

HEAL: An Instructional Design Model Applied to an Online Clerkship in Family Medicine

In press, *Academic Medicine*

John M. Wiecha

Hannelore Vanderschmidt

Kathy Schilling

Boston University School of Medicine

Objective:

"Medical educators should exploit the potential of distance learning technology to deliver educational programs in which instruction and evaluation are of a consistent and high standard across multiple settings in the community" (1). This potential is hampered by lack of instructional design models to guide development of distance learning curricula. In response, we developed the HEAL (Heuristic for Electronic Asynchronous Learning) model for designing online curricula.

Description

HEAL is based on theories that learning is facilitated by independent problem solving, investigation, and discovery (Heuristics); that collaboration between students fosters learning; and that the proven educational cycle of practice, feedback, and reflection are "integral to the interrelated domains of skills development and personal awareness" (2). HEAL brings these principles to online medical education by integrating 3 learning

activities: didactic modules, problem-based learning, and shared reflective journal writing.

We applied this innovative design template to an online curriculum that augments our conventional 6-week third year clerkship. Our students, placed in distant family physician offices, needed more interaction and learning from peers and faculty. The 3 elements of HEAL, and implementation in the “Online Clerkship”, are:

1) *Didactic modules teach and illustrate concepts.*

Students study modules (HTML pages) on management of diabetes (DM), and complete 5 modules on evidence-based medicine (EBM). They do EBM literature searches reviewed online by peers, faculty, and by informatics librarians who provide feedback. Searches support HEAL element #2.

2) *A problem-based case discussion promotes application of concepts from modules (horizontal curricular integration).*

Students view streamed video of a patient with a history suggestive of diabetes, review her medical chart online, and suggest evidence-based management in an asynchronous discussion group. The case progresses weekly to mimic 12 months of continuity of care.

3) *A collaborative journal activity explores the results of applying elements #1 and #2 to real patients (vertical integration). Additional elements advance reflection, professionalism, and medical humanism.*

Participation in a journal-like discussion group, stimulated by online readings, enhances self-awareness, informs psychosocial aspects of #2, and promotes generalization of learning objectives to real patients.

We use BlackBoard software. Students log in 2-3 times per week. Faculty trained in online moderation facilitate the threaded discussion groups and provide feedback.

Discussion

Students in alternating clerkship blocks complete the Online Clerkship. They are compared with the performance of students who complete a face-to-face diabetes curriculum, but no curriculum on EBM or medical humanism. After nearly one year (105 students), compared to the non-online, students completing the Online Clerkship demonstrated:

- greater gains in reported EBM skills from pre to post clerkship;
- larger increases in mean score (from pre to post) on a medical humanism aptitude scale; and
- higher scores on a post-clerkship diabetes management assessment (all comparisons $P < 0.05$).

The HEAL model is defined by synergistic online learning activities integrated with real patient care. It is applicable to all medical education levels. The Online Clerkship will become a permanent part of our clerkship and we have begun to use HEAL to design other online courses, including continuing education courses.

Inquiries

John M. Wiecha, MD, MPH

Department of Family Medicine

Boston University School of Medicine

Dowling 5 South.

Boston Medical Center, 1 BMC Place

Boston, MA, 02118

John.Wiecha@bmc.org

Phone: 617 414 4465

Fax: 617 414 3345

References

1. Council On Graduate Medical Education, Thirteenth Report: Physician Education for a Changing Health Care Environment. Rockville MD: U.S. Department of Health and Human Services, March 1999.
2. The Medical School Objectives Writing Group. Report III: Contemporary Issues in Medicine. Communication in Medicine. November 9, 2000. Web site (<http://www.aamc.org/meded/msop/report3.htm>).