

**PARTICIPATION IN SUPPLEMENTAL ONLINE PHARMACOLOGY MODULES
RESULTS IN LEARNING GAINS AND STUDENT ENGAGEMENT**

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PURPOSE

PBL curricula present unique challenges for pharmacology education; learning opportunities may be overlooked in deference to other content learning goals taught in a more concentrated fashion.

METHODS

An online, supplemental pharmacology curriculum was developed for first-year medical students to increase knowledge and engagement. Fourteen online, self-paced modules were written collaboratively by faculty and students, and included a topic introduction, reading assignment, and self-assessment quiz. Pre-/post-tests and retired National Board of Medical Examiners (NBME) questions were used to assess pharmacology knowledge acquisition. Engagement was assessed via module quiz completions.

RESULTS

Student engagement was high: 92% visited the site at least once, with a mean of 34.3 visits (SD=33.7). Students completed a mean of 6.7/14 modules (SD=4.7); 16.6% completed all modules, and 9.2% completed none. Students exhibited statistically significant learning gains from pre-test to post-test in two curricular blocks during which the supplements were offered: Block 2, $t(32)=6.12$, $p<0.0001$, mean: 57.1%, SD=11.0%, to mean: 82.9%, SD=18.6% and Block 3, $t(19)=3.34$, $p=0.003$, mean: 52.9%, SD=20.8% to mean: 65.0%, SD=18.8%. Scores on NBME pharmacology questions were significantly correlated with the total number of module quizzes completed ($r=0.21$, $p=0.008$). However, these effects were not as specific to pharmacology-related questions as our previously reported results, in which module use predicted greater improvement on final exam essay questions related to pharmacology than on questions related to other topics. Consistent with our previous results, early module use was a stronger predictor of NBME scores ($r=0.24$, $p=0.002$).

CONCLUSIONS

The addition of brief, supplementary, introductory, online modules in pharmacology can lead to improved learning and student engagement.

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EMBEDDING BIOMEDICAL SCIENCES IN THE FINAL YEAR OF A MEDICAL PROGRAM

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PURPOSE

Learning during the first two years is based on discussions of clinical problems, during which there are 21 cases with a child as a patient. This educational philosophy is being continued into Years 3 and 4, where students are situated in one of the ten hospital-based Clinical Schools. Students complete nine 8-week Core Clinical Rotations (Clerkships) during these two years, plus an Elective. Clinicians would like students to revise their biomedical sciences in the clinical context, which requires web-based resources.

METHODS

Paediatric On-Line Interactive Education (POLIE), using Scenario Based Learning Interactive (SBLi), is an innovative web-based educational tool for final year students enrolled in Paediatrics & Child Health, comprising eight clinical problems. Embedded biomedical science components require students to explain mechanisms of action of clinical conditions and drug therapy, whilst feedback links to previous resources on this topic and emphasises clinical relevance.

RESULTS

One problem has been developed fully, with another seven under development. Participants involved in the trials have completed 31 Likert-style questions related to evaluation of issues including learning effects, achievement of learning objectives, and integration with other learning activities, and 14 questions related to self-reported performance such as confidence, clinical reasoning, and changes in behaviour. The results have been generally positive and have led to further improvements.

CONCLUSIONS

Web-based delivery allows the School to ensure core material is being presented to all students enrolled in the course, irrespective of their geographical location. A case-based format embeds relevant biomedical science into clinical work.

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DIFFERENCE IN ATTITUDES TOWARDS ONLINE RESOURCES BETWEEN LONG-DISTANCE LEARNERS AND ON-SITE STUDENTS

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PURPOSE

From 2006-2009, Pathology instruction at the Indiana University School of Medicine – Evansville was conducted from 200 miles away in Lafayette, IN. The Pathology courses at both sites were taught concurrently with the Evansville students having access to lectures recorded in Lafayette, as well as live online conferences and infrequent visits by the instructor. Students from both sites had access to lectures recordings and several other online resources. Students were then surveyed to determine their preference in learning resources.

METHODS

At the end of the school year, students in Lafayette and Evansville were asked to complete a survey. Five Evansville students (33%) and seven Lafayette students (47%) completed the survey.

RESULTS

Evansville students relied heavily on the recorded lectures from Lafayette and other online resources. This included reviewing recorded lectures even when the material was covered in a live online session or instructor visit. Lafayette students, however, rarely viewed the recordings, even when they had to miss class. Evansville students suggested an “ideal” class would be 35% live, 42% recorded, 12% labs, and 13% other classroom activities. In contrast, Lafayette students thought the class should be 64% live, 23% recorded, 4% lab, and 12% other. Evansville students felt that 40% of lectures could be replaced by recordings and total class time could be decreased by 18%. Lafayette students thought that only 11% of lectures should be replaced by recordings. Neither group was comfortable with eliminating live interactions with the instructor.

CONCLUSIONS

Evansville students, who relied on recorded lectures for a significant portion of their course were very adept at using the course recordings. They preferred recorded lectures over live lectures to cut down on in-class time. Lafayette students, however, rarely used lecture recordings and placed a premium on in-class lectures. Replacing lectures with recorded instruction requires a significant shift in culture, but is well received once students become proficient at using the technology.

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ENHANCING MEDICAL SCHOOL CLINICAL FACULTY'S EVALUATION SKILLS WITH A WEB-BASED TOOL

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PURPOSE

Kirksville College of Osteopathic Medicine (KCOM) is launching a web-based tool to provide professional development to its community-based faculty. Still Learning, an interactive program, was developed by the Center for Instructional Innovation at the University of Nebraska-Lincoln. KCOM aims to teach clinical preceptors how to apply evaluation criteria using a competency based rubric to objectively evaluate medical students' clinical presentations.

METHODS

Still Learning uses a case-based reasoning approach to develop preceptors' problem solving and evaluation skills. The distance learning tool features a series of filmed medical student clinical presentations that prompt preceptors to evaluate each case using a rubric and justify their decision. Peer modeling and expert consultation video segments illustrate how to apply structured evaluation criterion, provide validation, and offer explanatory feedback. KCOM will assess preceptors' mastery of evaluation skills using the website's learning modules and the tool's impact on reducing grade inflation.

RESULTS

Beta testing revealed the instructional tool was user friendly and required minimal time investment. KCOM anticipates the online modules will enhance preceptors' evaluation and feedback skills that are essential to medical student learning and demonstrate a more effective method to teach preceptors how to evaluate oral presentations. Conclusion Still Learning prepares clinical preceptors to objectively evaluate medical students' presentations using a four point scale metric. KCOM's web-based tool fosters self-directed learning, offers opportunities to practice evaluation techniques, encourages grading parity, and provides peer consultation to enhance preceptors' instructional feedback to medical students.

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EFFECTIVENESS OF 'STEP-BY-STEP STUDY OF HUMAN LIFE SCIENCES' IN REMEDIAL EDUCATION

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PURPOSE

We have been producing 'Step-by-step study of human life sciences', which presents straightforward illustration and animation, two-choice quizzes and original explanatory model in small tree-structure steps, for beginners in life sciences. The effectiveness of the material in self-learning with online progress-monitoring was studied.

METHODS

Starting with students scheduled to enter a health care high education institution in the 2007 school year, through to the 2010 students, the basic level was presented with a booklet and an online version capable for randomizing quizzes for testing. In 2007, the material was used as a reference. From 2008, it was employed as a pre-entry assignment and an evaluation test immediately upon entering, consisting of the presented quizzes. Since 2009, Moodle was used as the online version and the self-study progress was monitored. In 2009, for those with bad progress, a post card was sent to encourage self-study. The 2010 students were assigned to take the randomized quiz tests every week for 14 weeks; for those with bad progress, self-study was encouraged using emails and phones each week.

RESULTS

The average score of the evaluation test immediately upon entering in relation to the percentage of the students who self-studied was 68.2/28.6, 80.7/67.6, 72.0/57.0, respectively for 2007, 2008 and 2009. After the 12th homework for the 2010 students, over 95% of the students self-studied. The score of the 2010 evaluation test will be presented at the meeting.

CONCLUSIONS

The material is effective for remedial education by self-learning, and the numerous weekly homework assignments combined with progress-monitoring promote self-learning.

CONTRIBUTORS The material and contributors are published at <http://life-science-edu.net>.

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VPSIM: WEB-BASED AUTHORING OF BRANCHED-NARRATIVE VIRTUAL PATIENTS

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PURPOSE

Virtual patients are computer-based clinical simulations for education, training and assessment. This pedagogical approach supports a wide variety of educational scenarios including teaching and assessing clinical reasoning skills (1), filling gaps in the clinical experience (2), and engaging students in deliberate practice in a patient care scenario. However, VPs traditionally were difficult and expensive to create and distribute.

METHOD

vpSim (vpsim.pitt.edu) is a new software application for authoring, playing and administering virtual patient simulations over the web. This hosted web application or “software-as-a-service” allows educators to design, develop and deploy VP cases using only a web browser. No technical assistance, hardware or software installation is required. Cases are accessed either from vpSim’s built-in LMS or integrated into third party software like Moodle. vpSim exports and imports cases based on the MedBiquitous VP standard allowing sharing and repurposing of cases across institutions. Authoring in vpSim employs a drag-and-drop graphical case map to quickly storyboard the steps and paths of complex branching cases. This map communicates dynamically with web forms for entering clinical data, multimedia, didactics, and questions. Learners play cases through a streamlined user interface to minimize cognitive load and focus on the clinical narrative and decision-making. Authors can design cases that provide adaptive, personalized feedback based on learner input and by tracking cost, score, time and patient status.

RESULTS

Educators and students from 10 institutions have used a beta version of vpSim to create and implement over 300 VP branching clinical scenarios for PBL, CME, independent learning and assessment. Version 1.0 was released March 2010. 1. Cook DA, Triola MM. Med Educ 2009;43:303-311. 2. Tworek, Coderre, Wright, McLaughlin. Acad Med 2010;85:155-158.

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SPOTLIGHTING BASIC HOSPITAL HYGIENE RULES THROUGH THE IMPLEMENTATION OF E-LEARNING

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PURPOSE

Patient safety has emerged as a hot issue in healthcare worldwide. Quick-scans in the Leiden University Medical Center revealed that behavior regarding basic hygiene falls short of expectations. It was felt important to teach students as well as hospital employees about basic hygiene rules to avoid healthcare-associated infections.

METHODS

Eight E-Learning modules have been developed on topics like hand hygiene, personal hygiene, accidental blood contact, cleaning & disinfection, personal protective equipment and isolation measures. These lessons have been incorporated as a compulsory part in the second year of the medical school curriculum. They are also incorporated in several Educational Programs for nurses, like IC-, HC-, MC-nurse and Cardiac Care nurse. During a large hospital campaign, all employees that work with patients or patient materials were encouraged to take these modules. New employees take the modules during their introductory program.

RESULTS

Almost all medical students of the second year course on Infectious Diseases and about 31% of the hospital employees actually took the E-learning lessons. Knowledge about basic hygiene rules has increased and students as well as employees state they know their way to the important protocols on patient safety better than before. Repeated quick-scans unfortunately did not show a significant long term improvement of behavior.

Participants felt that E-learning was an efficient way to study this topic, yet they complained about the time they had to spend taking 8 modules in total.

CONCLUSION/FUTURE DIRECTIONS

E-learning modules can provide proper training, but practice has to be maintained within the departments. To keep attention on a high level, we plan to repeatedly encourage employees to take certain modules at specific times.

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