INFORMATION NEEDS and SEARCH CHARACTERISTICS of FIRST-YEAR MEDICAL STUDENTS

Dinara Saparova

School of Information Science and Learning Technologies

PROBLEM BACKGROUND

According to the Association of American Medical Colleges Medical School Objectives Project, a student before graduation is expected to demonstrate the ability to retrieve, manage, and utilize biomedical information for solving problems and making decisions relevant to the care of individuals and populations (Anderson, 1999). This makes information searching a critical skill in preparation of contemporary medical specialists. Contemporary problem-based learning (PBL) approach to medical education uses patient problems that students need to tackle to acquire clinical problem-solving skills. While working on these problems, students eventually need more information to proceed. This results in generation of information needs. As the most natural way of expressing information needs is through asking questions (Cogdill & Moore, 1997), by the end of each PBL session students come up with questions that they distribute among themselves. Later, each student engages in information searching to find answers to his or her questions.

PURPOSE OF STUDY

1. What information needs do first-year medical students experience after reading a clinical scenario?
2. What are the characteristics of online information searches performed by first-year medical students in response to their information needs?

References

1. Anderson, B. (1999). Contemporary issues in medicine--medical informatics and population health: report II of the Medical School Objectives Project. *Academic medicine: journal of the Association of American Medical Colleges*, 74(2), 130-141.

2. Cogdill, K. W., & Moore, M. E. (1997). First-year medical students' information needs and resource selection: responses to a clinical scenario. Bulletin of the Medical Library Association, 85(1), 51-54.

3. Gwizdka, J. (2011). Visualizing Search Sequences. Proceedings of the American Society for Information Science and Technology, 48(1), 1-4.

APPROACH

• Students' immediate information needs focused around general and diagnostic medical knowledge

• Searches for general medical knowledge aimed to find information that was known to exist and resulted in the known-item search tasks. Searches for diagnostic knowledge required finding several pieces of information that needed to be put together to answer a question and resulted in subject search tasks

• Search visualization techniques were based on Gwizdka (2011) (**Q** – Query formulation; **L** – Examination of search result list; **C** – Examination of an individual result (content); **B** – Bookmarking and tagging a relevant result; + we added **R** – Return to the previously obtained search result list)

FINDINGS

Students' information needs

• Participants generated 94 immediate information needs, an average of eight per person

• Sixty four of those were associated with known-item search tasks and thirty with subject search tasks

Students' search characteristics

• Participants performed searches in online medical databases, e.g., Up-To-Date, Access Medicine, DynaMed, and StatRef! as well as Google searches

• Most searches began with entering a query and followed by scrolling down the result list in search of the source with relevant content

• Often participants borrowed keywords for consecutive searches from the visited content pages (Fig. 1)

• Searches for general medical knowledge associated with known-item search tasks were short and quick. They were often performed in only one or two databases before the final answer was found (Fig. 2)
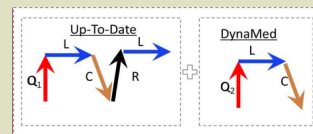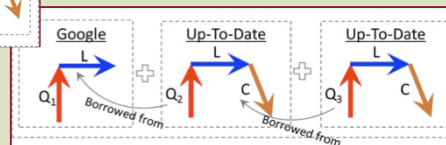

Figure 1. Borrowing queries for new searches

Figure 2. Example of a known-item search

• Diagnostic searches associated with subject search tasks were characterized by parallel searching in several databases and Google, often with the use of the same query (Fig. 3)
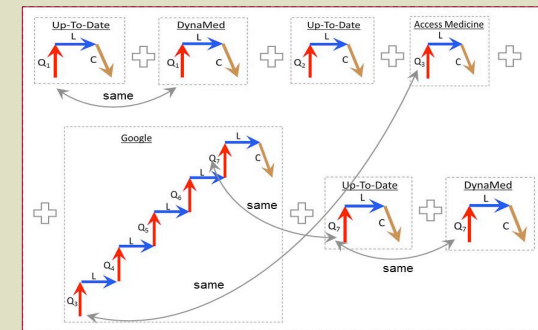

Figure 3. Example of a subject search

• Students retrieved sought information from the summaries provided under each retuned result in the result list. As a result, they did not need to visit the source pages (Fig. 4).

Figure 4. Obtaining ideas from Google search

• No Boolean searches were performed

PARTICIPANTS

• Twelve 1st year medical students (10 females, 2 males)

• From the School of Medicine at a large Midwestern University

• All participants completed the first eight weeks of the first PBL block of the Fall semester 2011