Online Ethics Center
FOR ENGINEERING AND SCIENCE

Using Case Studies Bibliography

Author(s)

Kelly Laas

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Description

This bibliography includes examples of different ways instructors have used case studies to introduce ethical topics to their students and resources for finding cases and incorporating them into the classroom.

Body

Descriptions of the Case Study Method

Davis, Michael. 1999. "Case Method" *Ethics and the University*. New York: Routledge. Pp.143-172.
After giving a brief history of the use of "case method" in teaching, the author discusses the different types of cases that exist (narrative vs. dialogue, hypothetical vs. fact) and their usefulness in teaching contexts, what can be accomplished in using the case method in teaching, as well as some guidance in how to use cases to teach and how to go about writing cases for use in your own course or program.

Huff, Chuck and William Frey. 2005. "Moral Pedagogy and Practical Ethics. *Science and Engineering Ethics*. 11(3): 389-408.

Though this article talks extensively about the effectiveness of online science and engineering ethics education, it contains an extremely good section discussing how well-designed cases -with appropriate goals and structure- can be easily adapted to courses, including those that have that have online components. The article begins with an extensive analysis of the goals of ethics education in science and engineering, and provides some examples on how to develop cases that meet these goals. It also discusses the different types of cases that are available, and the benefits and drawbacks of each of these case types for use in the classroom.

Finding/Developing Case Studies

Atkinson, Timothy N. 2008. Using Creative Writing Techniques to Enhance the Case Study Method in Research Integrity and Ethics Courses. *Journal of Academic Ethics.* **6(1): 33-50.**
The following article explores the use of creative writing techniques to teach research ethics, breathe life into case study preparation, and train students to think of their settings as complex organizational environments with multiple actors and stakeholders. In this assignment, students are asked to extend the narrative of an existing case study, and to think about what actions or settings help create conflicts, and how the contexts of situations are integrated with human nature when confronting ethical dilemmas.

Brummel, Bradley, C.K. Gunsalus, Kerri L. Anderson and Michael Loui. 2010. Development of Role-Play Scenarios for Teaching Responsible Conduct of Research. *Science and Engineering Ethics.* **16(3): 573-589.**
This article describes a series of nine role-play scenarios developed through a National Science Foundation Grant at the University of Illinois at Urbana Champaign that focus on central topics in responsible conduct of research. These scenarios are meant to be acted out by students in a RCR workshop or course, and then discussed in a group setting.
For more information see:

- **Loui, Michael & C.K. Gunsalus. "Role-Play Scenarios for Teaching Responsible Conduct of Research"** **Online Ethics Center for Engineering 8/24/2009 National Academy of Engineering**

- **Loui, Michael. *"Role Playing in an Engineering Ethics Class"* Online Ethics Center for Engineering 6/19/2006 National Academy of Engineering**

Connolly, Peggy, Becky Cox-White, David R. Keller and martin G. Leever. 2009. *Ethics in Action: A Case –Based Approach.* Malden, MA: Blackwell Publishing.
This is a collection of cases developed by the Case Writing Committee of the Intercollegiate Ethics Bowl. The cases cover a wide variety of disciplines and include expert commentary. These cases can serve as excellent guides for individuals looking to develop case studies for their own classes or workshops.

Chung, Christopher and Michael Alfred. 2009. Design, Development, and Evaluation of an Interactive Simulator for Engineering Ethics Education (SEEE). *Science and Engineering Ethics. 15(2): 189-199.*
This article describes the development of a web-based interactive simulator that places a student in scenarios where they are asked to deal with different ethical situations that commonly come up in professional work. Students are asked to gather data, access the situation, and make decisions. The simulator is currently being developed at the University of Houston to help fulfill American Board of Engineering and Technology ethics requirements.

Davis, Michael. 1997. Developing and Using Cases to Teach Practical Ethics. *Teaching Philosophy.* 20(4): 353-385.
Much has been written about "the case method", but most of it is about the teaching of law or business. Little has been written about teaching practical ethics–and most of that is rather theoretical–not about how to develop an ethics case, how to use one in class, or how to write or grade homework involving such a case will find only a few scattered remarks. The instructor who would like to use a few ethics cases in a course to which "the case method" is foreign will find almost nothing. This paper fills that gap in the literature.

Frey, William J., "[Writing and Analyzing Ethics Cases in Business and Research Ethics](#)", University of Puerto Rico at Mayaguez, 2010
This student module is designed to help students write and analyze ethics cases in business and research ethics. It provides a short taxonomy of ethics cases, tips on identifying and writing cases, and a four-step framework for analyzing them. Converging, interdisciplinary research shows that identifying, developing, and

studying ethics cases strengthens decision making and enables a concrete, "thick" understanding of basic and intermediate moral concepts. This module is being developed as a part of a project funded by the National Science Foundation, "Collaborative Development of Ethics Across the Curriculum Resources and Sharing of Best Practices," NSF-SES-0551779. This module is still under development

Laas, Kelly and Ladenson, Robert. "Case Study Writing Assignment." Illinois Institute of Technology, Center for the Study of Ethics in the Professions Web site, 2011.
As part of an effort to help students begin to think about ethical issues that come up in the course of research, the Center for the Study of Ethics in the Professions at the Illinois Institute of Technology developed a series of exercises for use in the university's interprofessional projects program. In this program, students from many different disciplines spend a semester working on a project with real world applications, such as designing a coffee storage facility for a small community in Uganda or working with a company to design more efficient way for shipping their products to customers. In this exercise, students are asked to adapt or write an ethics case study highlighting an ethical issue faced in work on their own project, based on an existing case study, a recent news article, or an imaginary scenario. At the end of the assignment is an example of an imaginary case that explores one aspect of the BP oil spill that occurred in 2010.

Kim, Sara, et al. 2006. A Conceptual Framework for Developing Teaching Cases: A review and synthesis of literature across the disciplines. Medical Education. 40(9): 867-876.
This article looked at how instructors from multiple disciplines go about constructing cases for use in teaching. The authors reviewed over 100 studies and identified seventeen strategies for developing cases and five core attributes of good cases. These include that the cases be relevant (level of learner, goals and objectives, setting of case narrative); realistic (authenticity, distractors, gradual disclosure of content); engaging (rich content, multiple perspectives, branching of content); challenging (difficulty, unusual cases, case structure, multiple cases), and instructional (build upon prior knowledge, assessment, feedback, and teaching aids).

McWilliams, Victoria and Afsaneh Nahvandi. 2006. Using Live Case Studies to Teach Ethics. Journal of Business Ethics. 67(4): 421-433.
Though this article describes cases being developed for a business course, the use of "live cases," or cases that involve a current situation, could easily be adapted for

use in an engineering or science course. For this, students select an ongoing current event that involves ethical issues or violations and write a case about it. They then present their case to the class and run a debate about the challenges and issues outlined in the case and the actions that should have or could have been taken.

Pease, Anastasia. 2009. Teaching Ethics with Science Fiction: A Case Study Syllabus. *Teaching Ethics.* 9(2): 75-82.
This short article describes how science fiction literature can provide an excellent variety of interdisciplinary case studies. The author describes how cases in these stories can help students talk about issues such as technology ethics, environmental ethics, ethical issues involved in interpersonal relations in workplace and other settings. Because science fiction is often seen as "fun," it often removes the intellectual and emotional resistance some students might at first feel towards the subject of ethics.

Riley, Kathryn, Michael Davis, April Cox Jackson, and James Maciukenas. 2009. "Ethics in the Details: Communicating Engineering Ethics via Micro-Insertion. *IEEE Transactions on Professional Communication.* 52(1): 95-108.
This paper describes a project funded by the National Science Foundation to develop, assess, and disseminate a unique method of integrating ethics into the graduate engineering curriculum. In contrast to traditional modular approaches to ethics pedagogy, micro-insertions introduce ethical issues by means of a "low-dose" approach in which technical problems are slightly re-written to include ethical issues, much like a short case study. Following a description of the micro-insertion approach, the authors outline the workshop structure being used to teach engineering faculty and graduate students how to develop micro-insertions for graduate engineering courses.

Schrag, Brian, ed. 1997-2002. [Research Ethics: Cases and Commentaries](#)
. Six volumes. Bloomington, IN: Association for Practical and Professional
Ethics.

This set of case studies were written by graduate and post-doctorial students who took part in workshops on Graduate Research Ethics Education workshops held from 1996-2002 at Indiana University, Bloomington. Focusing on the natural sciences, each case is accompanied by a number of expert commentaries. If you prefer to order paper copies these [volumes can be ordered from the Association for Practial and Professional Ethics](#).

Using Case Studies in Teaching

Discussions about a case study, can involve an entire class, a lab group, or be between a mentor and mentee. A number of articles and online guides exist to help you direct discussions about a case.

A short [guide about the some of the goals and tips for leading an ethics case discussion](#) can be found at Center for the Study of Ethics in the Professions Ethics Across the Curriculum website. This includes an example of how a case study can be approached using the 10-step method for ethical decision making.

Bebeau, Muriel, Kenneth Pimple, Karen M.T. Muskavitch, Sandara L. Borden and David Smith. 1995. [Moral Reasoning in Scientific Research](). Poynter Bloomington IN: Center for the Study of Ethics and American Institutions.
This booklet, published by the Poynter Center at Indiana University, is a collection of materials for teaching responsible science in college and university science courses. The booklet includes an introduction to one approach for teaching ethics, a short essay for students, entitled "Developing a Well-Reasoned Response to a Moral Problem in Scientific Research" and six short case studies in research ethics. Each case is accompanied by an instructor guide with notes on how to guide a discussion of the case, and how to assess students' responses. The booklet also includes advice on how to lead case discussions, and suggestions for giving written feedback to students and developing an assessment tool for evaluating the effectiveness of instruction. This booklet was developed for a project entitled "Teaching Research Ethics: A Workshop at Indiana University.

Davis, Michael, "Developing and Using Cases to Teach Practical Ethics." *Teaching Philosophy* **20:4, December 1997, pp. 353-385.**
After giving a brief history of the use of case studies in teaching, Davis discusses the types of ethics case studies that can be used in teaching practical and professional ethics, introduces the seven-step method for ethical decision making as a framework for leading an ethical discussion, and some general guidelines for how to uses cases in ethics instruction.

Card, Robert F. 2002. "Using Case Studies to Develop Critical Thinking Skills in Ethics Courses. *Teaching Ethics: The Journal of the Society for Ethics Across the Curriculum.* **3(1) 19-27.**
The focus of this paper will be on techniques for getting the most from case studies intended to introduce critical thinking skills in ethics courses. The main point is that incorporating case studies is an essential element in teaching ethics, since the primary goal of this endeavor is to inculcate critical thinking skills and cases are an undervalued tool for developing analytical capacities in students. In this paper, I do not purport to defend a metaethical approach to case studies, but instead address the topic strictly from the perspective of pedagogy.

Coughlin, Steven S. 2008. Using Cases with Contrary Facts to Illustrate and Facilitate Ethical Analysis. *Science and Engineering Ethics.* **14(1): 103-110.**

The author describes how cases with contrary facts and circumstances can be used to illustrate and facilitate ethical analysis. The author describes how this approach, together with practical steps for identifying and analyzing ethical issues, can help students develop their ethical analysis skills and stimulate their moral imaginations.

Elliott, Deni. 1995. Case Studies for Teaching Research Ethics. *Professional Ethics: A Multidisciplinary Journal* **4(3-4): 179-198.**
Discusses how ethics case studies can be used as an effective teaching tool for applied and professional ethics. Gives a framework for analyzing a case study, a number of short vignettes, and a bibliography of case study videos available.

Ermer, Gayle E. 2004. Using Case Studies to Teach Engineering Ethics and Professionalism. *Teaching Ethics: The Journal of the Society for Ethics Across the Curriculum.* **4(2): 33-40.**
The author demonstrates techniques for getting the most from case studies intended to introduce critical thinking skills in an ethics course by looking at two bioethics case studies and the ensuing discussions in an undergraduate course.

Fisher, Ellen R. and Nancy E. Levinger. "A Directed Framework for Integrating Ethics into Chemistry Curricula and Programs Using Real and Fictional Case Studies." *Journal of Chemical Education*, **85:6 (June 2008) pp. 796-801.**
The authors of this article describe a pedagogical method that uses historical and fictional case studies to introduce students to ethics. This approach can be used in programs for high school students and undergraduates all the way up to workshops with graduate and postdoctoral students, the authors merely focus on different aspects of the cases to make them relevant to the audience participating in the discussion. The article includes examples of cases for various audiences, and also provide examples of cases that a less effective with some audiences.

Ladenson, Robert. "The Educational Significance of Ethics Bowl" *Teaching Ethics* **1:1 (March 2007) 63-78.**
The Ethics Bowl is an activity that combines a valuable and distinct educational experience for students with the excitement and fun of a competitive team game. In the competition, two teams are asked to answer questions about a case study, and are judged by the clarity of their response. Since 1997, an Intercollegiate Ethics Bowl has taken place every year in conjunction with the annual meeting of the Association of Practical and Professional Ethics. This format has been adopted by

many organizations and instructors for use in their own subject area. This article describes the format, procedures, and rules of the Ethics Bowl, summarizes its origins and development, and analyzes in depth the Ethics Bowl's most important educational purposes.

Lewis, Scott, Warren Van Hout, and Aileen Huang-Saad. 2010. Teaching Biomedical Engineering Ethics: A Case Bases Approach. *IEEE Frontiers in Education Conference. 27-30 October, 2008.* **S3E-1-S3E-5.**
This conference paper describes a course taught in 2008 by the University of Michigan's Department of Biomedical Engineering that engaged industry representatives to introduce a new framework for teaching graduate level engineering students about biomedical issues in business situations. The framework was built on real-life case studies regarding quality problems in the medical device industry. The framework provided a mechanism for bringing real-world ethical situations into the classrooms and fostered a collaborative learning environment for the students.

Montes, Ingrid, Adriana Padilla, Atenaida Maldonado, and Solyman Negretti. 2009. Student-Centered Use of Case studies Incorporating Oral and Writing Skills to Explore Scientific Ethical Misconduct. *Journal of Chemical Education.* **86(8): 936-939.**
The authors describe a classroom activity developed at the University of Puerto Rico that used case studies to enhance the teaching-learning process in discussions of ethical misconduct. The students were asked to research the ethical issues inherent in these case studies and write a report about their findings, thereby helping to introduce them to concepts of professionalism and professional ethics.

Pimple, Kenneth. 2007. ["Using Case Studies in Teaching Research Ethics."](#) Poynter Center for the Study of Ethics and American Institutions, Indiana University.
This essay provides a short description of the use of case studies, and some general tips of how to facilitate discussions of a case.

Prince, Robert H. 2006. Teaching Engineering Ethics Using Role-Playing in a Culturally Diverse Student Group. *Science and Engineering Ethics.* **12(2): 312-326.**
This article describes a project where students were asked to write out a script and act out a case study that illustrated issues such as gifts, attitudes towards women

and ethnic minorities, conflict of interest, whistle-blowing, etc. Following the presentation, the actors lead group discussion based on previously specified questions. The method generated a vibrant discussion, and is now being expanded into short course format to assist the professional integration of foreign trained engineers.

Mullin, Jennifer, Vinod K. Lohani, and Jenny Lo. Work in Progress: Introduction to Engineering Ethics Through Student Skits in Freshman Engineering Program at Virginia Tech. *IEEE 36th Annual Frontiers in Education Conference: San Diego, CA: 2731 Oct. 2006. Pp. 21-22.*
Describes the development of an engineering ethics assignment that required students to form teams of 4-6 individuals and write a script and act out a case study documenting realistic engineering scenarios.

Swazey, Judith P. & Stephanie Bird. "Teaching and Learning Research Ethics." in *Research Ethics: A Reader* **Deni Elliott and Judy E. Stern. Hanover, NH: University Press of New England, 1996 pp.1-19.**
The authors of this article define some of the goals of using case studies to teach research ethics, and give an example of how to use a structured format such as the seven-step method of ethical decision making to lead a case discussion.

Evaluating Case Studies

Clancy, Edward, A., Paula Quinn and Judith E. Miller. 2005. Assessment of a Case Study Laboratory to Increase Awareness of Ethical Issues in Engineering. *IEEE Transactions on Education.* **48(2): 313-317.**
This article discusses the assessment of a three-hour "laboratory period," during which students read and discussed three short cases on engineering ethics. The assessment included focus groups and surveys, and while in focus groups students agreed that this activity enhanced their awareness of ethical issues, the survey results, however, were equivocal.

Delatte, Norbert, Kevin L. Rens. Forensics and Case Studies in Civil Engineering Education: State of the Art. *Journal of Performance and Constructed Facilities.* **16(3): 98-109.**
This paper discusses how the use of forensic engineering and failure case studies in civil engineering courses can offer students valuable insights into associated technical, ethical, and professional issues. The author discusses three approaches for using these kinds of cases including using standalone cases, capstone design

projects, and the integration of cases studies throughout the curriculum. The authors discuss the use of these kinds of cases and their benefits and conclude with some potential sources for finding cases.

Huff, Chuck and William Frey. 2005. "Moral Pedagogy and Practical Ethics. *Science and Engineering Ethics.* **11(3): 389-408.**

Though this article talks extensively about the effectiveness of online science and engineering ethics education, it contains an extremely good section discussing how well-designed cases -with appropriate goals and structure- can be easily adapted to courses, including those that have that have online components. The article begins with an extensive analysis of the goals of ethics education in science and engineering, and provides some examples on how to develop cases that meet these goals. It also discusses the different types of cases that are available, and the benefits and drawbacks of each of these case types for use in the classroom.

Puri, Satinder 1998. P.S. Discussion: Failure Case Studies in Engineering Mechanics Courses. *Journal of Professional Issues in Engineering Education and Practice.* **124(4): 121-124.**
This short article discusses how failure cases should be used in addition to other types of case studies. Limiting discussions to cases about failures conveys the wrong impression to students that all is well with structures that do not collapse. The author presents some important teaching notes for using cases in mechanical engineering courses. The author also recommends some sources for inspirational cases that show positive examples of professional practice.

Seiler, Stephanie, Bradley J. Brummel, Kerri L. Anderson, Kyoung Jin Kim, Serena Wee, C.K. Gunsalus, and Michael C. Loui. 2011., "[Outcomes Assessment of Role-Play Scenarios for Teaching Responsible Conduct of Research](#)". *Ethics CORE***, National Center on Professional and Research Ethics, University of Illinois at Urbana-Champaign.**
This article describes the summative assessment of role-play scenarios that were previously developed to teach central topics in the responsible conduct of research (RCR) to graduate students in science and engineering. Interviews with role-play participants, with participants in a case discussion training session, and with untrained students suggested that role-playing might promote a deeper appreciation of RCR by shifting the focus away from wanting to simply "know the rules." The article also presents the results of a think-aloud case analysis study and

describes the development of a behaviorally-anchored rating scale (BARS) to assess participants' case analysis performance.

Shuman, L.J., R.M. Clark, M. Besterfield-Sacre and T. P. Yildrim. 2008. Work in Progress: Ethical Model Eliciting Activities (E-MEA) – Extending the Construct. *IEEE 38th Annual Frontiers in Education Conference, 2008.* 22-25 th October, 208. Pp. S4C-16-17.
This article describes a project which seeks to develop open-ended realistic case studies that challenge student teams to recognize and resolve potential ethical dilemmas embedded within larger engineering problems. The article describes the development and use of these problems, and the teams' use of two rubrics, one of which (P-MEAR) was developed previously to assess the ethical dimensions of student projects. Data collected will be analyzed using cluster and statistical methodologies to classify students according to performance and strategies employed to solve the problems.

Whitbeck, Caroline. 1992. The Trouble With Dilemmas: Rethinking Applied Ethics. *Professional Ethics: A Multidisciplinary Journal*. 1 (1-2): 119-142.
One might expect that the character of moral problems would be well thought out after the attention given to practical or "applied" ethics in the last twenty years. However, from many recent discussions of practical ethics, and professional ethics and policy questions in particular, one would gain the impression that most moral problems are dilemmas and those that are not dilemmas are some other sort of multiple-choice problem. This essay examines the misrepresentation of moral problems as dilemmas and the sources of this mistake. These include including neglect of the perspective of the agent, the person called upon to act in the situation.

Notes

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Use of Materials on the OEC

Resource Type

Bibliography

Topics

Case Study Method

Discipline(s)

Teaching Ethics in STEM