Center for the Study of Ethics in the Professions

Evaluation of Ethics Teaching

Bebeau, Muriel J. "The Defining Issues Test and Four Component Model: Contributions to Professional Education." *Journal of Moral Education*. 31:3 (September 2002) 271-295.

Brock, Meagan E., Andrew Vert, Vykinta Kligyte, et al. "Mental Models: An Alternative Evaluation of a Sensemaking Approach to Ethics Instruction." *Science and Engineering Ethics*. 14:3 (September 2008) 449-472.

This paper assesses a novel responsible conduct of research curriculum developed at the University of Oklahoma that focuses on metacognitive reasoning strategies that professionals use when making sense of professional issues that have ethical implications for science. To find out the overall effectiveness of the sensemaking approach, the authors also studied mental models of field experts, faculty, and graduate students who were both trained and untrained in sensemaking. The study found that sensemaking training has the potential to lead in a shift in mental model structure and introduces a new way for research to think about the novel, highly complex, and ambiguous ethical situations that research professionals often face in their daily lives.

Brown, Sarah and Michael W. Kalichman. "Effects of Training in the Responsible Conduct of Research: A Survey of Graduate Students in Experimental Sciences." Science and Engineering Ethics. 4:4 (October 1998) 487-498.

Carlson, Patricia J. and Frances Burke. "Lessons Learned from Ethics in the Classroom: Exploring Student Growth in Flexibility, Complexity and Comprehension." *Journal of Business Ethics*. 17 (1998): 1179-1187.

Campbell, Alastair V., Jacqueline Chin, and Teck-Chuan Voo. "How Can We Know that Ethics Education Produces Ethical Doctors? *Medical Teacher* 29:5 (June 2007) 431-436.

After discussing some of the goals of medical ethics instruction and some methods of teaching aimed at achieving this specific outcomes, the authors look at ways of improving instruction in the future through the development of clearly defined outcomes and valid assessment methods.

Clancy, Edward A, Paula Quinn, and Judith E. Miller. "Assessment of a Case Study Laboratory to Increase Awareness of Ethical Issues in Engineering." IEEE Transactions on Education. 48:2 (May 2005) 313-17.

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.

Feldhaus, Charles. R. Robert M. Wolter, Stephen P. Hundley, and Tim Diemer. “A Single Insturment: Engineering and Engineering Technology Students Demonstrating Competence in Ethics and Professional Standards. *Science and Engineering Ethics* 12:3 (June 2006) 291-311.

This paper details efforts by the Purdue School of Engineering and Technology at Indiana University Purdue University Indianapolis (IUPUI) to create a single instrument for honors science, technology, engineering and mathematics (STEM) students wishing to demonstrate competence in the IUPUI Principles of Undergraduate Learning (PUL’s) and Accreditation Board for Engineering and Technology (ABET) Engineering Accreditation Criterion (EAC) and Technology Accreditation Criterion (TAC) 2, a through k. Honors courses in Human Behavior, Ethical Decision-Making, Applied Leadership, International Issues and Leadership Theories and Processes were created along with a specific menu of activities and an assessment rubric based on PUL’s and ABET criteria to evaluate student performance in the aforementioned courses. Students who complete the series of 18 Honors Credit hours are eligible for an Honors Certificate in Leadership Studies from the Department of Organizational Leadership and Supervision. Finally, an accounting of how various university assessment criteria, in this case the IUPUI Principles of Undergraduate Learning, can be linked to ABET outcomes and prove student competence in both, using the aforementioned courses, menu of items, and assessment rubrics; these will be analyzed and discussed.

Funk, Carolyn L., Kristin A. Barrett, Francis L. Macrina. “Authorship and Publication Practices: Evaluation of the Effect of Responsible Conduct of Research Instruction to Postdoctoral Trainees.” *Accountability in Research: Policies and Quality Assurance* 14:4 (October-December 2007) 296-305.

Kirkman, Robert. “Teaching for Moral Imagination: Assessment of a Course in Environmental Ethics.” *Teaching Philosophy* 31:4 (December 2008) 333-50.

This article looks at the results of an assessment project on a course in environmental ethics whose goals were to measure the impact of the course on students, as well as to contribute to a broader goal of developing assessment tools for ethics education.

Kligyte, Vkyinta, Richard T. Marcy and Ethan P. Walples et al. “Application of a Sensemaking Approach to Ethics Training in the Physical Sciences and Engineering." *Science and Engineering Ethics* 14:2 (June 2008) 251-278.

This study accesses the effectiveness of a newly-developed responsible conduct of research training in enhancing the ethical decision-making of researchers in the physical sciences and engineering, and examines the influence of training and trainee characteristics on ethical decision-making and application of broad metacognitive reasoning strategies.

Krawczyk, Rosemary. "Teaching Ethics: Effect on Moral Development." *Nursing Ethics*. 4.1 (1997): 57-65.

Lacour, Jean and Diane M. Lewis. "Effects of a Course in Ethics on Self-rated and Actual Knowledge of Undergraduate Psychology Majors." *Psychological Reports*. 82 (1998): 499-504.

Larkin, Luke. "Evaluating Professionalism in Emergency Medicine: Clinical Ethical Competence." *Academic Emergency Medicine*. 6.4 (April 1999): 302-311.

Newton, Lisa H. "Outcomes Assessment of an Ethics Program: Purposes and Challenges." *Teaching Ethics: The Journal of the Society for Ethics Across the Curriculum*. 2:1 (Fall 2001) 29-45.

Plaisance, Patrick Lee. "An Assessment of Media Ethics Education: Course Content and the Values and Ethical Ideologies of Media Ethic Students. " *Journalism & Mass Communication Educator* 61:4 (Winter 2007) 378-386.

Plemmons, Dena K. , Suzanne A. Brody and Michael W. Kalichman. "Student Perceptions of the Effectiveness of Education in the Responsible Conduct of Research. " *Science and Engineering Ethics*. 12:3 (July 2006) 571-582.

Rudnicka, Ewa A. "Ethics in an Operations Management Course." Science and Engineering Ethics. 11:4 (October 2005) 645-654.

Article includes a model of a grading rubric for evaluating students' understanding of ethics case studies.

Staehr, Lorraine J. and Graeme J. Byrne. "Using the Defining Issues Test for Evaluating Computer Ethics Teaching." *IEEE Transactions on Education*. 46:2 (May 2004) 229-244.

Steneck, Nicholas H. "Designing Teaching and Assessment Tools for an Integrated Engineering Ethics Curriculum." Proceedings of the 29th ASEE/IEEE Frontiers in Education Conference. (1999): 12d6-11, 12d6-17.

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Mentoring

Anderson, Dana D. and Wendelyn J. Shore. "Ethical Issues and Concerns Associated with Mentoring Undergraduate Students. Ethics and Behavior. 18:1 (January-March 2008) 1-25.

Fisher, Celia B., Adam L. Fried, , Sabrina J.Goodman, Kaori Kubo Germano, "Measures of Mentoring, Department Climate, and Graduate Student Preparedness in the Responsible Conduct of Psychological Research." . *Ethics & Behavior,* 19:3 (May 2009) 227-252.

Fischer, Beth A. and Michael J. Zigmond. "Promoting Responsible Conduct of Research through 'Survival Skills" Workshops: Some Mentoring is Best Done in a Crowd." *Science and Engineering Ethics* 7:4 (July 2001) 563-587.

Whitbeck, Caroline. "Group Mentoring to Foster the Responsible Conduct of Research." S*cience and Engineering Ethics* 7:4 (July 2001) 541-558.

Wright, David E., Sandra L. Titus, and Jered B. Cornelison. "Mentoring and Research Misconduct: An Analysis of Research Mentoring in Closed ORI Cases." *Science and Engineering Ethics* 14:3 (September 2008) 323-336.

The authors of this paper reviewed the USPHS misconduct files of the U.S. Office of Research Integrity to discover the role of the mentor in cases of trainee misconduct. The study focused on three specific behaviors the authors believed mentors should perform with their trainee: (1) reviewing source data, (2) teaching specific research standards, and (3) minimizing stressful work situations. The study found that three quarters of mentors in these cases had not reviewed source data and two-thirds had not set standards. The authors end by recommending that mentors and institutions devote more attention to the teaching of mentors about the process of education and their responsibilities in helping to educate upcoming generations of scientists.

Science

Anderson, M.S. "Collective Openness and Other Recommendations for the Promotion of Research Integrity." *Science and Engineering Ethics.* 13:4 (2007) 387-394.

This article reports on the findings of a 2002 survey of mid-career U.S. scientists who had received funding from the National Institutes of Health that looked at the relationship between mentoring and responsible conduct of research (RCR) instruction and subsequent engagement in misconduct. The survey found that RCR instruction and mentoring were less reliable inhibitors of misconducts and one would hope. The bulk of this article makes some recommendations on ways to improve RCR instruction, mentoring, and making a shift towards collective openness in the research culture to promote research integrity.

Bebeau, Muriel, Kenneth Pimple et al. Moral Reasoning in Scientific Research: Cases for Teaching and Assessment. Materials developed for "Teaching Research Ethics: A Workshop at Indiana University" (TRE). December 1995. Download full PDF document here.

Bird, Stephanie J. and Joan E. Sieber. "Teaching Ethics in Science & Engineering: Effective Online Education." *Sceince & Engineering Ethics*. 11.3 (July 2005) : 323-328.

Bisbee, Linda A. "Ethics in the Science Classroom." *Journal of College Science Teaching*. (November 1994) : 132-134.

Braxton, John M. and Leonard L. Baird. “Preparation for Professional Self-Regulation." *Science and Engineering Ethics*. 7:4 (July 2001) 593-610.

Brock, Meagan E., Andrew Vert, Vykinta Kligyte, et al. “Mental Models: An Alternative Evaluation of a Sensemaking Approach to Ethics Instruction.” *Science and Engineering Ethics*. 14:3 (September 2008) 449-472.

This paper assesses a novel responsible conduct of research curriculum developed at the University of Oklahoma that focuses on metacognitive reasoning strategies that professionals use when making sense of professional issues that have ethical implications for science. To find out the overall effectiveness of the sensemaking approach, the authors also studied mental models of field experts, faculty, and graduate students who were both trained and untrained in sensemaking. The study found that sensemaking training has the potential to lead in a shift in mental model structure and introduces a new way for research to think about the novel, highly complex, and ambiguous ethical situations that research professionals often face in their daily lives.

Brown, Sarah and Michael W. Kalichman. “Effects of Training in the Responsible Conduct of Research: A Survey of Graduate Students in Experimental Sciences.” *Science and Engineering Ethics*. 4:4 (October 1998) 487-498.

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Funk, Carolyn L., Kristin A. Barrett, Francis L. Macrina. "Authorship and Publication Practices: Evaluation of the Effect of Responsible Conduct of Research Instruction to Postdoctoral Trainees." *Accountability in Research: Policies and Quality Assurance* 14:4 (October-December 2007) 296-305.

Heitman, Elizabeth, and Ruth Ellen Bulger. "Assessing the Educational Literature in the Responsible Conduct of Research for Core Content." Accountability in Research: Policies & Quality Assurance 12:3 (July-September 2005) 207-224.
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Plemmons, Dena K. , Suzanne A. Brody and Michael W. Kalichman. "Student Perceptions of the Effectiveness of Education in the Responsible Conduct of Research. " *Science and Engineering Ethics*. 12:3 (July 2006) 571-582.

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This article describes the development, implementation, and assessment of an Ethics in Science program as a component of a summer undergraduate research experience.

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This article describes the development of a responsible conduct of research training program based on a sensemaking model , which is based on the assumption that professional integrity is shaped by the decisions people make when they are faced with complex and ambiguous ethical situations. The study focused on metacognitive reasoning strategy frameworks that can be used by researchers to address ethical issues that arise in their day-to-day work, The authors describe the tested training program, and discuss the implications for responsible conduct of research in the sciences.

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