

Challenges of remote teaching of clinical skills for medical students: A Case Study

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ABSTRACT

Medical student education amid the COVID-19 pandemic has proven complex. One solution is the teaching of otolaryngology clinical skills remotely using an online webinar. This case study summarizes an asynchronous, “Flipped Classroom” approach using Microsoft Teams: pre-reading, distribution of a mock marking scheme, and home participation. Ergonomic considerations included using a mobile webcam for close-ups and a swivel chair to demonstrate examinations. A hospital clinic room was used, with on-site IT equipment. Recording a session has many advantages as it yields an editable, reusable resource, but carries its own drawbacks. Through experience, we learnt to ‘close the loop’ with recording technologies, including obtaining a trial-run final session recording prior to the session proper. A co-tutor was found in our case to be invaluable, as they can troubleshoot technical problems, admit latecomers, and man discussion boards. Overall, emerging simulated pedagogies complemented current online technologies to surmount the current challenges commonly facing medical education.

KEYWORDS

Otolaryngology, Technology, Medical Education

Introduction

Simulation training and Observed Structured Clinical Examinations (OSCEs) are considered the gold standard to teach and assess clinical skills for the emerging generation of doctors (Burton, 2015). Hospital attachments in clinical years are often the context where these are first taught and rehearsed on real patients. Despite substantial changes to teaching on clinical placements during the COVID-19 pandemic, the General Medical Council (GMC) has named the annual graduation of medical students a top priority, maintaining clinical skills teaching. This has challenged medical schools and their affiliated clinical departments to innovate new techniques to deliver teaching. In a climate of ever advancing technology, medical education has turned to webinars, YouTube and even social media to engage our students. One service development observed an increase in teaching attendance amongst students both in theoretical and practical communication skills sessions on switching to purely online teaching in March. The rise in online resources is matched with a need for integration with face to face sessions, known as ‘blended learning’. Such interaction with tutors is necessary in providing supportive instruction to prevent errors in the use of clinical skills.

These challenges come to the fore in the teaching of clinical skills remotely using an online webinar. Such teaching tools need to be adaptable, reproducible and practical. Here we present a model recently piloted in a District General Hospital otolaryngology department.

Simulation

Various components typically form a simulated clinical skills session. Firstly, a live demonstration of the skill; next, a discussion of the rationale behind each step; and finally the turn of the students in

putting these skills in to practice, during which peer assessment and mock marking schemes can be used (Abay et al, 2017). Peyton's 'four-step approach' teaching methodology employs four sequential steps to direct small group teaching. In the fourth and final step, students put in to practice what they have learned, ideally after the teaching session with student peers (Nikendei et al, 2014) (Young et al, 2014). The hands-on experience normally obtained within the clinical environment is difficult to replicate in the non face-to-face setting, particularly when good habits and techniques are ideally ingrained from the outset. Real time summative (in form of a completed OSCE mark sheet) or formative feedback (focussed discussions on a student's pace and confidence), may be takeaways missed by students in online teaching.

Planning

'Flipped' methodologies, such as pre-reading, pre-recorded lectures and active learning activities are rated highly by today's student, as well as having the added advantage of current feasibility (Hew et al, 2018). An opportunity to engage the technologically fluent millennial, the flipped classroom has aided students in becoming more organised and professional in clinical skills, by encouraging them to take responsibility for their own learning (Hannafin et al, 2017) (Sanchez et al, 2020). A key benefit in a pre-recorded session such as this webinar, is that the material can be revisited in the lead up to final exams. Another consideration when utilising remote teaching is the impact of this on the students' timetables. Where students previously could 'shadow' for a day or attend for an evening course, sessions are restricted to the equivalent time for a lecture. Such compact sessions can afford students more time to reflect on what they have learned and revisit teaching material at their own pace. Polled learners have reported preferring 30 minutes- one hour sessions on a weekly basis as opposed to less frequent half days (Laloo et al, 2020) (Dyrbye et al, 2009). For our pilot, a learning needs assessment was performed by contacting two local medical schools faculties in addition to discussions both with recent alumni and the departmental medical team.

Session Ergonomics

Necessary equipment to teach remotely includes: a computer, webcam, microphone (ideally as part of a headset), good internet connection, conferencing and recording software. When using video, lighting and sound require pre-broadcast checks, and the space must be phone-free, interruption free, and small enough to fit into a recording screen. For this purpose we found a clinic room of sufficient size, which contained many of the necessary props and hardware. Our session had unique considerations such as correctly simulating otoscopy at home and according substitutes. Such specialty-specific considerations required technical flexibility. For instance, the webcam was removed and held up to the ear at one part of the demonstration in order that sufficient resolution could be achieved.

Information Technology

As a pillars of clinical governance, and there are many policies surrounding the use of Information Technology (IT). Microsoft Teams (Microsoft Corporation) is the platform which was used to deliver the webinar, as its encryption technologies are approved by the National Health Service. Hospital IT departments can offer help with questions on information protection, licensing and hardware availability. For students who use institutional computers rather than personal laptops, an alternative option is the use of broadcasting mediums with a mobile app which can be accessed within the hospital and university libraries.

Recording Considerations

The main advantages of recording a session are that it yields a resource which can be edited, circulated and revisited. However, recorded material also warrants careful considerations surrounding consent and access to the content. It is important that consent is sought from those who are being audio or video recorded and that it is clearly defined who has access to the content (General Medical Council 2011). A junior doctor performed the role of a ‘simulated patient.’ Through experience, we learned that it was important to ‘close the loop’ (Fig 1) with recording technologies. For example, only when logged in as a ‘dummy learner’ on a different device were some broadcasting glitches detected and when at the stage of playing back a mock recording it was a frustrating but timely moment to discover a *faux-pax* of screen sharing (Fig 2) or recording volume. Indeed the presence of a co-tutor was found in our case to be invaluable: they can talk over technical problems, admit latecomers, man discussion boards or advocate for students, be they unable to hear or unwilling to interrupt. Simultaneous use of synchronous and asynchronous activity designs allow for learners to ask questions in real time, or later as part of course follow up (Ellaway et al, 2008).

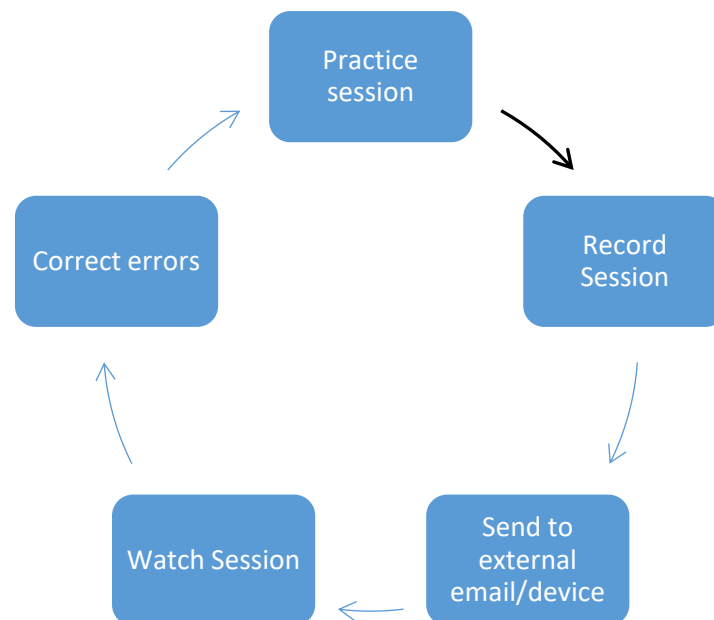
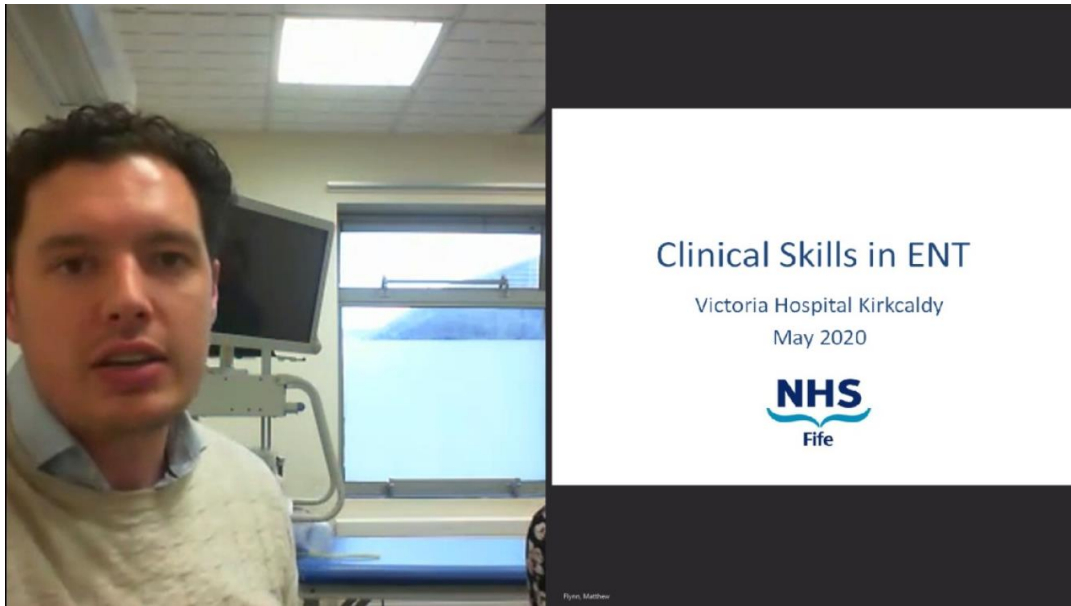


Figure 1: The Recording Loop

Figure 2: Screen sharing



Conclusion

Overall, new learning technologies can surmount current limitations on teaching. Amid an ocean of online teaching content, these developments require implantation within real clinical environments where students can have role models of real tutors and reference points of real clinical experiences (Morrison, 2015). Such focus will ensure high quality of teaching standards and prevent erosion of the student lecturer relationship, and provide models for future surgical training (Barry, 2015)

Key Steps when Teaching Clinical Skills Online

1. Decide on transmission software and that you and learners can both access
2. Obtain necessary permissions and ethical approval
3. Involve an assistant or co-tutor as a moderator
4. Gather all equipment and record a complete trial run
5. Send out joining links and pre-reading ahead of time

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