**Anatomy e-tutorial of the heart with 3D digital models and real-time cardiac imaging techniques**

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**Background:** Advances in technology have caused a surge in e-learning resources worldwide. Glasgow University has run an SSC to develop e-Tutorials for anatomy in conjunction with the MBChB curriculum.

**Summary of work:** An interactive tutorial on the anatomy of the heart was created using Articulate Storyline. Nine sub-topics are covered to give a comprehensive tutorial. Interactive 3D models are incorporated as an extra learning tool for users. These were created by taking 70+ photographs of prosections of the heart, then using 123D Catch, Blender and Unity Web Player to merge the images into one cohesive model. Imaging of the heart is covered in detail and real-time GIFs of cardiac imaging were used to aid that part of the tutorial. Each of the nine sub-topics includes a short quiz to test the information given, using a variety of question types. In some cases, clinically relevant information has been included to add another dimension to the user’s learning.

**Summary of results:** These interactive features have been engaged in an easy to use tutorial that allows a user to learn and test their existing knowledge of heart anatomy. The use of interactivity allows for constructivist education and sets e-learning apart from traditional textbook or lecture based learning.

**Conclusions:** This e-tutorial provides a detailed package of information on the anatomy of the heart with some clinical relevance included, creating a resource that is easy to use and not cluttered with irrelevant information.

**Take home message:** This project has created a valuable interactive e-resource that incorporates advanced 3D technology for students to learn and revise the anatomy of the heart.

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**Integrating an anatomy MOOC into a medical anatomy curriculum**

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An anatomy Massive Open Online Course (MOOC) – Exploring anatomy: the human abdomen – was created at the University of Leeds, UK, and hosted on the FutureLearn platform. The course was scheduled for three weeks and contained a series of multiple entry-level resources that were created to attract, and enable, a wide range of learners. Each week covered two areas of abdominal anatomy and finished with a clinical scenario to link the basic anatomy to modern medical practice. The course aimed to attract three groups of learners, including: (1) prospectus medical, biomedical and allied healthcare students; (2) current medical undergraduate students; and (3) postgraduate...
trainees. Learning objectives, discussion topics, self-assessment questions and live question and answer sessions were delivered within each week and supported the learners in monitoring their own progress and engaging directly with the lead educator. This short communication will provide a detailed review of the development and delivery of the MOOC and focus on the learner feedback from the first and second runs of the course. This will include the sex, age distribution, employment status, level of education and location of learners. First-hand experience from the course’s lead educator will highlight the workload and time commitments in developing the resources and delivering the course live over the three weeks. Moreover, ideas on how MOOCs can be integrated into medical anatomy curricula to compliment the existing on-campus lecture, small group and practical teaching will be discussed.

1430-1445 hrs
#C3.3 (27491)
The Anatomy of E-Learning Tools: Does software usability influence learning outcomes?

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Increasing class sizes and a reduction in laboratory hours have increased the popularity of commercial anatomy e-learning tools. It is critical to understand how the functionality of such tools can influence the mental effort required during the learning process, also known as cognitive load. Using dual-task methodology, we examined two anatomical e-learning tools to determine the effect of their design on cognitive load during two joint learning exercises (elbow and knee). ADAM Interactive is a simplistic, 2-dimensional tool that presents like a textbook and utilizes a sliding tab to dissect image layers, while Netters has a more complex 3-dimensional usability that allows structures to be rotated. We hypothesized that longer reaction times on a Stroop visual observation task would indicate a higher cognitive load imposed by the anatomy software, which would interfere with learning. Undergraduate anatomy students from Western University, Canada (n=70) were assessed using a baseline anatomy knowledge test, Stroop task response times, and an anatomy post-test. Results showed that different software packages had no influence on reaction time or post-test outcomes (reaction times: 1518±356 and 1530±414; post-test scores: 7.71±2.01 and 7.77±2.01, for Netters and ADAM respectively, p>0.05). Post-test scores differed significantly based on which joint was studied (8.22±1.93 and 7.42±1.62 for elbow and knee respectively), however this was not impacted by the software itself. This suggests that a simple e-learning tool, such as ADAM, is as effective as more complicated tools, such as Netters. The results of this study could constructively inform software developers about future design considerations.

1445-1500 hrs
Discussion