Virtual reality as a method of teaching anatomy

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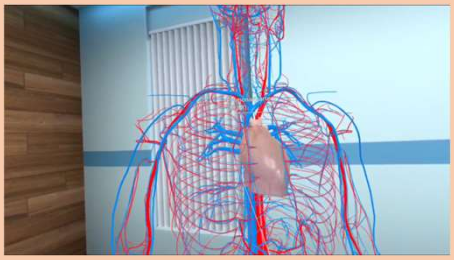
Introduction

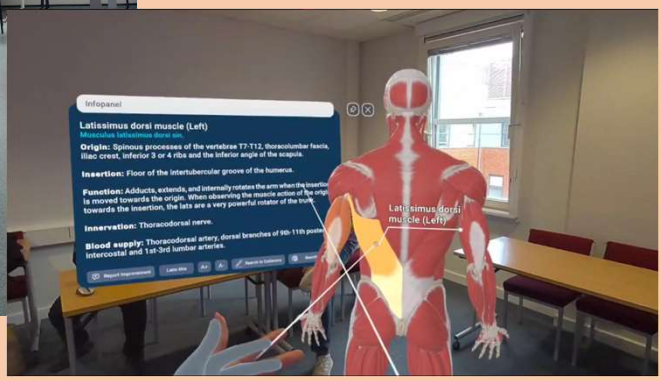
Anatomy education can be subject to numerous hurdles such as limited access to full-body dissection, a reliance on prosection and difficulty engaging all ranges of learner. Digital tools to address these issues have been underutilised. We piloted a virtual reality (VR) anatomy session using the Human Anatomy VR app on Meta Quest 3 headsets.

Methods

Four two-hour drop-in sessions were run, with attendees comprised of medical students, foundation doctors, radiologists and obstetrics and gynaecology doctors of differing grades. After spending supervised time within the app, they were given a feedback survey comprising of a series of questions answered on a 5-point Likert scale, questions regarding demographics and free-text boxes for qualitative feedback. A total of 10 responses were recorded across all the sessions.

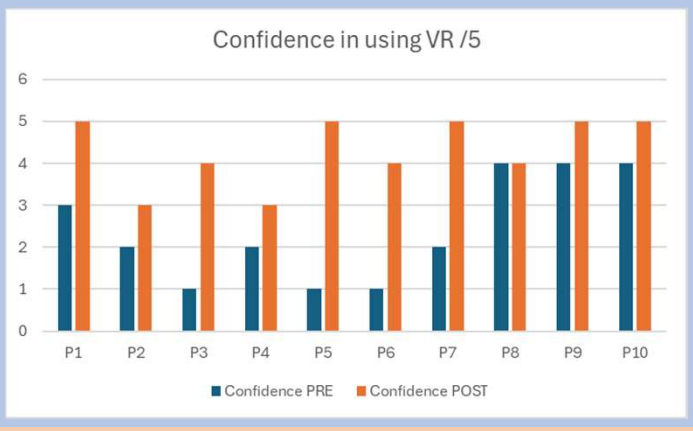


The sessions used 3 Meta Quest 3 VR headsets and the Human Anatomy VR application. The application allowed 3D models of anatomical structures to be placed into the room, along with information panels about the specific structure being highlighted by the user.



Results

Engagement and motivation were scored highly; attendees found the VR method of learning as more enjoyable and more effective, but some doctors did mention difficulty navigating the program. Scores were an average of 4.7/5 for engagement, 4.7/5 for enjoyment, 4.4/5 for realism and 3.5/5 for confidence using the program. All attendees would recommend their colleagues to use VR to learn anatomy, and the medical students reported they would want VR anatomy incorporated into their teaching.



Qualitative feedback highlighted:

- Immersion
- Visualising anatomy in full 3D
- Having a "personal" model to learn from.

"This is a great way of learning anatomy… every medical school needs to implement this into their curriculum."

"…should be on hand when encountering an anatomy issue e.g. in the radiology reporting room"

Discussion

- Modern digital tools have value in addressing barriers to education. Early findings suggest that **VR is a suitable alternative** to traditional anatomy education.
  - Effectiveness and ease of use decreased mildly as more senior doctors used the technology, likely as specialty doctors have had plenty of real-world experience
- Future iterations should:
  - incorporate regular sessions to assess long-term viability
  - structured assessment to objectively assess effectiveness and
  - measure uptake to ensure barriers are indeed being broken.

1.Hamilton, D., McKechnie, J., Edgerton, E. et al. Immersive virtual reality as a pedagogical tool in education: a systematic literature review of quantitative learning outcomes and experimental design. J. Comput. Educ. 8, 1–32 (2021). https://doi.org/10.1007/s40692-020-00169-2