

# REMODELLING SURGICAL EDUCATION:

## A GUIDE TO THE GAMIFICATION OF SURGICAL ANATOMY

### Authors

Luca Kovacs<sup>(1)</sup>, Jingjing Wang<sup>(1)</sup>, Beatrice Lofthouse<sup>(1)</sup>, Reagan Lee<sup>(1)</sup>, Katie Hughes<sup>(2)</sup>

### Affiliations

University of Edinburgh



### BACKGROUND

Knowledge of surgically relevant anatomy is key to safe practice and, for medical students, is a vital part of making the most of clinical placement. Sourcing information that concisely summarises salient anatomy in common surgical procedures is difficult, with available content usually aimed at specialty trainees. **Gamification is a popular area of development in medical education** but has yet to be utilised in this subject field.

### OBJECTIVE

To increase accessible, level-appropriate student resources for surgical anatomy, we designed a novel virtual peer-led series utilising game-style interactive cases called 'An operative approach to anatomy'.

### METHODS

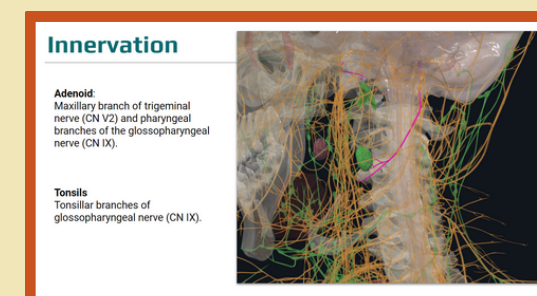
Eight sessions combining **lecture-style teaching** with **choose-your-own-adventure simulated cases**.

Cases took students through common operations from 'open to close', using annotated snapshots of open-access surgery videos.

Attendees utilised **group-led decision-making** to move the surgery forward by applying their learning to **interactive polls**.

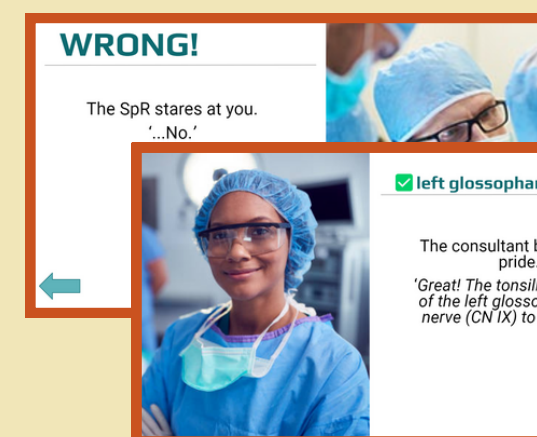
Simple but consistent graphics and recurring characters from the surgical team were created to enhance the game-like experience.

Post-webinar feedback forms contained 5-point Likert scales and free text questions to evaluate the experience.



Teach knowledge

Consolidate knowledge with case scenarios



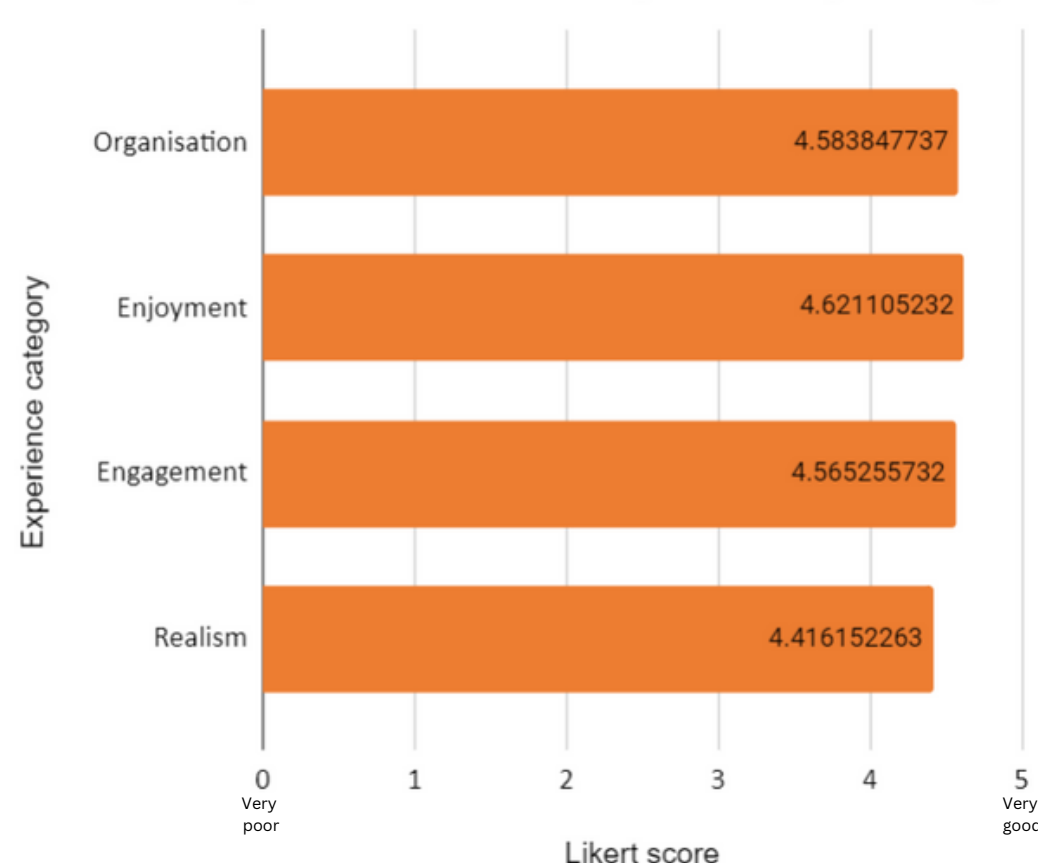
Review answers

### RESULTS

Over 200 students attended the series. 168 feedback responses were collected, with students rating the gamified format to be highly enjoyable (4.6/5), engaging (4.6/5), and realistic (4.4/5).

In addition to finding this style more favourable than traditional anatomy teaching. Qualitative feedback was positive, commenting on interactivity, immersion, and enjoyment of the story line.

Attendee experience of 'Gamified-style' anatomy teaching



Many questions during this tutorial that help us to understand our weaknesses.

I enjoyed the interactive nature of the tutorial and the use of MCQ's to stimulate thinking on the topic rather than simple lecturing.

Putting the anatomy in context is very helpful.

The format of the webinar was unusual and enjoyable! I was able to join and contribute it from Istanbul too!

Very important fine details which normally couldn't find in other resources

I really enjoyed the "real life" scenarios and surgeons asking questions as if you were there yourself!

The interactive and adventure-like aspect, it really keeps me engaged and motivates me to remember more.

### CONCLUSION

This series demonstrates that:

- Gamification of anatomy teaching is **simple, enjoyable and effective in the delivery of an anatomy curriculum**
- Online resources employing a 'play through' of interactive surgical cases **may help fill a resource-limited gap** in surgically relevant anatomy teaching.

Overall, this series provides a blueprint for educators interested in gamifying surgical anatomy education to benefit their students.

### Related literature

Sbayeh, Amgad et al. "Relevance of anatomy to medical education and clinical practice: perspectives of medical students, clinicians, and educators." *Perspectives on medical education* vol. 5, 6 (2016): 338-346. doi:10.1007/s40037-016-0310-4

Xu M, Luo Y et al. (2023) "Game-based learning in medical education." *Front. Public Health* 11:1113682. doi: 10.3389/fpubh.2023.1113682

Perumal, Dash et al. (2022). "Clinical anatomy through gamification: a learning journey." *The New Zealand medical journal*, 135(1548), 19-30.