

What did you do?

Design and evaluation of innovative artistic anatomy learning methods to enhance learning, skill development and engagement

Who is involved?

Iain Keenan (Lecturer in Anatomy, School of Medical Education), Rachael Allen (Professional Visual Artist), undergraduate medical, biomedical science and postgraduate fine art student partners. This work was part-funded by our 2014 NICAP (Newcastle University Institute of Creative Arts Practice) Award.

How do you do it?

We initially designed our novel cyclical artistic learning process ORDER (Observe-reflect-do-edit-repeat), based on learning theory and recent evidence, in order to provide a robust framework for student use of artistic learning methods in anatomy. Students use ORDER to produce drawings and models from observed images and anatomical specimens during practical anatomy sessions and we have developed online interactive video tutorials for the use of ORDER during self-directed study.

We have also developed *Artatomy*, an exhibition of anatomical artwork produced by medical students that began with optional drawing sessions in the anatomy dissecting room and resulted in an opening event at the Venue at Newcastle University Student's Union in April 2015, followed by a durational show at the Centre for Life between June-September 2015.

Why do you do it?

Anatomical knowledge and the ability to interpret clinical images are important requirements for medical students and clinicians. We propose that through the use of ORDER, 2D drawings and 3D models, we can facilitate the reciprocal transitions in student understanding between 3D anatomical structures and 2D clinical images and therefore develop student knowledge of anatomy and skill development in clinical image interpretation.

We have found that many medical students have artistic backgrounds and interests and we have also identified a shortage of project opportunities for undergraduate students to actively conduct medical education research. We have therefore developed this work to not only increase the variety of available anatomy learning methods and to promote engagement with the topic, but also to simultaneously provide research opportunities in medical education for undergraduate project students.

Does it work?

A high proportion of medical students have engaged with artistic learning methods for academic purposes and Iain received a Teaching Excellence Award for Innovative Teaching (FMS) in 2015 nominated by his students, in part

due to his use of artistic learning methods in his delivery of MBBS anatomy.

We have conducted controlled mixed-method evaluations of our methods incorporating experimental pre-post knowledge testing, survey questionnaires and focus groups. We have seen improvements for a high proportion of students when using our ORDER drawing, modelling, and online interactive tutorial methods and we have received positive feedback from students regarding the impact of our methods on their understanding of anatomy, clinical image interpretation and their learning experience. Our research findings have been presented at international and national conferences and are currently in preparation for publication.

We have received positive responses from students, staff and the public regarding our *Artatomy* exhibitions and the project has been covered by both the Times Higher Education and Research Fortnight.

Your title	Interdimensional Travel: Reciprocal transitions in understanding between 3D anatomical structures and 2D clinical images
a. Coherent Curriculum themes	Student engagement eLearning
b. Students' Stage	Undergraduate
c. Students' academic unit	Stage 1, 2 MBBS
d. Learning technologies	3D modelling, interactive video tutorials
e. Type of interaction	Anatomy practicals, online tutorials
f. Main trigger for your practice	Enhancing knowledge, skill development, variety and engagement
g. Tags	3D modelling, interactive video tutorials, Student engagement, eLearning, ORDER, art, drawing
Your name	Iain Keenan
Your email address	iain.keenan@newcastle.ac.uk
Your Academic Unit	School of Medical Education
Your subject area	Anatomy