Bodybuilding: an anatomical model project in a paramedic education program.

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Background

Anatomy is a subject where learning is not possible by studying books or notes alone. The best method to teach anatomy continues to be widely debated. Previous research conducted mainly on medical students supports the principle of model building exercises to improve anatomy knowledge retention (1). In addition, the inclusion of models and multimedia learning strategies has shown favourable results to date in other health professions students. (2-4) We sought to investigate students perceptions of the inclusion of these educational approaches in a flipped curriculum in the first year of a primary care paramedic (PCP) program.

Methods

First year PCP students were assigned to groups and each group was given an anatomical model to construct. These models were required to be anatomically correct, and useful as a teaching aid. Recycled materials were to be used where possible. Students perceptions on the utility of this model construction assignment as a means to learn anatomical structures, their perceptions of the inclusion of BioDigital Human® 3D modelling software, and self-directed learning resources such as videos and podcasts were then investigated through an optional survey at the end of the semester.

Models

Eight models were constructed by seven student groups: brain, skin cross-section, uterus, kidneys, heart (2), lungs and digestive system. Materials used during construction of the models included papier-mâché, cardboard, wood, metal, dried pasta, electrical cable, modelling clay, and…a whoopee cushion (digestive system model). One group [brain] included QR codes at various anatomical landmarks, which can be scanned by a barcode app to obtain further information (name of landmark, function etc.), while most groups included a legend to identified landmarks on their given model. Several of the models constructed can be seen in Figure 1.

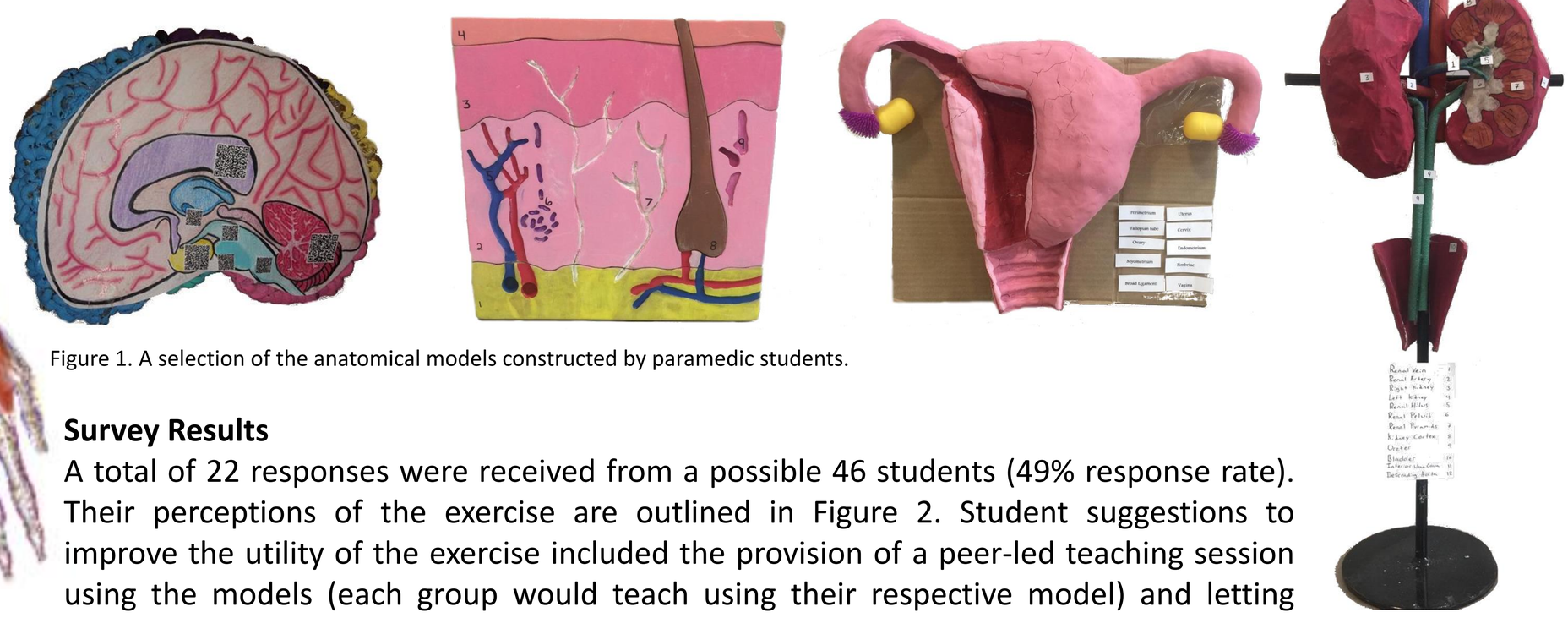

Figure 1. A selection of the anatomical models constructed by paramedic students.

Survey Results

A total of 22 responses were received from a possible 46 students (49% response rate). Their perceptions of the exercise are outlined in Figure 2. Student suggestions to improve the utility of the exercise included the provision of a peer-led teaching session using the models (each group would teach using their respective model) and letting students create the groups. The students use of digital resources is outlined in Figure 3.

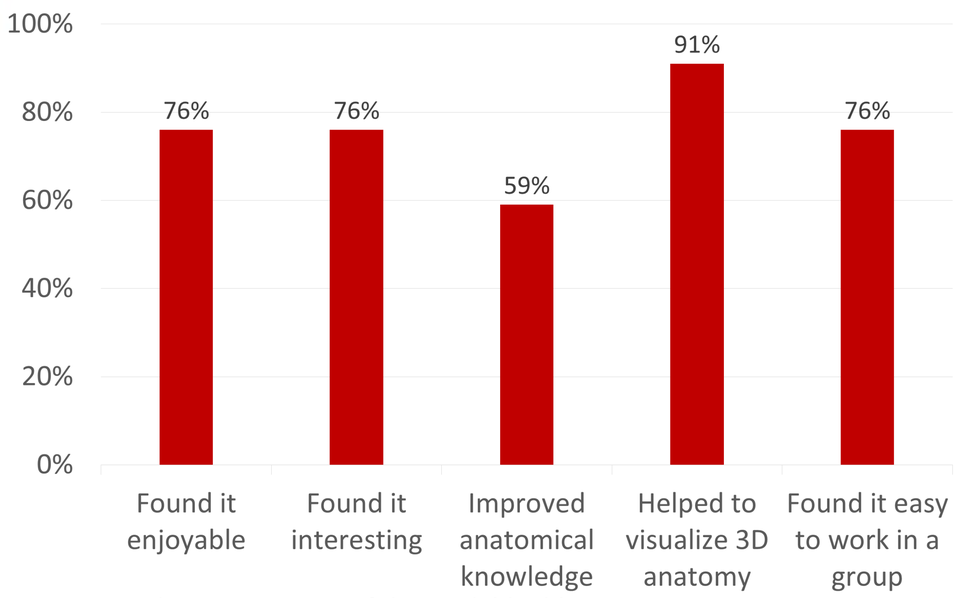

Figure 2. Student perceptions of the model-building exercise.

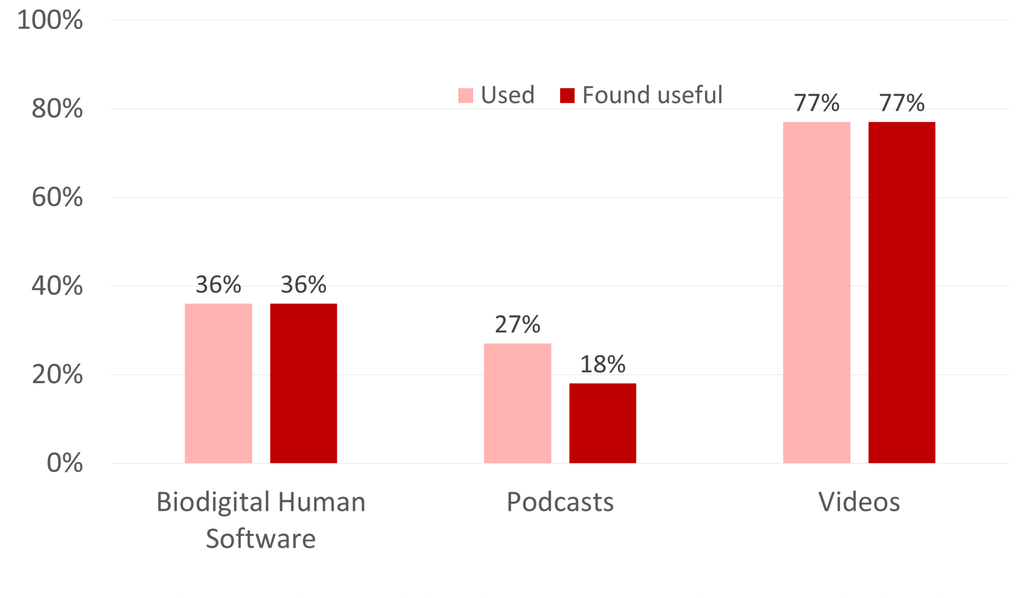

Figure 3. Student use of provided digital resources within the anatomy & physiology subject.

Discussion

This was a novel model-making exercise implemented in a second semester anatomy & physiology subject. Overall students appear to be receptive of the exercise, and the majority indicated they found it useful, with suggestions made to improve its utility in future. Interestingly, the use of digital resources was lower than we were expecting, in particular the use of the 3D software. Further research into the utility of both the model-making exercise and the 3D software is planned.

References

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