COMPARATIVE ANATOMY E-BOOK WITH EMBEDDED QUIZZES: AN ACTIVE LEARNING STRATEGY

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INTRODUCTION

The subject "Anatomy: structure and movement" is a first year anatomy course compulsory for Biomedical Science students and elective for Bachelor of Science students. This subject includes modules on both human and comparative vertebrate musculoskeletal systems (MSS). Whereas there is an excellent textbook for human MSS we have not found an adequate textbook that targets the key learning outcomes for the comparative vertebrate MSS module. We believe that this is one of the primary reasons that students struggle with this module, much more so than the human module, as borne out in the assessment data. Our aim was to create a targeted learning resource for the students and to encourage more independent and active learning through this resource.

MATERIALS AND METHODS

A blended learning tool (comparative vertebrate MSS ebook) was developed using ibook author (Apple). The text has been written according to specific learning outcomes for the comparative vertebrate MSS module and peer reviewed by experienced anatomists. The movies and pictures were edited using Camtasia (Techsmith) and fireworks (Adobe) and were inserted in the ebook. Finally some interactive MCQs have been added at the end of each chapter of the ebook. In order to investigate the effect of the ebook on the student learning, the assessment data from two cohorts with a similar overall position score (tertiary entrance rank used in Queensland for selection into universities) respectively without ebook (Y1, n=93) and with ebook (Y2, n=73) was compared using a Mann-Whitney test ($p<0.05$).

RESULTS

This new teaching resource clearly aligns with the learning outcomes and includes some self-assessment tools. The cohorts Y1 and Y2 that have been selected for the study with a respective OP score mean of 9.54 (+-6.53) and 7.55 (+-4.3) were found to be not significantly different (p-value = 0.15). According to the assessment data for the comparative MSS module, the Y1 and Y2 quiz mean was 63.95% ±24.23 and 63.44% ±15.21; practical mean was 65.83% ±27.84 and 75.84% ±18.18; final exam mean was 59.89% ±26.83 and 67.60% ±16.93, respectively. Whereas the introduction of the ebook did not significantly change the marks along the assessments between Y1 and Y2, it may have improved the assessment outcomes in reducing the subject failure rate from 22% to 10%. Finally, according to the subject feedback report, the introduction of the ebook may have improved the motivation and engagement of students in the vertebrate module of this subject (Overall Subject satisfaction scores were 4.6 in Y1 and 4.8 in Y2 out of a maximum of 5).

DISCUSSION

The production of the comparative vertebrate MSS ebook with embedded quizzes has provided students with another type of learning resource, addressing the issue of variability in learning styles and promoting a more active learning. As the assessment outcomes have improved after the introduction of this interactive teaching resource, its concept should be generalised in the future to cover all of the comparative anatomy course.