

“Oh god, please don't let me hurt them!”: Assessing Self-Regulated Learning in Medical School Education

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Abstract: With recent trends in residency training moving towards outcomes-based education, changes are needed in the design of undergraduate medical education. This study explores medical students' learning facilitated by an online system, the ENCORE LMS, designed to enhance the standard curriculum by promoting self-regulation and self-reflection. Student survey responses and analysis of their online journals provide evidence of content mastery and development of self-regulated learning. We discuss the effectiveness of this student-centered learning management system.

Introduction

While medical school education has evolved in response to basic and clinical research discoveries and an enhanced understanding of learning methods, undergraduate medical education (UME) retains at its core the time-based curriculum of two pre-clinical years focused on basic science lectures and two clinical clerkship years. This model was established nation-wide a century ago, with its roots dating back to the 1870s (Flexner, 1910). Outcomes-based education has recently taken hold in residency programs and, anticipating that this trend will move upstream, the medical school at a large Midwestern U.S. research university is investigating a competency-based approach for UME. Combined with rigorous assessments, this curriculum reform will ultimately permit a student to move through medical school at his or her own pace while still achieving mastery over the content required by licensing boards.

To support this new curriculum, named ENCORE, the medical school is partnering with faculty at the university's Schools of Information and Dentistry to prototype a new learning management system (LMS), following Dalsgaard's (2006) recommendation to replace the monolithic learning management system in order to “engage students in an active use of the web as a resource for their self-governed, problem-based and collaborative activities.” Key features of ENCORE include explicit competency standards that must be met for graduation, assessments that track student mastery of outcomes, and flexible learning paths based on the individual needs and interests of students. ENCORE relies on a self-regulated learning model; a metacognitive process built on the concept of, and positively correlated with, perceived self-efficacy or personal judgment of performance capability (Schunk, 1985; White & Gruppen, 2007). Self-efficacy contributes to motivated learning, which emphasizes acquiring skills and knowledge over task completion. Self-regulation includes strategies for planning, monitoring, and modifying student cognition (Pintrich & De Groot, 1990). The benefits of self-regulated learning have been established through controlled studies that show students with good self-regulation skills performing at a higher academic level than those without such skills (e.g., Zimmerman & Bandura, 1994). Challenges include maintaining motivation and developing the skills to effectively use feedback.

ENCORE's portfolio-oriented LMS features tools for managing learning outcomes, listing and tagging learning resources, recording patient encounters, reflective journals, formative and summative assessments, and faculty feedback. Faculty mentors provide a default set of learning activities while students self-select (and sometimes self-define and acquire) learning activities and learning resources, such as journal articles and anatomy videos. Self-regulated learning in ENCORE occurs both independently and in peer groups. Students decide when they are ready for summative assessments based on their use of formative assessments. The research question for this project is: How do medical students develop and express self-efficacy and identity as self-regulated learners in an environment facilitated by a new learning management system?

Methods and Preliminary Analysis

During the summer of 2009, six first year medical students were recruited to participate in a six week evaluation of the ENCORE curriculum. The pilot curriculum had three major threads: clinical experiences with patients, collaborative learning projects, and independent learning. An online survey instrument was administered six times during the study, prompted at different times of the day, to ask students about the reason for their most recent use of the LMS, their assessment of the value of the LMS, and the relevance of that use to the learning objectives. Students also utilized the system to record journal entries regarding their various learning activities.

Survey data revealed that, at the moment of prompting, 37% of the students were using the ENCORE LMS because they wanted to, while 73% of the time they were completing a compulsory task. Using a 5 point Likert scale (1 = not at all relevant to 5 = very relevant) to measure the fit between the LMS tools and learning activities, 89% of the student responses were that the system tools were somewhat or very relevant to the

current learning task. Using a similar scale, 81% of the student responses were that the LMS somewhat or very much improved the quality of the learning activity.

Students provided 160 daily and capstone journal entries in which they were asked to address the following prompts: What are your (reflective) thoughts about today's learning experiences? How did today's experience(s) build upon previous learning experiences (e.g., the connections you are seeing/making)? Describe progress you are making toward your learning goals. Describe progress you are making toward program goals.

Discourse analysis of the journal entries provides evidence of growing awareness of self-efficacy and learning. For example, one student, through the use of metaphor, indicates a positive experience while still acknowledging challenges:

This whole week was a great opportunity to stretch my wings and try to fly a little for the first time. I feel like the Wright brothers. My first flights are very short and bumpy, but one day, I'm really going to make it work and I'll walk into the room thinking "I can help this person" rather than "oh god, please don't let me hurt them!" (S3)

The same student, while hedging on qualifications and exhibiting stake inoculation (i.e., not claiming competencies not yet held), shares a success story of reaching the same conclusion as an attending physician:

While diagnosing is not really a skill we're expected to have mastered yet, I think it's tremendously useful to push us to try and think it through. I may not be brilliant and quick yet, but I did come to the same conclusion as Dr. X. (S3)

Another student indicated a shift in perception regarding the institutionally conferred power structure:

I learned to be more critical about data and practices that were more based on tradition than research. Since starting medical school, we have been bombarded with so much information that I have not been able to question the validity of the material. Honestly I have assumed that everything we have been taught must be correct because the material is being presented by clinicians and PhDs who have more experience. It seems in medicine there is a hierarchy and sometimes information is just taken to be true just based on the fact that it comes from your superior and you don't want to fail because you didn't do what they thought was right. (S6)

Discussion

This study explored the use of a new learning management system in conjunction with an innovative curriculum based on self-regulated learning. The survey data indicates that although use is not primarily student-initiated, student learning can be facilitated by a learning management system "tuned" to self-regulated learning. The preliminary analysis of student journals demonstrates evidence of growing self-efficacy and learning. Future work will include more detailed discourse analysis of student journals and provide further evidence from the surveys, student interviews, and review of the broad range of artifacts generated during the pilot. Standardized test scores will also be incorporated into the analysis, facilitating a longitudinal assessment of the intervention.

Although generalizability is not a top goal for this project, we anticipate that understanding the experience of a specific group of medical students will inform larger-scale follow-up initiatives. For example, a subset of the LMS tools are currently being deployed to all 170 first year medical students to support outcomes based collaborative learning around patient cases. This pilot will inform surveys of that larger population. As other disciplines move to outcomes-based education, these studies will inform a broader movement to support self-regulated learning and provide input to the design of student-centered learning management systems.

References

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