

video calls also provided structured points for social contact, which proved important for maintaining routine, supporting well-being and providing a sense of perspective and connection to the course.

Feedback about the group chat function was also positive, with students appreciating the connection with other members of their cohort. The unique context of social distancing measures means that pre-existing friendships and connections of students at home are also difficult to access and this generalised social withdrawal has contributed to increased anxiety and loneliness. Students reported that group chat with peers offers opportunities for light relief and respite from study with people who are in the same situation as themselves. We assume that students would not have used these functions if they had not perceived a benefit or had a preferable means of staying in touch with peers.

Limitations to the scheme exist for students in areas with poor Internet connectivity or bandwidth, and for those who do not have

access to the information technology resources required to support the application. We found that Internet connectivity was an issue at times, with some parties reporting call dropouts, but no students were excluded by a complete lack of Internet access. The benefits of using this application as a smartphone app include the use of 4G signal rather than wi-fi if necessary. The university also has hardship schemes open to students who cannot afford their own computer equipment, which increased the inclusivity of this initiative.


Usage of the platform has increased substantially during the isolation period and we predict that this will continue until the end of term as a result of the positive reception of the scheme. We intend to maintain this option for student contact after the pandemic ends.

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# Ophthalmic clinical skills teaching in the time of COVID-19: A crisis and opportunity

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## 1 | WHAT PROBLEMS WERE ADDRESSED?

Despite advances in artificial intelligence-based diagnostics, ophthalmic clinical skills remain an important acquisition during medical school. Simple ophthalmic examination techniques allow future non-ophthalmic physicians to make timely referrals to ophthalmologists for sight-threatening diseases. Currently, the coronavirus disease 2019 (COVID-19) pandemic poses a serious public health crisis worldwide and an immediate challenge to traditional methods of medical education. With the present threat of disease transmission, face to face small group tutorials are not feasible, especially in the context of ophthalmic clinical skills, which requires close contact between the examiner and the patient.

Prior to the outbreak, we introduced ophthalmic clinical skills to second-year pre-clinical undergraduate medical students in the form of face to face demonstrations of techniques by a clinical tutor. A recent published study reported that, video-based materials and written materials were synergistic in enhancing ophthalmic clinical skills and knowledge acquisition in an undergraduate medical programme.<sup>1</sup> The objective of our adaption was to introduce

video-based and written materials to precede and complement Zoom™ (Zoom Video Communications Inc., San Jose, CA, USA) platform-based small group tutorials. Our aim was to identify advantages and difficulties with this new approach as a necessary replacement for traditional face to face small group clinical demonstrations during the COVID-19 pandemic.

## 2 | WHAT WAS TRIED?

We taught ophthalmic clinical skills to second-year undergraduate medical students, including the visual acuity assessment with near Snellen chart, pupil examination, confrontation test for visual field, extraocular movement examination and direct ophthalmoscope examination. In order to replace face to face 2-hour group tutorials during the COVID-19 outbreak, we devised a three-pronged approach to provide an effective learning experience for our undergraduate medical students. First, for each examination technique, we included written information regarding: (a) technique; (b) physical signs demonstrated; (c) common

mistakes by medical students, and (d) clinical relevance. Second, we recorded a video of a clinical teacher demonstrating the techniques on a surrogate patient. We uploaded both written material and videos on the e-learning platform of our medical school. Third, after going through the online materials, the students were split into small groups of 30 students for a single 60-minute tutorial with a clinical teacher on the Zoom cloud-based video conference platform. During the tutorial, the teacher went through each key ophthalmic clinical skill and highlighted important points, pitfalls and clinical knowledge. The last 10 minutes were reserved for questions from students. Using the private message function, students were able to send live questions as they maintained anonymity. Assessment was conducted at the end of the block in the form of objective structured clinical examination (OSCE) stations.

### 3 | WHAT LESSONS WERE LEARNED?

Our three-pronged approach was designed to both enhance knowledge acquisition and increase competency attainment in ophthalmic clinical skills. By introducing an element of self-directed learning (SDL) to precede our tutorials, the students took a proactive role in the learning experience. The tutorials themselves further served as an opportunity for critical reinforcement of self-directed learning. We noted that the students were able to better follow the online clinical demonstration with the help of the pre-tutorial materials.

One major revelation resulting from the introduction of Zoom tutorials was the ability for students to send live questions to the clinical tutor anonymously via private message. It allowed the tutor to read out loud and address questions for the entire group's benefit without the student

having to reveal his or her identity. This is a unique advantage in Asian medical schools, where due to cultural upbringings, students are usually uncomfortable asking questions in public during tutorials and lectures fearing embarrassment. They prefer instead to email teachers later to address their questions. Furthermore, another significant advantage of our adaptation was that recordings of the Zoom tutorials were made available to students to re-watch later at their own pace. However, one important limitation we encountered in our tutorials was the difficulty in effectively teaching direct ophthalmoscopy online. To learn this technique, students first needed available simulated patients to practice on. Furthermore, much of the difficulty in this particular skill is in understanding the correct angle of approach and the necessary adjustments to be made when examining the fundus. Face to face tutorials are still a more effective means of teaching for this particular skill. In conclusion, the COVID-19 outbreak is an opportunity for a re-evaluation of our teaching methods. The lessons learned from the use of video and online-based teaching provide feedback to clinical teachers on how undergraduate medical students acquire knowledge and express themselves best.

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# Learning at home during COVID-19: A multi-institutional virtual learning collaboration

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### 1 | WHAT PROBLEMS WERE ADDRESSED?

Given the cancellation of all elective procedures with the coronavirus disease 2019 (COVID-19) crisis, many anaesthesiology learners are

assigned to stay at home, limiting opportunities to learn in the clinical environment. We report on a novel use of existing resources to structure a daily nationwide learning experience, using Kotter's change management model (KCMM) to drive the process: (a) create urgency; (b) form a guiding coalition; (c) create a vision; (d) communicate the vision; (e) remove obstacles; (f) create short-term wins; (g) build on the change, and (h) institutionalise