



TECHNOLOGY

Method for Teaching and Evaluating decision-Making Skills Through Computer-Based Simulation

OVERVIEW

Researchers in the Department of Surgery, University of Maryland School of Medicine, have developed a software tool to aid faculty in teaching students clinical decision-making in patient care as well as the interrelationships between medicine and other disciplines. The software is used to design medical case studies of patients that recreate the student (medical student/resident/Continuing Medical Education (CME) candidate) to teacher (attending physician) interaction when discussing a patient. The design simulates the Socratic method of teaching experienced when a physician mentor (attending) sits with one student or a small group to discuss a patient, the disease process, and its management.

APPLICATIONS

Adaptable to any teaching environment where decision making is taught and feedback is received by students.

ADVANTAGES

-Simulates the interaction between student and teacher. -Includes the ability to teach more than one topic in a parallel fashion. -A dialogue consisting of a series of questions, answers, decisions and explanations of the decision-making process takes place. -Includes the interpretation of clinical decision-making and the rationale to explain why one correct answer is better than another. Incorrect choices can also have explanations at the discretion of the author. - Through the use of multimedia technology the student is able to view and interpret the same diagnostic information (patient history, physical findings, and studies) that the attending physician uses to manage the patient, with the added benefit of an expert interpretation that reports and explains, via animation, the findings at the appropriate time in the case. -The content of the patient cases can be designed by the author to accommodate all levels of complexity ranging from medical students to physicians pursuing CME credits.

STAGE OF DEVELOPMENT

Software using Visual Basic, Active Server Pages and XML has been generated. This software was modified based upon serial trials using student input as to what worked well and what could be improved from an educational standpoint. A final version was developed that was highly acceptable to students. It accomplished the original strategy of simulating the clinician/teacher interaction. It proved to be very effective in holding the student's attention through the use of rich, interactive images and rapid feedback about student choices. This final version assembles an XML file from a database that an author has populated using an authoring tool. The authoring software is written in object-oriented programming and contains essentially no hard-coded information. It also easily accommodates the later insertion of additional teaching components into the master XML file if desired. This XML file has the complete set of information elements necessary to create the simulation and can be viewed by the student using a special browser and speakers. The student answers are stored in a database and available for summary statistics as feedback to the student, case author or course director. The student retains a copy of the case with images and his/her individual answers in an XML file, which can be reviewed in digital format or hard copy. This software strategy has been very reliable and robust.

R&D REQUIRED

Refinement of programming.

LICENSING POTENTIAL

UM seeks a development partner via an exclusive or non-exclusive license agreement and/or sponsored research.

CONTACT INFO

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Additional Information

INSTITUTION

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PATENT STATUS

U.S. Patent 8,480,403 issued 07/09/2013

LICENSE STATUS

Available for licensing

CATEGORIES

- Software + Algorithm
- Healthcare
- Education/Training/Multimedia

INVESTIGATOR(S)

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