of research ethics include critically thinking about all stages of the research process and the sociological enterprise.

APPENDIX

Case Study

Inez, María, and Paula are field-workers on a large-scale farm owned and operated by Widget-Crops USA. As field-workers, they harvest crops that are regularly sprayed with pesticides. Over the years, each woman has become pregnant while employed at the farm and has worked during pregnancy. After giving birth, the women discover that their babies have severe health problems. Inez's baby is born without arms and legs. María's baby has Down syndrome. Paula's baby has a respiratory condition and dies soon after birth.

After these tragedies, the women suspect that working in fields sprayed with pesticides contributed to their children's health outcomes, and they seek legal counsel. Through interviews with Inez, María, and Paula, their attorneys learn that Widget-Crops USA requires workers to harvest crops after the fields are sprayed with pesticides. The attorneys obtain agricultural data confirming that pesticide exposure is related to health problems, including birth defects. Given these facts, the attorneys file a lawsuit against Widget-Crops USA and issue a public statement concerning the company's practices. The media circulate news stories criticizing Widget-Crops USA.

Widget-Crops USA denies any wrongdoing and is concerned about negative publicity. Before the lawsuit goes to trial, the corporation's defense team seeks to determine whether negative publicity has contaminated the local jury pool. As a result, the defense team hires a social scientist to assess public perceptions of pesticide use by agribusiness firms to determine bias among potential jurors. The defense team signs a contract with Professor Jones, a social science professor at a local university. Professor Jones designs a telephone survey to evaluate public opinion about pesticide use, agribusiness firms, and environmental pollution.

Professor Jones requires his undergraduate students in an upper-level course to conduct 20 telephone surveys to determine the attitudes of local residents about pesticide use and agribusiness firms. Professor Jones allows the students one week to conduct the telephone surveys, each of which takes up to 30 minutes to complete. Given

time constraints, Professor Jones does not train students on how to properly conduct telephone interviews. Because of budget cuts, Professor Jones is unable to reimburse students for completing long-distance calls or for their time. Nevertheless, Professor Jones believes that this assignment is a valuable learning experience and decides to count it as 20 percent of students' course grades.

The undergraduate students submit their completed assignments to Professor Jones, who compiles the results and completes a basic statistical analysis. The results show that 75 percent of the local residents believe that agribusiness firms pollute the environment through their use of pesticides. The defense team calls Professor Jones as an expert witness in a pretrial hearing to argue that because of adverse publicity, the trial needs to be relocated to another community. The judge grants this request.

During the trial, several students contact a local newspaper and admit to falsifying the survey results. They claim that they lacked the training, money, and time needed to complete the assignment. Several other students share similar stories about fabricating the survey data. These students confess that they were afraid to complain about the assignment or avoid completing the assignment for fear of retribution (e.g., failing grades). Even students who intended to complete the assignment had difficulty doing so. For instance, many of the telephone numbers provided by Professor Jones did not work. Students felt compelled to fabricate the data to fulfill the assignment and pass the course.

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AUTHORS' NOTE

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