

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Innovations in Undergraduate Research and Honors  
Education: Proceedings of the Second Schreyer  
National Conference 2001

National Collegiate Honors Council

---

2001

# ISSUE REACTION: INQUIRY-BASED LEARNING IN THE COLLEGE CLASSROOM

Jill L. Lane

*Pennsylvania State University*

Joanne M. Cawley

*Pennsylvania State University*

Follow this and additional works at: <http://digitalcommons.unl.edu/nchcschreyer2>



Part of the [Higher Education Administration Commons](#)

---

Lane, Jill L. and Cawley, Joanne M., "ISSUE REACTION: INQUIRY-BASED LEARNING IN THE COLLEGE CLASSROOM" (2001). *Innovations in Undergraduate Research and Honors Education: Proceedings of the Second Schreyer National Conference 2001*. 21. <http://digitalcommons.unl.edu/nchcschreyer2/21>

This Article is brought to you for free and open access by the National Collegiate Honors Council at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Innovations in Undergraduate Research and Honors Education: Proceedings of the Second Schreyer National Conference 2001 by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# **ISSUE REACTION: INQUIRY-BASED LEARNING IN THE COLLEGE CLASSROOM**

**JILL L. LANE, JOANNE M. CAWLEY  
THE PENNSYLVANIA STATE UNIVERSITY**

Inquiry-based learning is a research-based learning technique used to promote student comprehension, self-reflection, and research skills. The implementation of inquiry-based learning methods in the classroom can look very different depending on student factors, such as academic level, and on instructional variations, such as academic discipline. In all cases, students will learn more meaningful information if inquiry-based activities are student-centered. The five phases of inquiry-based learning are (1) identification of prior knowledge, (2) student exploration, (3) focus on content, (4) organization of new ideas, and (5) application to new situations. This issue reaction explores ideas on how to implement inquiry-based learning in a course as well as the challenges of this approach.

Inquiry-based learning can be described as "the acquisition of new concepts through carefully structured student activities involving the formulation and testing of hypotheses" (Otto, 1991). Inquiry-based learning is a research-based strategy that actively involves students in an exploration of the content, issues, and questions surrounding a curricular area. Activities are designed so that students work individually or in teams to solve problems that incorporate both class work and fieldwork.

While inquiry-based, problem-based, and case-based learning all provide opportunities for students to be actively involved in their learning (Feletti, 1993), inquiry-based learning is the most appropriate instructional method to use if you want your students to become better researchers. By implementing an inquiry-based technique, students have more opportunity to reflect on their own learning and thus gain a deeper understanding of the course concepts (King, 1995).

The amount of teacher-directed vs. student-centered learning in inquiry-based classroom can vary depending upon the level of the students, their prior knowledge about the subject, and the level of experience that they have had with inquiry-based learning. In the college classroom, inquiry can vary from an activity where the instructor selects the topic and helps students formulate research questions to student-led research where the instructor acts as a support person should the students ask for help. According to Bonnstetter (1998), as inquiry-based activities become more student-centered, more meaningful learning takes place.

Though inquiry-based learning will appear different depending on the curricular areas, Boylan (1988) suggests using a five-phase learning cycle. First, the instructor must identify what the learners already know about the content. Then the students are allowed to explore events, situations, and information about the content. In the third stage, the students begin to develop a deeper and more scientific understanding of the concepts as they focus on the details of the content. To create meaningful understanding, the learners next organize new ideas and relate them to prior knowledge. Finally, the learners practice and apply what is learned in novel situations.

This issue reaction team examined ways in which inquiry-based learning could be used to involve students in research. Discussions focused on a hypothetical sociology course called "Morphing the American Family."

Researchable areas discovered for this course revolved around the changing demographics and perceptions of today's American family. These areas would give students experience conducting research that was relevant not only to the course but to their own lives. The biggest challenge that arose was not in using inquiry-based methods to teach the class but instead was determining the level of involvement of the instructor. The team recommended that the instructor would need to provide students

with background on the issues, content of the course, and the range of strategies used to address the research questions. The depth of coverage of these topics would vary depending on the students' prior knowledge and experience conducting research. However, regardless of the level of involvement, the instructor would need to guide students to the right answers using questioning techniques rather than telling the students the answer. Finally, the instructor would need to conduct evaluations of the student research periodically throughout the semester so the students would understand how well they were performing. Methods for these evaluations included the use of rubrics (grading guides) to help students monitor their own performance and to allow the instructor the opportunity to appraise student performance holistically (Wiggins, 1998).

## REFERENCES

- Bonnstetter, R. J. (1998). Inquiry: Learning from the past with an eye on the future. *Electronic Journal of Science Education* [On-line serial] 3(1). Available URL: <http://unr.edu/homepage/jcannon/ejse/ejsev3n1.html>
- Boylan, C. (1988). Enhancing learning in science. *Research in Science and Technological Education* 6(2):205-217.
- Feletti, G. (1993). Inquiry based and problem based learning: How similar are these approaches to nursing and medical education? In G. Ryan (Ed.), *Research and Development in Problem Based Learning* (Vol. 1, pp. 289-298). Sydney, Australia: Australian Problem Based Learning Network.
- King, A. (1995). Process to enhance critical thinking across the curriculum. *Teaching of Psychology* 22(1):13-17.
- Otto, P. B. (1991). Modeling problem solving inquiry processes. *Journal of Science Teacher Education* 2(2):37-39.
- Wiggins, G. (1998). *Educative Assessment*. San Francisco, CA: Jossey-Bass Publishers.

## **AUTHOR BIOGRAPHIES**

Jill L. Lane is a Research Associate and Program Manager of Instructional Design at the Schreyer Institute for Innovation in Learning at Penn State. She has served as project manager for multiple large-scale curriculum reform projects as well as consulting and collaborating with individual faculty on the redesign of their courses.

Joanne Cawley is a Statistical Technical Communications Specialist with Minitab Inc. She is also pursuing her doctoral degree in Educational Psychology from Penn State, specializing in assessment and measurement.