Anatomy & Physiology: Current Research

ISSN: 2161-0940

Harve and Yip, Anatom Physiol 2013, 3:1
DOI: 10.4172/2161-0940.1000e124

Editorial Open Access

The Use of E-Learning in Contingency Planning for Anatomy Education

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There are many methods of teaching anatomy to students of medicine, dentistry, pharmacy and allied health sciences. The traditional cornerstones of anatomy education are lectures, tutorials and cadaver-based dissection classes [1]. More recently, there has been a shift in education philosophy, with attention being focussed on student-centric learning instead of teacher-centric instruction. Further, anatomy education faces challenges such as a reduction in curriculum time and the relative lack of cadavers available for teaching. This has contributed to the growing interest in using computer-based learning tools to supplement classical teaching methods [2-4]. Novel approaches to anatomy education, such as problem-based and team-based learning, have also been introduced in various medical schools [5,6].

The rapid development of telecommunication technology and information highways has taken the educational macrocosm by storm. The benefits of e-learning and mobile learning are obvious, including the ability to provide better access to education and to facilitate interaction among students and between teachers and students. At the National University of Singapore, we have been exploring the use of e-learning as part of our contingency plan for anatomy education over the past few years. One of the factors that prompted us to do this was our experience with the Severe Acute Respiratory Syndrome (SARS) outbreak ten years ago, which disrupted the operation of the university. E-learning could be an important channel for us to continue our task of uninterrupted teaching of our students while reducing risks to ourselves in the event of outbreaks of bird flu or other communicable diseases.

Our experience with e-learning has been very positive, as we are able to tap into the information technology infrastructure and human resources of the university. In our most recent exercise, we aimed to simultaneously conduct nine tutorial sessions in anatomy for our cohort of first-year medical students. Each session involved one tutor and twenty students, and lasted for two hours. Each virtual session was designed to allow students to gain the same anatomical knowledge as what they would acquire in a real-world classroom setting. The tutor could make use of the virtual whiteboard to draw diagrams, annotate pictures, and explain anatomical concepts. Students were able to ask questions and interact with each other and with the tutor in real-time as in a telephone conversation. Access to the virtual tutorial session was gained via a computer connected to cable broadband or wirelessly using a smart phone or other mobile network devices. Feedback from the students and tutors on the sessions were very good. Additionally, students enjoyed the freedom of not having to travel to the university campus to attend classes.

As with any new technology, careful planning is important to ensure success in its deployment. For our e-learning exercise, we had to make logistical preparations to ensure that a reliable network and suitable servers to host the application software and data were available. We chose to use the Cisco WebEx software for web conferencing for its large concurrent user capacity and its ease of use. A one-hour training session was provided to students in advance on how to use the software and join the tutorial. Training for the teaching staff took approximately two hours, as they also had to learn to transfer their class management skills to the virtual environment.

A reliable and effective contingency plan for education is crucial for universities, and e-learning is an important component of our plan for anatomy teaching. For now, it is still not possible to perform cadaveric dissection in e-learning. However, in time, this obstacle may be overcome with the use of live video streaming or three-dimensional technology. Certainly, e-learning can complement traditional teaching methods to enhance the anatomy education experience for both students and teachers.

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Received September 19, 2013; **Accepted** September 20, 2013; **Published** September 23, 2013

Citation: Harve KS, Yip GW (2013) The Use of E-Learning in Contingency Planning for Anatomy Education. Anatom Physiol 3: e124. doi: 10.4172/2161-0940.1000e124