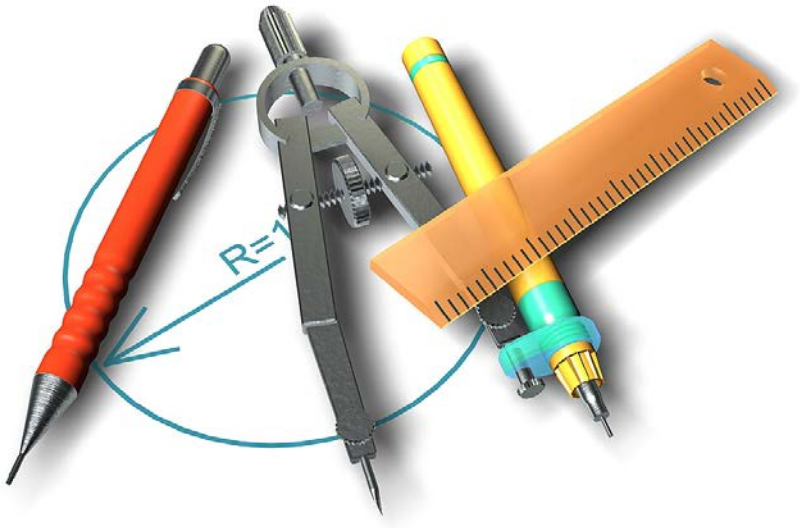

Forum on Collaborative Information Literacy Programs

INTEGRATING INFORMATION LITERACY CONCEPTS INTO AN UPPER LEVEL BIOMEDICAL ENGINEERING DESIGN COURSE

ASEE June 21, 2006

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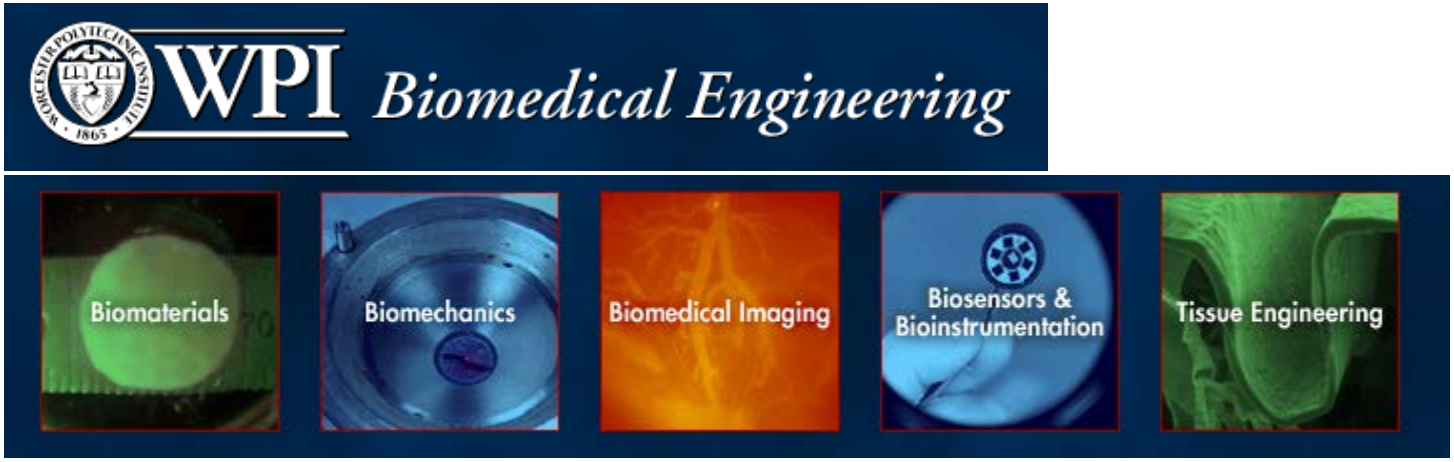
users.wpi.edu/~cdrew/ppts/ASEE_June2006.ppt

WPI, Biomedical Engineering & the Library

- WPI Life Sciences and Bioengineering Center at Gateway Park
- Biomedical Engineering #6 ugrad major @ WPI
- Gordon Library Information Literacy Goals
  - No required courses, so department specific approach to IL integration at the undergraduate level



Students learn best when they are actively involved in the process. Researchers report that, regardless of the subject matter, students working in small groups tend to learn more of what is taught and **retain it longer** than when the same content is presented in other instructional formats. Students who work in collaborative groups also appear **more satisfied** with their classes.

Source: *Tools for Teaching* by Barbara Gross Davis; Jossey-Bass Publishers: San Francisco, 1993
teaching.berkeley.edu/bgd/collaborative.html

Biomedical Engineering Design Course

Cast of Characters

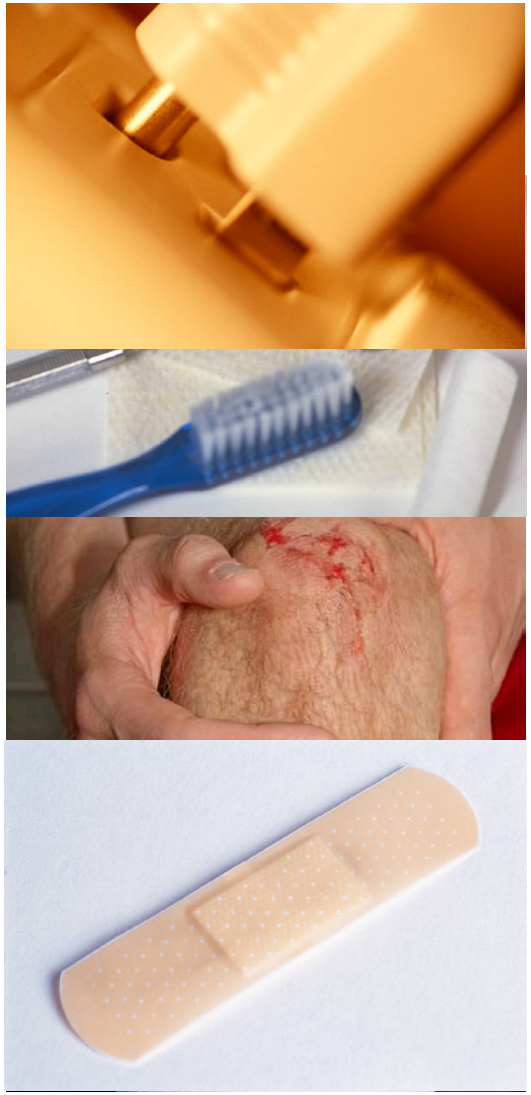
- Most juniors: two groups of 25 on two separate project topics (Electric Toothbrush & Tissue Incubator)
- One librarian and one faculty working with each group

Setting

- Library Instruction Labs A & B – some shared PCs
- 50 minutes
- First week of 7 week term

Term Project

- Design of biomedical device & proof of concept



IL Teaching Outcomes

By the end of the session students should be able to:

- Find background information and glean keywords on their topic/product
- Understand variety of information venues & resources types: from popular magazines, to journals to handbooks, to patents
- Connect to and search the USPTO patent database
- Identify a few key library databases that will be useful to research varying perspectives (medical, technical, etc.)
- Begin to understand the process to obtain full text of materials (visiting consortial libraries, using ILL)
- Learn that librarians at the reference desk can assist them

Three Acts: Via Research Challenges – dyads or groups of three

Course Web Page: BME 3300: Biomedical Engineering Design

wpi.edu/Academics/Library/Help/Courses/BME3300/BME3300mendelson.html

Act I: Information Choices

Review the 4 items below. What type of sources are the following? Newspapers, popular magazines, scholarly research journals?

_____

Who's the intended audience for each?

_____

- Temperature Takers in *Baby Talk*
- High resolution temperature measurement *Sensors, 2004. Proceedings of IEEE*
- Diagnostic accuracy of routine postoperative body temperature measurements in *Clinical Infectious Diseases*
- Measurement, Instrumentation, and Sensors Handbook.

Transition Activity

Evaluate... these web sites as well

Evaluating Web Resources Checklist (PDF)

According to a study at Stanford, nearly half of all web site evaluators (46.1%) used visual cues, to assess a site's credibility. Move beyond what a site ***looks like***...

Sensor Land | Temperature of a Healthy Human | Accuracy of Parents in Measuring Body Temperature

- Authority
- Scope
- Currency
- Accuracy

Act II: Patent Searching

- Search the USPTO patent database for a thermometer patent by ***Exergen*** (as assignee). Scan the results, list two types of thermometers that Exergen has patents for. What body part does patent number 6,292,685 scan for a body temperature? Review the drawings by clicking the IMAGES link.

  _____

  _____

- More time? Find a patent filing by Professor Mendelson as the inventor:

  _____

Act III: Finding Articles

After demo of *Health Reference Center Academic*

- Search one of the above databases (7 to choose from) for an article on the accuracy of body temperature measurement. What can this article tell you about designing a new product? List 1-2 issues or concerns medical professionals have about current practices. What method of measurement is found to be most accurate?

  _____

  _____

  _____

- What journal or magazine is this article from?
- Is it available in full text? Or just an abstract?
- If only an abstract is found, find the full text, using the library's Journals, Magazines, & Newspapers list.

And the Critics Say…

Assessment & evaluation form @
users.wpi.edu/~cdrew/pdfs/BME3300assessment.pdf

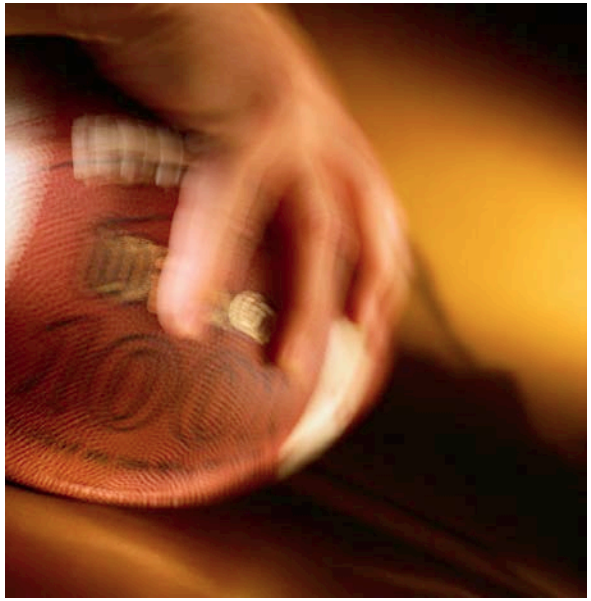
And the survey says…

- Almost 1/3 **mixed up research paper & conference proceeding** in matching exercise but all could pick out the popular magazine. Only 1 missed the technical manual.
- All listed the **USPTO as the go to site** for U.S. patents and could list reasons to search them
- 30 listed PubMed/MEDLINE as a database to use, and others listed various library databases.
- **Finding full text?** Only 2 were completely off track, and 3 too vague (find journal) to assess

“Cut the Lecture Down”

Evaluation

- 17 agreed or strongly agreed that library research session helped them to complete their project
- 24 felt the course helped improve their research skills
- 16 used web guide 2 or more times
- 9 followed up by asking research question(s) of the librarians either in person, via email or chat reference
- A few suggested we include more information on finding standards



Despite our activity-based approach, one commented ***“cut the lecture down”***

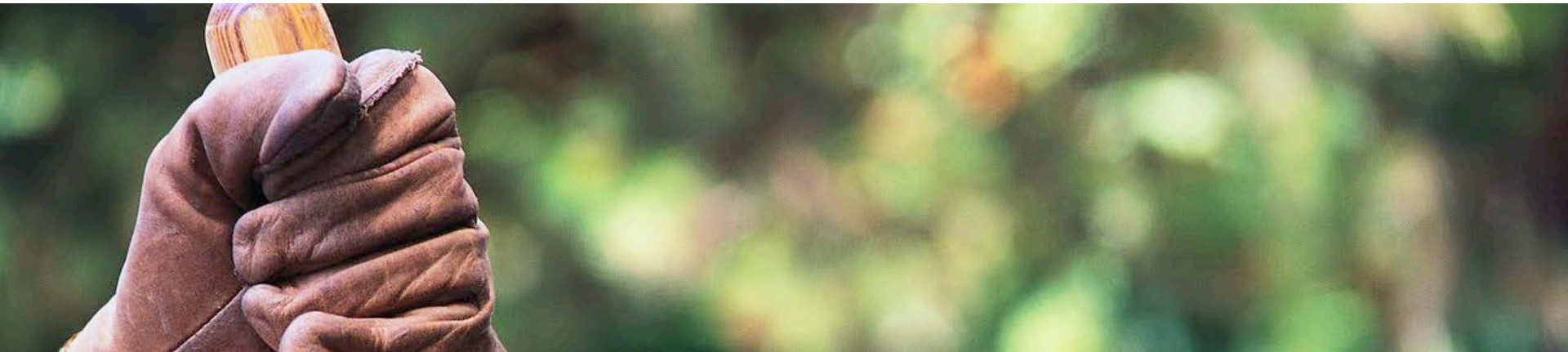
Additional Resources

Tools for Teaching, Davis, B.G., Jossey-Bass; San Francisco, 1993.

Teaching Engineering
electronic book by Phillip Wankat and Frank Oreovicz, Purdue University Department of Chemical Engineering

National Teaching and Learning Forum's Frequently Asked Questions (FAQ) about Collaborative Learning

Keller, J.M. (1983). "**Motivational design of instruction**." In C.M. Reigeluth (Ed.). Instructional design theories and models: An overview of their current status." Hillsdale, NJ: Erlbaum. See also ERIC Digest



"Students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers.

Learning is not a spectator sport.

Students must talk about what they are learning, write about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves."

-- Chickering and Gamson, authors of *Seven Principles for Good Practice in Undergraduate Education*.

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