COMBINING INTELLIGENT TUTORING SYSTEMS AND VIRTUAL CLINICAL SIMULATIONS FOR USMLE STEP 1 PREPARATION

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INTRODUCTION.

The United States Medical License Examination (USMLE) is widely regarded as the 'gold standard' in the assessment of acquired knowledge in the training of students for the MD degree and is finding widespread general use by many nations. Passing rates for USMLE Step 1 vary widely ranging from 23% to greater than 95%. One common explanation for low passing rate is inadequate preparation and/or inability to master the material required. Most review programs consist of review lectures and /or the completion of multiple choice questions derived from commercially available review texts. It is clear however, that many medical students consider a comprehensive review to be essential in the preparation for the USMLE Step 1.

AIM AND OBJECTIVES.

The primary objective of the proposed research program was to establish a framework for the development and establishment of a comprehensive Review Program for the United States Medical License Examination (USMLE) Step 1.

METHODOLOGY.

The approach developed here uses immersive virtual situations in which students interact with a virtual clinical question/case in a desktop 3D virtual world developed with the aid of 'ICT Virtual Human Toolkit'. Scenarios are indexed to questions in selected USMLE Step 1 review texts and commonly used medical textbooks. Students are provided with relevant background information and an opportunity to select a response from 5 possible options. If a student answers incorrectly, the software triggers a virtual intelligent pedagogical agent (e.g., a virtual supervisory clinician/qualified medical educator), to interact with the student. Correct responses are accompanied by both 'concept' and 'cognitive' maps to reinforce the clinical point. This interactive module provides each student with the basic logic and underlying scientific principle(s) to fully comprehend the problem and the correct response.

The underlying idea of our project is that medical students learn and retain more effectively when engaged in experiential learning, rather than being subjected to a series of didactic presentations. Not only do we propose in the further development of this project to provide a comprehensive review, but also to reinforce primary instruction in clinical medicine with accurate, adaptable, human-in-the-loop simulation of diagnostic and treatment scenarios. This will engage both students' intellectual recognition and recall memory, thereby academically approaching the material from 2 cognitive perspectives.

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