

# Synchronous online pharmacy skills group work: A breakout room toolbox for teaching

V A Perumal-Pillay, BPharm, BSc Hons, MMedSci (Pharmac Sci), PhD; F Walters, BCom (Info Systems), PGDip (Bus Admin), MBA

*Discipline of Pharmaceutical Sciences, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa*

*Corresponding author: V A Perumal-Pillay (perumalv@ukzn.ac.za)*

## The problem

South Africa (SA) declared a state of disaster on 15 March 2020 due to the global COVID-19 pandemic and went into a national hard lockdown, initially for 21 days from 27 March 2020.<sup>[1]</sup> The entire population was requested to stay at home, not to leave their homes unless seeking essential goods or services, and only essential workers were allowed to go to work. In response to the lockdown measures, tertiary educational institutions suspended face-to-face academic activities.<sup>[2]</sup> The COVID-19 pandemic abruptly disrupted traditional teaching and learning at these institutions. There was, therefore, very little time to prepare alternative teaching methods, resulting in a rapid transition to remote online learning platforms. The University of KwaZulu-Natal (UKZN) student population originates from diverse backgrounds and remote locations. Although the logistics of ensuring that all students receive the necessary tools to participate in remote online activities were challenging, it ensured teaching and learning continuity during the pandemic. Academics were compelled to change their teaching strategies and deliver content using online applications, e.g. web conferencing and learning management systems (LMSs). Inverting the classroom was adopted as a teaching strategy, as data for internet connectivity is very expensive in SA,<sup>[3]</sup> and time spent online with students needed to be optimised. Transitioning to the remote online learning platform was a steep learning curve for both academics and students.

Online learning for a multifaceted pharmacy module was challenging, as clinical application for case studies and patient counselling role-plays, practical skills and tutorials on calculations all required facilitated group work. For the latter, students had to participate actively in the session, stimulating their ability to apply knowledge and critical thinking skills, and further encouraging them to engage with each other and the course content.

## The intervention

This article shares our experience of attempting to facilitate group-work sessions on an online platform. A combination of teaching and learning approaches was used to cater for the students' learning styles. These included the inverted classroom,<sup>[4]</sup> case-based learning,<sup>[5]</sup> peer learning, LMSs and web-conferencing breakout rooms.<sup>[6]</sup> A constructivism<sup>[7]</sup> theory was used, as the students were in their final year and were able to draw on their knowledge from previous years. A new way of thinking for conducting group work for clinical skills practical and tutorial sessions, traditionally requiring face-to-face interaction, is presented. The innovation merges various pedagogies for teaching and learning with web-conferencing software to adapt group work for an online interface and can be employed in health professions teaching.

Pharmacy students are required to apply their theoretical learning to pharmacy practice. Practical skills include appropriate patient interaction; counselling; and conducting pharmaceutical calculations during the dispensing process. These aspects are easily engaged with during face-to-

face sessions. To mimic such sessions on an online platform, we used an integrated approach to teaching and learning with a toolbox that supported the constructivist's view to knowledge. The basis of this teaching strategy is the belief that students learn best when they gain knowledge through exploration and active learning. This was coupled with the inverted classroom approach and case-based and peer learning. The toolbox for synchronous online practical skills sessions was designed to incorporate 3 phases:

**Phase 1.** This is the pre-session phase, which used the inverted classroom approach, whereby students were provided, a few days in advance, with the content pre-readings pertaining to the topic. These readings and tutorials on calculations were posted on the LMS for students to attempt individually before discussing their solutions during group work.

**Phase 2.** This is the in-session phase, which used the case-based learning approach, where each case was designed to represent a pharmacist faced with a patient. This was done to ensure that each student engaged in good pharmaceutical care approaches in line with the good pharmacy practice guidelines for SA. Case studies containing patient counselling scenarios pertaining to the content topic were only provided during group work. The in-session phase made use of: (i) breakout rooms for small-group discussion of cases; and (ii) the main session for group presentations to the class.

**Phase 3.** This is the post-session, which used polls to obtain feedback on the session.

UKZN uses Moodle as its LMS, and the Zoom web-conferencing plugin was integrated as an activity on Moodle for ease of access and use. This plugin enabled academics and students to access the web-conferencing software seamlessly. Links were set up in LMS and authentication was via the LMS login. The breakout rooms feature allowed one to divide the main session into  $\leq 50$  separate sessions. This enabled the entire class student complement to be divided into smaller, separate parallel sessions - the ideal solution for synchronous online group work.

Breakout rooms were created. Students were allocated to the rooms for group discussions and worked on the case study/tutorial for an allocated period of time. Features in the breakout room included audio, video, chat, screen-sharing and ask for help from the host. The number of breakout rooms was created based on the class, enabling rooms to have ~8 participants per room. The students were initially automatically assigned by the web-conferencing software to a room to avoid any bias in the allocation process. For multiple tutorial sessions, students were manually allocated to the same group for ease of grading group work. Assistance was offered to the students, as the academic/host was able to visit the breakout rooms, or students could request assistance. At the end of the group-work session, the breakout rooms were closed and students returned to the main session to present their work using multiple applications, such as MS PowerPoint (Microsoft Corp., USA) and MS Word (Microsoft Corp., USA) when sharing their screens with the entire class.

A toolbox for synchronous online pharmacy skills group work using web-conferencing breakout rooms was developed and implemented (Table 1).

## Lessons learnt

**For facilitators.** There is improved efficiency with  $\geq 2$  facilitators. This ensured that the main session was always manned to assist students who experienced connectivity issues or latecomers, allocating or re-allocating them to their room. This allowed the remaining facilitators to visit each room to observe or contribute to the live discussions. Ideally, academic facilitators should visit each breakout room every 10 minutes to moderate discussions and pose questions to encourage participation, thereby moving passive learners to active learners to maintain similar impact of face-to-face group work.

We used the polling function as a quick spot test to gauge understanding of a concept during a session and for feedback after a session. This enabled adapted learning.

**For students.** They required orientation to the concept of breakout rooms at the outset and during the first two sessions they could familiarise themselves with this format for online group work. The group work required them to engage with the content provided, moving them from passive to active learners. Students were innovative during these breakout room sessions, demonstrating role-plays for patient counselling and MS PowerPoint (Microsoft Corp., USA) and MS Word (Microsoft Corp., USA) presentations using screen-share to present worked calculations. Students became familiar with breakout rooms and eventually attended sessions with preprepared content and engaged in fruitful discussions.

## What will I keep in my practice?

This integrated approach to teaching and learning is beneficial to health professions education, as learning occurs through the application of concepts. The intervention is a student-centred approach to learning, creating an environment increasingly conducive to learning, where students

**Table 1. Toolbox for synchronous online pharmacy skills group work**

Constructivism approach to online teaching	Phase 1	Pre-session	Instructions
		Select the exercise for the session and upload content to the LMS Pre-allocate case study numbers to groups	<ul style="list-style-type: none"> <li>Provide content pre-readings</li> <li>Example: 4 groups - each group is allocated a different case study, numbered from 1 to 4</li> <li>Provide this only in-session to ensure that students complete all pre-reading material before attending online group-work sessions so that they are able to apply this content to the case during group-work discussions</li> </ul>
	<b>Phase 2</b>	In-session Set the scene for the day's topic  Assign students to breakout rooms Label breakout rooms  Provide the instructions to students before opening breakout rooms  Set time limit for the breakout rooms	<ul style="list-style-type: none"> <li>Instructions</li> <li>Provide a brief lecture on the salient points of the topic highlighted from the pre-readings</li> <li>Outline the exercise/activity for the day</li> <li>Manually or automatically</li> <li>Name according to group numbers or with the allocated case study numbers to assist students with easy identification of their allocated group and to assist the academic when grading group work</li> <li>Instruct students to click the 'Join' pop-up message to join the breakout room when invited to do so</li> <li>Instruct students not to leave the breakout room for any reason. If disconnected for some reason, advise students to rejoin the meeting and provide their group/case number in the chat box on rejoining the meeting to be reassigned to the correct breakout room</li> <li>Inform students to 'Ask for help' from the facilitators by clicking on that exact feature inside the breakout room</li> <li>Advise students to discuss answers and work together on an electronic document for presentation during the main discussion session when breakout rooms close</li> <li>Inform students of the time allocation for discussion and preparation of presentations</li> <li>Close breakout rooms automatically or send out a broadcast message to all breakout rooms a few minutes before closing the rooms to notify students of the remaining time to complete their group work</li> </ul>
	<b>Phase 3</b>	<b>Post session</b> Obtain feedback	<b>Instructions</b> <ul style="list-style-type: none"> <li>Set up and run a poll at the end of the session</li> <li>Encourage students to post further questions on the discussion forum in the LMS to be addressed by peers and academics</li> </ul>

LMS = learning management system.

feel valued as they share their understanding on topics. Case-based learning used human cases to link theory to practice and allowed for simulation of the actual working environment, which was especially useful during students' role-play demonstrations.<sup>[5]</sup>

Group work promotes teamwork and improves professional communication skills. Interpersonal and communication skills for patient counselling from role-plays were effectively demonstrated. This method of synchronous online group work ensured that the positive learning outcomes were maintained during the pandemic and students were able to engage with their peers on an academic platform during a time of isolation and uncertainty. Going forward, this method of teaching can be seamlessly integrated in a blended learning pedagogy for pharmacy skills.

## Conclusions

The use of the integrated teaching and learning pedagogy approach, Moodle and Zoom breakout rooms allowed the toolbox to be successfully applied to numerous synchronous online pharmacy skills group-work sessions. This ensured continuity in teaching and facilitated group-work discussions during a difficult period in education. Since the majority of students are millennial learners<sup>[8]</sup> and are technology savvy, they adapted to the remote online teaching and navigated the Zoom breakout rooms with ease.

The toolbox is intended to be a quick get-started guide for academics wanting to conduct face-to-face group-work sessions for practicals and tutorials on an online platform. This guide could further assist individuals who have a fear of technology by guiding them through the use of breakout rooms for group-work teaching. Such innovative methods for teaching may also be used for blended learning and employed at distance-learning institutions.

**Declaration.** None.

**Acknowledgements.** Dr VA Perumal-Pillay is a University of KwaZulu-Natal (UKZN) Developing Research Innovation, Localisation and Leadership in South Africa (DRILL) fellow. DRILL is an NIH D43 grant (D43TW010131), which was awarded to UKZN in 2015 to support a research training and induction programme for early career academics. The content is solely the responsibility of

the authors and does not necessarily represent the official views of DRILL and the National Institutes of Health.

**Author contributions.** VAPP and FW jointly contributed to the conceptualisation of the study; equally contributed to the writing of the manuscript; and both read and approved the final manuscript.

**Funding.** None.

**Conflicts of interest.** None.

## Evidence of innovation



1. South African Government. Minister Blade Nzimande: Implementation of measures by the post school education sector in response to Coronavirus Covid-19 pandemic. 2020. <https://www.gov.za/speeches/minister-blade-nzimande-implementation-measures-post-school-education-sector-response> (accessed 20 December 2020).
2. South African Government. Disaster Management Act: Regulations to address, prevent and combat the spread of Coronavirus COVID-19: Amendment. 2020. <https://www.gov.za/documents/disaster-management-act-regulations-address-prevent-and-combat-spread-coronavirus-covid-19> (accessed 20 December 2020).
3. Bottomley E. SA has some of Africa's most expensive data, a new report says – but it is better for the richer. Business Insider, 5 May 2020. <https://www.businessinsider.co.za/how-sas-data-prices-compare-with-the-rest-of-the-world-2020-5#:text=South%20Africa%20ranks%20at%20148,4%20afford%20bulk%20data%20packages> (accessed 13 August 2021).
4. Tolks D, Schäfer C, Raupach T, et al. An introduction to the inverted/flipped classroom model in education and advanced training in medicine and in the healthcare professions. *GMS J Med Educ* 2016;33(3):46. <https://doi.org/10.3205/zma001045>
5. McLean SF. Case-based learning and its application in medical and health-care fields: A review of worldwide literature. *J Med Educ Curric Dev* 2016;3:39-49. <https://doi.org/10.4137/JMECD.S20377>
6. Koohang A, Riley L, Smith T, Schreurs J. E-learning and constructivism: From theory to application. *Interdiscipl J E-Learn Learn Object* 2009;5(1):91-109. <https://doi.org/10.28945/66>
7. Larekeng SH, Yassi AH, Najib M, Badaruddin B. Exploring the millennial learners' attributes and needs in educational environment. *ELS J Interdiscipl Stud Human* 2019;2(3):389-397. <https://doi.org/10.34050/els-jish.v2i3.7642>

Accepted 2 August 2021.

*Afr J Health Professions Educ* 2021;13(3):167-169. <https://doi.org/10.7196/AJHPE.2021.v13i3.1525>