

The Information Element of Inquiry-Based Education:

Skills that Enable Students to Manage Their Own Learning

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UW Madison

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Information Skills for Lifelong Learning

- How prepared are students for inquiry/problem-based learning? Do they know how to actively learn?
- “In addition to producing engineers who have been taught the advances in core knowledge and are capable of defining and solving problems in the short term, institutions must teach students how to be lifelong learners.” (Educating the Engineer of 2020)
- “Overworked students, who recognize that their information skills are unlikely to be graded separately, are unwilling to spend time in developing competency in this area—inevitably, they will put in the minimum amount of effort required to gain a pass grade.”

McGuinness, “What Faculty Think—Exploring the Barriers to Information Literacy Development in Undergraduate Education.” (The Journal of Academic Librarianship, November 2006)

Inquiry-Based Learning

- ⦿ Students engage in collaborative, investigative learning constructed around real-life problems
- ⦿ Good practices:
 - Scaffolding
 - Collaboration
 - Relevance
 - Questioning and communicating ideas
- ⦿ Essential learning outcomes/skills through IBL-structured work:
 - Communication
 - Collaboration
 - Project and time management
 - Critical thinking and critical evaluation of information
 - Assessment of information necessary for investigation
 - Responsibility for their own learning

Small group

⦿ Instructions:

- Read the assignment [handout #1]
- With the people next to you, answers questions 1-3 in 5-7 minutes

What are some of the challenges in promoting students' information skills?

Research and Theory-based Solutions

- ① “Scaffolding makes the learning more tractable for students by changing complex and difficult tasks in ways that make these tasks accessible, manageable, and within student’s zone of proximal development.”
- ② Four strategies for implementing scaffolding in inquiry learning environments.

#1: Structure Complex Tasks

Instructor:

- ⦿ Frames problem-solving process and concepts students need to learn to solve the problem
- ⦿ Restricts options to make the task accessible and manageable

Students:

- ⦿ Learn routines for professional practice and problem solving
- ⦿ Learn social norms for participation and teamwork
- ⦿ Learn professional norms for use of resources and communication

IL Toolkit: check-ins, research worksheets, rubrics

#2: Embed Expert Guidance

Instructor:

- ⦿ Provides direct instruction just in time
- ⦿ Provides some information to keep focus on learning goals

Students:

- ⦿ Seek information as they experience a need to know
- ⦿ Understand the necessity of information to solving the problem

IL Toolkit: Video clips and tutorials, in-class demo or library instruction session

#3: Make Disciplinary Strategies Explicit

Instructor:

- ⦿ Provides investigation models
- ⦿ Makes disciplinary strategies explicit in tasks, tools, products
- ⦿ Problematizes important aspects of students' work in order to force them to engage with key frameworks and strategies

Students:

- ⦿ Understand how information fits into investigational practice in their discipline

IL Toolkit: Structures to follow, prompts to use particular strategies, models of expert performance, rubrics

#4 Encourage Information Metacognition

Instructor:

- ⦿ Promotes learning of how to do the task and why the task should be done that way
- ⦿ Supports process management and sense making
- ⦿ Situates process in context of essential learning outcomes

Students:

- ⦿ Reveals process as well as final product
- ⦿ Prompted to share reflections on information use
- ⦿ “Learning how to learn”

IL Toolkit: Prompts to share process, reflections

Discussion

⦿ Direction:

- Skim the full assignment (Carpick and Crone)

⦿ How does the assignment...

- embed expert guidance?
- structure complex tasks?
- make disciplinary strategies explicit?
- promote information metacognition?

Collaborate with your librarian:

- “Library ready” assignments, syllabi, learning activities
- Online learning objects
- Course-related library instruction, individual consultations
- Library course pages
- Information enrichments for course frameworks such as Learn@UW, eCow2, Moodle
- Discussions, blogs
- “Librarian” role for Learn@UW courses?



Library / Reserves Course Pages UW Home My UW UW Libraries

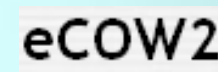
UW-MADISON LIBRARIES

Course Info:
ENGR PROFESSIONAL DEVELOPMENT 690 (Special Topics in E.P.D.)
Hagness, Susan C.
Spring 2007-2008 LEC 010 MW 02:25 PM to 03:15 PM

Library Contacts:
Diana Wheeler, Wendt Library, dhwheeler@engr.wisc.edu, 265-9801

Library Course Materials:
[College Level Research](#) [Find Articles](#) [Find Books](#) [Quality Web/News Sources](#)
[Popular Trade Scholarly](#) [Evaluating Your Sources](#) [Writing and Citing](#) [Madison Connections](#)
[Tutorials](#) [Getting Help](#)

Good General Databases for EPD 690 Topics:
[Proquest Research Library](#), 1988- (updated daily), indexes more than 2,000 periodicals, and provides the full text of nearly 1,000 of them. It has a mix of general interest and academic journals that cover the arts, business, education, health, humanities, psychology, sciences, and the social sciences.
[Academic Search](#), 1984- (updated daily), is a general academic index that indexes almost 3,000 magazines and journals from every academic discipline and provides the full-text of more than 1,200.
[CQ Researcher \(Current Issues\)](#), November 1991- (Updated weekly), reports on the most current and



Thanks! Any questions or further comments?

Information and media literacy... “practiced extensively, across the curriculum, in the context of progressively more challenging problems, projects, and standards for performance,” is an essential learning outcome.

UW Madison Essential Learning Outcomes,
http://www.provost.wisc.edu/content/WI_Exp_ELOs.pdf