

Learning through Osmosis: A novel program for the long-term retention of medical information

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Needs and Objectives

Medical students must learn a tremendous amount of foundational material in order to become broadly competent physicians. However, the knowledge obtained from each course rapidly decays following the completion of the block, thus negatively affecting performance during clerkships, licensing exams, and clinical practice. Therefore, the primary objective of this project is to improve long-term retention of clinically relevant information.

Setting and Participants

Medical students at the JHU SOM.

Description

We have developed an innovative mobile- and web-based software, called Osmosis, that aims to improve long-term retention by uniquely combining three evidence-based concepts in education: (1) adaptive spacing, or quick and periodic reviews; (2) quiz-based learning, or improved absorption of material through practice questions; and (3) gamification, such as social network-enabled peer-to-peer learning. Osmosis (<http://osmosis.freetext.org/>) provides students free access to hundreds of high-yield practice questions and explanations developed by faculty and peers and sorted by course module. Question quality is enhanced through a novel rating and commenting feature. The Learning Mode, in advance of block tests, allows students to cycle through questions and encourages understanding by retiring a question once it is answered correctly twice. The Retention Mode, following the course, facilitates long-term retention by periodically e-mailing selected questions with high-yield clinical concepts to students. Osmosis records data (e.g. student usage and answers) on a secure server, which would be available for education research.

Evaluation

A beta version of Osmosis was released to the first year class shortly before the GTS Immunology exam. The Learning Mode featured 116 peer-developed questions highlighting material emphasized in lecture. Approximately two dozen students logged in through Facebook and submitted a total of 1,706 answers (average 77 questions/student). Immunology Retention Mode data are pending; ID/Microbiology Learning Mode is already delivering faculty- and student-developed questions.

Lessons Learned

Initial usage statistics and student & faculty reception are very promising, and indicate that the platform is flexible, fits well into busy schedules, and helps participants self-assess knowledge gaps. The effect of review parameters including question repetition, spacing, and selection (adaptive v.s. static) on long-term retention is currently under study.