



Background

- Medical informatics and PBL are required courses for 1st year medical students.
- Since 1997, medical informatics has been taught via an online curriculum.
- PBL requires students to analyze and research six medical cases in a self-directed, small group format.
- For each case, PBL groups meet for three two-hour small group discussion sections plus one lecture format, wrap-up session.
- Since 2001, library faculty have worked with individual PBL groups to improve information literacy.
- Each PBL group is comprised of 10-12 students, a faculty tutor, and a faculty librarian.

Impetus for Integration

- Student feedback requesting closer integration.
- Demonstrate relevancy of informatics by providing instruction at point-of-use in PBL cases.
- Reduce workload for students by allowing them to combine PBL research with demonstration of competency in Microsoft Word®, PowerPoint®, and Excel®.
- Ability to discuss and demonstrate resources and strategies more fully and to introduce additional resources.

Integration

- “Introduction to Medical Informatics” renamed “PBL Informatics.”
- Online informatics curriculum integrated with online PBL curriculum on Blackboard (university-wide online course management system).
- Faculty librarian assigned to each PBL group to provide instruction and to evaluate students’ selection and presentation of information.
- Online written lectures describe information resources relevant to researching PBL cases and informatics concepts integral to research and patient care (copyright, privacy, etc).
- Faculty librarians make regular presentations to their PBL groups highlighting informatics concepts and resources relevant to the current case.

Results

- Improved resource selection observed by librarian faculty.
- More consistent and accurate citations for electronic resources.
- Students use PowerPoint® regularly (versus rarely) to present weekly reports.
- Student PowerPoint® presentations are more dynamic than written reports and support livelier group atmosphere.

Integration of Medical Informatics Curriculum into Problem-Based Learning (PBL) Course for 1st Year Medical Students

Laura Abate, MSLS, *Electronic Resources & Instructional Librarian*; Anne Linton, MS, AHIP, *Director*;
Patricia Wilson, MIS, *Associate Director, Public Services*
Himmelfarb Health Sciences Library, The George Washington University

PBL Informatics Online Curriculum

- Written lecture mirrors and advances concepts from PBL case.
- Online quiz accompanies each session. True/false and multiple-choice questions reinforce concepts from the written lectures.
- Detailed MEDLINE assignment requires student to demonstrate proficiency with MeSH, subheadings, basic limits, and publication types.
- Students evaluate a website provided by a patient and recommend reliable alternatives to meet the patient's information needs.
- Competency in Microsoft Word®, PowerPoint®, and Excel® demonstrated by presenting individual research on case to group.

PBL Case Integration

- Medical informatics concepts have been integrated into most PBL cases.

PBL Case	PBL Informatics	Integration
Broken hip	Website selection/evaluation	Patient brings website to physician to discuss. Students must evaluate patient's information and suggest a more reliable information source.
Sickle cell anemia	MEDLINE & Library catalog searching	Students search MEDLINE to identify information relevant to specific clinical scenarios and a specific patient.
Stroke	Selecting the best information resource	Integration of informatics concepts is ongoing.
Chest pain	Contextual research	Students learn to use PsycINFO and MEDLINE to explore how patient's life stage, culture, race, and other non-clinical factors impact health.
Asthma	Evidence-based medicine	Students explore guidelines and other EBM resources to identify treatment options for patient.
Diabetes	Ethics & copyright in online setting	Young teen patient emails physician for advice using family email account eliciting discussion of patient privacy.

Library Faculty Presentations to PBL Groups



Faculty librarians make short 5-10 minute PowerPoint® presentations at two of three small group discussion sections for each case. These presentations reinforce concepts from the informatics curriculum and highlight resources relevant to the specific PBL case.

PBL Informatics	Presentations in PBL Groups
Website selection/evaluation	Session 1: Appropriate vs. inappropriate resources for PBL research & presentations, and formats for print and electronic citations Session 3: Patient education materials: selecting resources to meet patient needs
MEDLINE & Library catalog searching	Session 1: MEDLINE: phrasing a search, MeSH vs. keyword searching Session 3: MEDLINE: subheadings; limits (including human, English, Himmelfarb holdings, publication types, ages)
Selecting the best information resource	Session 1: Introduction to EBM: systematic research & peer-review Session 3: E-Journals & E-Texts
Contextual research	Session 1: PsycINFO Session 3: Contextual Research in MEDLINE
Evidence-based medicine	Session 1: Practice guidelines: National Guideline Clearinghouse, MDConsult, & MEDLINE Session 3: EBM in MEDLINE; Clinical Evidence
Ethics & copyright in online setting	Session 1: Finding and using statistics Session 3: HIPAA

Future Challenges



- Enhance integration of informatics concepts in PBL cases by rewriting cases.
- Weekly PowerPoint® presentations require laptop computer and LCD projector in fourteen PBL groups concurrently. This need has been met but stretches the resources of the Library's audiovisual staff and equipment.
- Excel® competency not fully integrated in PBL case contents or student research process.
- The fourteen PBL groups run concurrently which continues to be a challenge for library faculty. Some library faculty are assigned to more than one group and attend half of each group's weekly 2-hour session.