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Innovative strategies to maintain nursing students' academic continuity during COVID 19 pandemic

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Keywords

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Abstract

In tertiary education, occasional cancellation of classes is not uncommon and often of short duration (Day, 2015). Whilst inconvenient, the impact on students and organisations is often minimal. In more recent years, cancellation of classes and in some cases, short-term closure of educational institutions has become more common in connection with a range of natural disasters such as hurricanes, floods, earthquakes, and pandemics (Day, 2015). Online teaching is reported as an appropriate and effective option during short periods of disruption, yet little is reported on the impact on course integrity and importantly, student academic continuity when courses designed to be taught face-to-face are moved online for the duration of the course. Although a relatively new concept in higher education and minimally reported in the literature, the concept of academic continuity is increasingly becoming a focus for educational institutions (Day, 2015; Di Pietro, 2018; Regehr et al., 2017). The COVID-19 pandemic that developed through 2020 required urgent responses from higher education providers around the world to comply with government directives and resulted in a rapid and comprehensive move to online teaching (Crawford et al., 2020). This paper provides a critical reflection on the experiences of three academic staff in a Bachelor of Nursing programme Clinical Health Assessment skills course delivered in Singapore, and innovative teaching strategies implemented in the online environment to successfully maintain academic continuity as the COVID-19 pandemic unfolded in 2020.

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Introduction

The World Health Organization (WHO), (2019), in their Global Influenza Strategy 2019-2030 recommended school closures / class cancellations and social distancing as strategies for prevention and control during seasonal epidemics and pandemics. Educational institution administrators and academics are becoming increasingly aware of the need to provide appropriate alternate learning environments for students when face-to-face attendance is no longer possible (Day, 2015). Academic continuity is a process of maintaining teaching, despite a disruptive event, to ensure students have an opportunity to complete courses (Bates, 2013; Day, 2015; Regehr et al., 2017). Dunlap (2016) describes academic continuity as a series of steps allowing an organisation, such as a school, to regain operational capability quickly, following an incident of some sort, across a wide spectrum of situations. While there is ample literature related to natural disasters, including pandemics, there is limited literature on the impact on professional education programmes such as nursing, and little reported on strategies for ensuring academic continuity, student achievement and progression during such events (Di Pietro, 2018; Richardson et al., 2015). The COVID-19 pandemic and biosecurity measures resulted in many significant challenges to organisations of every type globally. Universities and colleges are committed to the education of their students and therefore operations affected by COVID-19 pandemic have been of primary concern (Regehr & McCahan, 2020). With the shifting of all face-to-face teaching to an online mode in 2020, critical reflections of strategies used to maintain academic continuity for nursing students may provide useful insights for other academics.

Critical reflection

Reflective practice is the purposeful questioning and self-examination of one's own performance and actions, underlying beliefs, and attitudes, with the goal of increasing self-awareness and improving performance (Sharp, 2016). Critical reflection takes reflection deeper and involves critically reviewing practice including reviewing and scrutinising one's assumptions, ideas, concepts, and beliefs (Bass et al., 2017). Critical reflection is widely recognised in many professions and is considered an essential process for professional development and a key part of professional accountability (Bass et al, 2017; Middleton, 2017). Multiple frameworks for reflection are available dating from the early works of Dewey (1916) and the later work of Schön, (1987). The Gibbs (1988) reflective cycle, commonly used, and familiar in nursing provided a basic framework for initial individual reflections on our lived experiences. In this situation we, the two academics were fortunate to have a well-established and trusting professional relationship and were therefore ideally positioned to use critical dialogue – critical conversations designed to reflect, review actions, and develop creative solutions and learning (Middleton, 2017).

Background

A review of nursing academic programmes in Singapore reveals several pathways (Goh et al., 2019). A common pathway is for students to complete a diploma-level nursing qualification at a local college, after which they are eligible for registration as a Registered Nurse (RN) with the Singapore Nursing Board (SNB). To provide opportunity for further qualifications and promotion, and upskilling of the nursing workforce overall, several offshore universities offer a 2-year post-registration baccalaureate nursing (BN) transition programme for RNs in Singapore (Goh et al., 2019; SNB, 2020). One such programme has been provided by a large multi-campus university in South East Queensland in partnership with a higher education institution in Singapore. The programme of study consists of eight courses run over a two-year period. The structure of the programme allows for rolling enrolment with a maximum of 400 students in the programme at any one time (100 per cohort). The programme is provided in an intensive face-to-face teaching format, with two blocks of teaching for each of two courses each semester, hosted by the local partner, and ongoing student support provided online. A Programme Director (PD), who resides in Singapore oversees the programme and delivers some courses while the nursing specific courses are delivered by university staff from Australia on a fly in – fly out basis.

Students coming into this BN programme are already RNs and working full-time in healthcare. To accommodate students' work rosters, lectures are held over two consecutive weekends in each of the two teaching blocks per course. With student numbers in the lecture room capped at 100 students for quality reasons and safety regulations, the student cohort is divided into 4 lecture groups and each of the two 4-hour lectures is repeated a further three times after initial delivery, providing a total of eight hours of lecture content each teaching block for each student. While representing a heightened teaching burden for the academic staff, this arrangement has provided a somewhat smaller class size to facilitate a more positive student learning experience. Research reports that class size does impact on the student's learning experience with more positive reviews reported for smaller class sizes (Harfitt & Tsui, 2015).

The content and resources for tutorials is provided by the university academic staff and then delivered by appropriately qualified, experienced local tutors with supervision and support from the relevant academic staff. For face-to-face tutorials, several small groups are run simultaneously with student numbers capped at 25 students per room to comply with local fire safety regulations within the host college and provide a small group learning experience for students. Tutorials are repeated over consecutive evenings in the week between lectures, to facilitate the large numbers in the cohort. An outline of a typical teaching schedule is provided in Table 1.

In addition to the usual lectures and tutorials, the Clinical Health Assessment (CHA) skills course focussed on in this paper included a clinical skill learning and assessment component which was scheduled in the second teaching block through clinical laboratories in place of tutorials,

followed by an Objective Structured Clinical Examination (OSCE) as an assessment item. In order to provide supportive, student-focused learning opportunities throughout the course and the OSCE assessment, two academics, one of whom was the lead academic / convenor for the course, share the teaching workload.

Table 1: Example of teaching schedule

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Week 1 of Teaching intensive						Lecture 1 (Group 1) (4 hrs) Lecture 1 (Group 2)	Lecture 1 (Group 3) (4 hrs) Lecture 1 (Group 4)
Week 2 of Teaching intensive	Tutorial x 5 simultaneous classes	Tutorial 1 X 5 simultaneous classes	Tutorial X 6 simultaneous classes	No class	No class	Lecture 2 (Group 1) (4 hrs) Lecture 2 (Group 2) (4 hrs)	Lecture 2 (Group 3) (4 hrs) Lecture 2 (Group 4) (4 hrs)

Initial challenges and innovative strategies

In early February 2020 we, the two Australian academics flew to Singapore to begin the first teaching block of the CHA skills course for semester 1 of the academic year, the COVID-19 pandemic was just beginning to impact Singapore, but no restrictions had been put in place at the time. However, shortly after arrival, we were informed that the situation was rapidly changing, and some students would not be able to attend class as they were in quarantine at home or being called to work. Onshore in Australia, lectures are recorded through "lecture capture" technology, enabling students who are not able to attend class to view the recordings. Such automated technology was not available in the teaching space in Singapore.

Literature recommends that, in times of crisis, universities and faculty need to act quickly to implement alternative teaching and learning strategies to maintain academic continuity (Rasiah et al., 2020). Regehr and McCahan (2020) highlight stages for managing academic continuity of: pre-planning; approaching crisis; immediate crisis; prolonged uncertainty; planning for recovery and adaptation. As the pandemic situation arose and quickly developed, this reflection highlights the activities undertaken from the immediate crisis and adaptation stages, through to planning for recovery during the first trimester, 2020.

Challenge 1: Managing lectures

With the unfolding COVID-19 pandemic restricting some students' attendance, the main concern from an academic and student equity perspective was that students may be disadvantaged by not being able to attend the face-to-face lectures. Arrangements were quickly made to provide simultaneous face-to-face teaching, live-streaming with a chat facility, and recording of each lecture. Cognisant of minimising students' stress wherever possible, it was decided to use the 'Blackboard Collaborate Ultra' platform, a web conferencing or synchronous collaborative browser-based online teaching tool (Hill, 2019). This platform is already embedded in the university virtual learning environment (VLE) course site and most students were familiar with it. The

benefits of using the platform were that it not only allowed for non-attending students to join the lecture in real time, but also the ability to create recordings which provided opportunity for all students to replay the lecture, and thus would support content revision. A camera and microphone were acquired from the host college, and lectures proceeded in person, and simultaneously in the virtual classroom. The only downside to the strategy was that plans for the two academic staff to share the face-to-face teaching load for this particular course were abandoned, as one was now needed to manage the virtual classroom and respond to students' questions, while the second academic staff member delivered the lecture in the physical room. Having one instructor lead the class while a second instructor manages the online chat was also reported in recent months by staff at the Singapore University of Technology and Design (SUTD) (Rai, 2020). In our case, the teaching strategy was considered effective as feedback from students in person and online, was positive.

Challenge 2: Providing tutorials

After the initial weekend of lectures, shortly prior to the first evening of tutorials, we were informed that all face-to-face classes had been cancelled and moved online as ordered by the local authorities due to a worsening COVID-19 crisis. With little time to develop alternate strategies, it was decided to again use the virtual classroom concept. All students were urgently notified not to come to class in person, and to sign on to the virtual tutorial 'room' on the course website. Within this room, the content was delivered by the lead academic staff member for the course, with the second academic and local tutors also in the 'room' as support. However, what would normally have been five to six different small groups in different physical classrooms, each with a local tutor, had now become one large virtual class. On reflection after the class, it was recognised that, although there was active engagement from many students through the chat facility, having the one large, combined tutorial group may have inhibited engagement in the tutorial activities for some students and was not capitalising on the experience and knowledge of the local tutors. It was considered important to maintain the normal class structure for students (Rai, 2020) and therefore it was necessary to find a way to deliver the smaller tutorial group experience in the virtual platform. In discussion with the PD, advice and support was immediately sought from the technical and learning support advisors at the university in Australia. A meeting was urgently convened within the virtual platform allowing experimentation in real time in ways to create and manage a main course room and multiple smaller rooms that could run simultaneously. It was discovered that this was indeed possible and by manipulating the volume controls in each room, audio interference between rooms could be prevented.

Virtual tutorial rooms were quickly set up within the course site, with each room labelled with the assigned student group and tutor name allocated to each particular tutorial group. Students were again contacted, and tutors were briefed prior to the evening classes, including the assurance that the academic staff would be available online to support them. For that evening and the following evening classes, students joined their assigned tutorial group, with their local tutor

in the virtual world. Each class was recorded for students who were unable to attend, and for revision purposes for all students. We, the academics, and the PD were able to drop in and out of each room to provide support where needed as was the case one evening, when it was necessary to take over one class when a tutor experienced a problem with their internet connection. Immediate communications between academic staff and tutors were managed via a messaging app. One advantage of the virtual platform was that student numbers per class no longer needed to be limited by physical space and regulations, thus students could swap classes to accommodate changing work rosters more easily. However, the quality and stability of internet connections was noted as an important consideration, especially for the teaching team, to minimise disruptions. Later, following advice from IT support staff, guidance was developed for students (and teachers) in relation to minimising devices accessing Wi-Fi, closing nonimportant applications and in ensuring caches and browsers were cleared.

From observations within each of the virtual tutorial rooms, there was active engagement of students using the chat facility and microphone, including responses to tutors' questions and discussion activities. It was clear that students and tutors had adapted to the virtual platform and were actively engaged in the content for the class. Comments and immediate feedback from the students about their online tutorial experience each evening were very positive.

As the COVID-19 health crisis continued to worsen and new restrictions were put in place almost daily, including potential closure of borders and restrictions on travel, flights back to Australia for the two Australian academics were quickly rescheduled, in time for the second weekend of lectures to be delivered from the safety of office space on university campuses.

Strategic planning for block two teaching

Biosecurity and travel restrictions implemented by many countries including Australia and Singapore meant the continuation of online teaching (Commonwealth of Australia, 2020b; European Centre for Disease Prevention and Control, 2020). In addition to lectures and tutorials, the CHA skills course included clinical laboratories and OSCEs scheduled to take place in the latter half of the second teaching block. While we had already demonstrated that lectures and tutorials could be presented in the online platform relatively easily, new strategies were needed for clinical skills demonstration and student practice. In the somewhat naïve hope that the restrictions on travel and face-to-face teaching may be lifted within a few months, the second teaching block was split into two smaller blocks: Lectures and the first week of clinical labs could be delivered as scheduled in late March, with the second week of clinical labs and the OSCEs re-scheduled for June, close to the end of semester. This would still allow time for finalisation of grades and the final semester cohort to complete the course and be eligible to graduate.

Challenge 3: Clinical skills laboratories

In order to demonstrate the physical examination / assessment skills, we filmed an initial exemplar video with the help of a video technician and submitted for approval from the nursing executive of the university in Australia, and Singapore Nursing Board. With this method accepted as an appropriate teaching method, and with the addition of two medical actors we filmed several short videos, each demonstrating assessment of a body system. There is evidence that the use of videos in instruction in physical assessment can reduce stress associated with OSCEs and can improve outcomes (Bani-Issa et al., 2019). In this case, however videos were the primary means of demonstrating the assessment skills. Clinical laboratories were set up in the virtual platform in the same way the tutorials had been conducted, and videos and content worksheets were loaded for each tutor in their rooms. There were some technical challenges initially, with poor audio and video playback in individual rooms, thought to be related to varying internet speeds and other software incompatibilities on individual tutor computers. Playback issues were resolved by the lead academic showing the videos in succession in a main course room, then students moved into their group rooms with their tutors to discuss the skills and complete the worksheets. Following completion of classes, links to the videos were posted on the course site to allow all students access for further viewing and revision purposes.

Challenge 4: Exam and OSCE assessments

By March 2020, WHO had classified the worsening COVID-19 health crisis as a global pandemic (WHO, 2020a). Ongoing biosecurity measures and travel restrictions introduced by governments and local authorities meant that all teaching and classes were to remain online for the foreseeable future. Thus, a new plan was urgently needed to provide effective teaching of the final clinical laboratories and enable students to complete the OSCE assessments and end of semester multiple choice questions (MCQ) exam. The primary focus was on maintaining academic continuity - to ensure students were given an opportunity to meet the learning outcomes and complete the course while also preserving the integrity of the course content and assessments. There is evidence in the literature that online assessment can be a viable alternative to invigilated assessment in times of widescale crises (Regher et al., 2017).

Literature reports that academic integrity can be preserved in the online exam environment (Kolski & Weible, 2019). Various platforms are available for managing MCQ exams online, and several of these platforms were explored for this course. However, mindful of student workplace stress due to the pandemic, and the added stress of study, it was agreed that introducing an unfamiliar platform to students would potentially add further stress and possibly impact on opportunity for student success. In discussion with the relevant School of Nursing executive and technical staff, it was agreed to present the exam using the familiar Blackboard platform on the course site. Detailed instructions for the exam were provided to students, and several short practice quizzes set up within the platform, allowing

automatic marking to assist exam preparation. Permission for this exam process was also sought and granted by the Singapore Nursing Board (SNB).

For the objective structured clinical examinations (OSCEs), the directive from both the Singapore Nursing Board and the School of Nursing executive in Australia were that the virtual OSCEs needed to be performed and assessed in real time in preference to students' video-recording a demonstration of clinical assessment skills in a given scenario and submitting the video for marking. Again, it was important to consider the potential for increasing stress for students if an unfamiliar technology was introduced. Despite our searches and enquiries, no useful information on how to conduct OSCEs online was found. With a little experimentation, exemplar OSCEs were filmed using the Collaborate Ultra virtual web-based platform used for tutorials. The exemplar video covered the full process of an OSCE being performed including academic marker screen view, student identification check, and checking the student's environment to ensure no additional notes were being used and thus ensuring assessment integrity. The exemplar videos were then submitted as evidence to the SNB and approved, that completing an OSCE online was indeed possible and with minor adjustments to the process, the integrity of the assessment could be preserved.

Summary of assessment

The MCQ exam was successfully completed by the entire cohort, with technical assistance being made available if needed. A small number of students reported that they experienced internet dropouts but were able to return to the exam and complete within the allowed time without difficulty.

For the OSCEs, students were able to electronically self-enrol to an available timeslot. An OSCE waiting room was set up on the course site, while on a separate site within the university website, virtual rooms were set up for each examiner for each day. On the day of assessment, students presented to the virtual OSCE waiting room 30 minutes prior to their scheduled OSCE time where they were greeted by one of the academic staff and given opportunity to test their microphone and camera while waiting for an examiner. At the student's designated time, when an examiner was ready, students were provided with a link to a selected private virtual examination room to meet their examiner and complete their OSCE, thus ensuring privacy and confidentiality of each student's OSCE exam. Initially students were to have a colleague or friend to act as their patient, but increased biosecurity measures in Singapore at the time meant that most students did not have access to another adult person to be their 'patient'.

To ensure equity, it was decided to use a virtual patient in the form of images taken from the various skills videos that had been produced for the skills teaching. Images included anterior and posterior chest and abdomen views, and for the sake of modesty and cultural sensitivity, only images of the male medical actor were used. Students were able to draw and write on the interactive screen within Collaborate

virtual room to indicate various landmarks or assessment points while discussing their observations, assessment techniques and expected assessment findings with their examiner. At the completion of each student's OSCE, the examiner uploaded the marking sheet electronically to the academic staff. Again, the use of a messaging app was effective, to communicate between the academic staff in the waiting room and the examiners, to notify of problems and notify readiness for next student. Academic staff were also able to join an examination room to observe for moderation purposes. An algorithm (Diagram) was developed to document the process of virtual OSCEs (see Appendix).

A small number of students experienced technical difficulties with audio or camera operation on their devices, but these were able to be resolved and all students completed their OSCEs. With all assessment items completed, students' final results across the course were reviewed and found to be comparable with previous iterations of the course where teaching and OSCEs had been completed face-to-face. There was one issue where a student was considered to have been using a third party to provide answers during the OSCE. As this was all recorded it was investigated and the plagiarism policy was followed, demonstrating that academic integrity could also be maintained in this process.

Discussion and reflections

In many natural disasters such as hurricanes, earthquakes and floods, there is usually a defined area affected, and the period of initial disruption is of relatively short duration, followed by recovery (Day, 2015). Although there is evidence in the literature that natural disasters have a negative impact on students' academic achievement, educational institutions can, where feasible, move programs to another location and support students to resume their studies (Di Pietro, 2018). The COVID-19 global pandemic presented challenges not previously experienced on such a scale or period of time. In the weeks following the recognition of the pandemic, Governments imposed increasingly severe restrictions in an attempt to arrest the spread including the cancellation of all non-essential travel, social gatherings and sporting events, and closure of education institutions and many business operations (Commonwealth of Australia, 2020a). With restrictions put in place for several months, and in April 2020, the Director General of WHO warning there was 'still a long way to go', the personal, social, psychological, mental, and economic consequences are expected to extend beyond the period of the global pandemic (WHO, 2020b). While the future remains unclear, what was clear from the beginning was that maintaining academic continuity and student progression would require innovative strategies, and the capacity to adapt those strategies as the situation evolved.

A strong theme within the limited literature relates to the support provided by individual staff members, and by the educational institutions to assist student learning. Such support includes flexibility in delivery, ongoing communication, personal support and recognition of the impact and disruption of the events on an individual's ability to cope (Richardson et al., 2015). In critically reflecting on our actions and strategies to support student learning, as

the pandemic unfolded and continued, three main themes are recognised:

- **Commitment to academic continuity and educational mission:** From the beginning we were committed to providing opportunity and support for students to continue their learning and complete the course. As each challenge arose, we remained positive, student-centred, and solution-focused, finding creative ways to adapt teaching processes, including creation of additional resources such as videos, and reconfiguring assessments to function in an online format. Each change was scrutinised by the academic staff of the course, and PD, with invited input from senior academics, the Learning and Teaching advisors within the university, and executive of the Singapore Nursing Board who accredit the program, to ensure academic integrity of the course and assessment items. As part of that process, clear communication and the use of familiar platforms was considered essential to minimise student stress.
- **Timely and inclusive communication:** Throughout the evolving situation, students were kept informed of any and all changes as they were made. Communication via SMS messaging for urgent matters, additional regular online 'drop in' sessions, as well as announcements and discussion forums on the course site, and email proved effective. Detailed written instructions for the online exam and OSCEs were provided and extra technical support made available to support students in case of technical issues.
- **Collegial support:** A key factor in successful adaptation and delivery of this course has been the committed collegial relationship between us, the two nursing academic staff. From the beginning, we worked well together capitalising on our experience as nurses and strengths as educators, ably assisted and supported by the PD in Singapore and the local tutors. Despite spending most of the semester separated by different geographical locations and time zones, and government restrictions in the pandemic, we continued to communicate frequently and work collaboratively to support student learning and course completion. The collaborative and collegial culture established in the course extended to students, with students regularly sharing messages and comments expressing concern and well wishes for the welfare of fellow students and the teaching staff. An additional factor in successful adaption and completion of this course has been the positive collaborative relationship between the faculty and support staff of university in Australia and the host college in Singapore. Interpersonal relations between faculty and educational technical support are considered of significant importance in the successful delivery of online courses (Day, 2015).

Following our experiences, as part of our reflections, we again searched the literature. While there is some research on the impact of natural disasters such as earthquakes, on education and strategies to maintain academic continuity (Day, 2015; Di Pietro, 2018; Richardson et al., 2015), little is reported on maintaining academic continuity over a longer period of disruption such as that experienced during the COVID-19 pandemic. However, literature does include several recommendations and principles to plan for and maintain academic continuity during periods of disruption. In 2009, in planning to mitigate the impact of the expected H1N1 epidemic, the University of Toronto developed a policy of academic continuity with several principles. These included: an undertaking that the university would provide students with a reasonable opportunity to continue learning and complete academic requirements; the importance of the maintaining integrity of academic courses; fairness to students; and timely information (Regehr et al., 2017). Strategies also included modifying courses and moving courses to an online platform. Recommendations for academic continuity made following the 2010 New Zealand earthquake included ensuring effective and timely communication and sharing of information, providing flexibility and responsiveness of course delivery, and consideration of the additional stresses and workplace commitments of students (Richardson et al., 2015). More recently, effective strategies reported by the Singapore University of Technology and Design during the COVID-19 pandemic include having structure, maintaining prompt communication, the use of videos and online classes, and modified assessment (Rai, 2020).

When reflecting on the different strategies we developed and implemented 'on the run' in response to an unfolding and ever changing situation, it is heartening to recognise a correlation with the recommendations in the literature. Without prior knowledge of such recommendations, or a prior disaster plan, we had implemented appropriate processes and adaptations to support students and enable academic continuity in an uncertain world. Literature reports that successful adoption of online technologies requires planning, time and knowledge and training in such technologies, and a willingness by all parties including students to adapt (Day, 2015). In this course, despite little time to plan for change, and students and teaching staff having limited experience with the technologies, there was an overwhelming willingness from all parties to adapt, learn new skills and technologies, and engage in the online format.

At the end of the course, anecdotal feedback and written evaluations from the students were positive with students commenting that they felt well supported. In a Student Evaluation of Course (SEC) survey, 81% reported that they were satisfied or very satisfied with the way the course was delivered and that it engaged them in learning. An in-house survey conducted by the host higher education institution on student satisfaction with the online learning format and shared in personal communication, provided strongly positive results. With a response rate of 43%, (n=205), 93% of respondents were satisfied with the online learning experience, and of those, 47% reported they were very satisfied. Although all respondents reported they would

prefer at least 40% of content to be delivered face-to-face, 91% reported that the online experience had improved over time throughout the semester. These results were heartening and validated that the efforts and strategies we developed 'on the run' were effective in providing students, not only with opportunity to complete the course, but also provided a supportive, engaging learning experience.

Conclusion

Online course delivery and assessment is reported as an appropriate and effective option during short periods of disruption. For this Clinical Health Assessment skills course, face-to-face teaching and assessment will remain the most preferred and appropriate format. However, in this course we have demonstrated that with innovative strategies, and supportive staff, online course delivery and assessment can be a viable option to maintain academic integrity and continuity for longer periods of disruption. Strategies that were developed, learned, and used in this course were effective in providing a supportive learning environment and maintaining academic continuity for students during a global pandemic.

Recommendations

Recommendations reported in recent literature (Rasiah et al., 2020), and congruent with our experience include the urgency for Higher Education Institutions (HEI) to establish Academic Continuity plans as part of their risk management processes, and appropriate education and training in the effective use of technologies and online platforms is provided for academics and students.

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Appendix

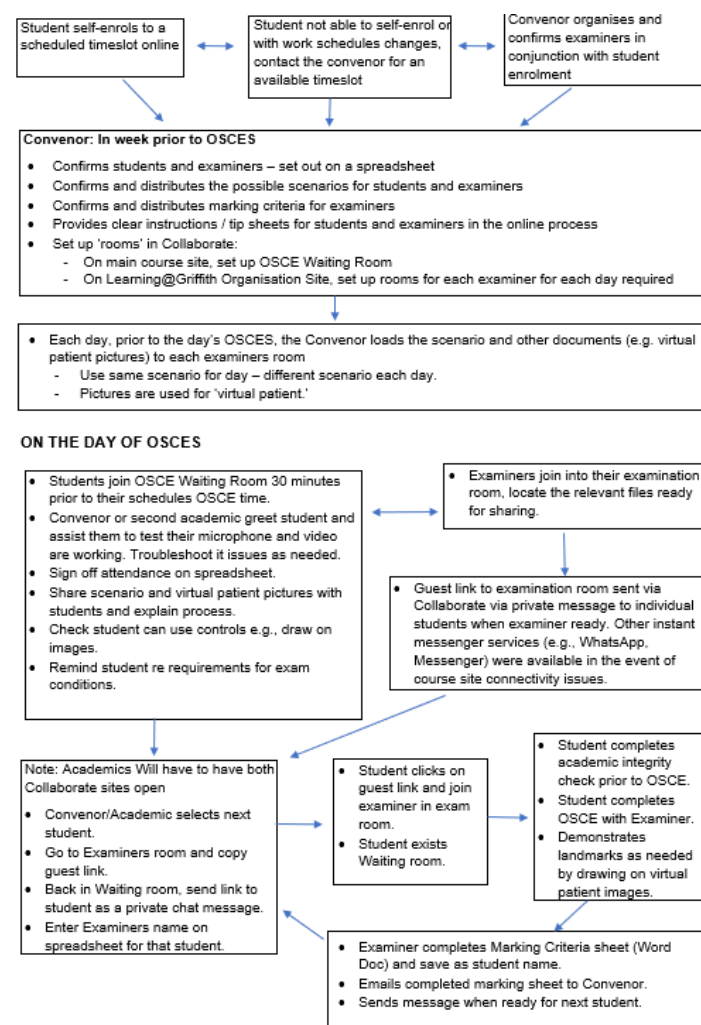


Figure 1: Online OSCE process