Case teaching when case counts are rising: Teaching online using cases during a global pandemic

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Teaching can be challenging at the best of times. Teaching during a pandemic brought new pedagogical challenges to even the most seasoned professors. Modes of delivery, methods of engagement, inequitable access to Internet, and even terminology for these methods were a few early challenges. Our language expanded rapidly, parallel to the swift pivot from in-person classroom learning to virtual online learning. There are several terms used to describe online learning, with nuanced differences often depending on the educational context. An important distinction exists between the situation where online education is the intended method of delivery for learning from the outset (perhaps labeled remote learning or distance education), versus the situation many educational institutions found themselves in during the pandemic: having to teach material intended to be delivered in the classroom in an online environment. The latter situation was labeled differently across regions and institutions, and terms changed throughout the pandemic to try to accurately describe the current state. For example, when COVID-19 first required universities to shutter classrooms, the learning was labeled 'emergency online learning'. In response to the continuing pandemic, many universities took a 'blended approach' with students physically present for course components, such as labs or tutorials, and other components (often lectures) took place remotely. Other universities decided to stay online as the pandemic evolved the following year.

'Synchronous learning' is now commonly used to describe a learning context where the student and the professor are both present in the same shared space, be it in-person or online. During the pandemic, this type of 'real-time' teaching was often carried out through live classes conducted on various online platforms, allowing peers to interact while the instructor simultaneously provided guidance and support. 'Asynchronous learning' describes an alternative approach that permits learning to occur at the student's convenience, where the material available to students (often pre-recorded presentations or pre-assigned resources) can be completed at their own pace (Finol, 2020). Both forms of learning (synchronous and asynchronous) can be facilitated online. Regardless of its label, whether planned or reactionary, online learning in a pandemic posed many challenges for students, instructors, administrators, and others. Strategies for teaching and learning that had proved successful for years were not easily transferable to the online setting. Therefore, instructors were faced with implementing novel and innovative teaching methods to meet the demands of the rapidly changing environment while also ensuring that the quality of education remained high. The lessons learned from teaching online during the COVID-19 pandemic will undoubtedly impact the future of education across all levels.

Ontario, Canada's most populous province, is home to 23 universities, 24 public colleges, 3,967 elementary schools and 877 secondary schools (Ministry of Education, 2021; Ontario Government, 2021). On March 14, 2020, due to the rapidly rising prevalence of COVID-19 cases in the province, Ontario implemented a province-wide school closure following the

traditional one-week mid-term 'March Break' for elementary and secondary schools (Council of Minister of Education, Canada, n.d.; Gallagher et al., 2021). Although most post-secondary schools have a reading week during February, these school also followed the province-wide school closure during March as well (Council of Minister of Education, Canada, n.d.; Gallagher et al., 2021). The province declared and maintained a state of emergency on March 17, 2020 (Office of the Premier, 2020). School closures continued for over 20 weeks, disrupting elementary, secondary, and post-secondary schools. When the Ministry of Education announced that schools would not return to in-person learning for the remainder of the 2020 school year, policies were quickly developed and implemented to ensure that students were provided with consistent remote learning education. This included the implementation of effective and accessible online learning opportunities as well as ensured regular reporting of progress and any challenges faculty or staff faced in implementation (Ministry of Education, 2020). Post-secondary institutions were not required to follow the mandates from the Ministry of Education, however, many followed suit taking a similar approach to closures and online learning.

Western University, one of Ontario's largest universities, is home to the Schulich School of Medicine and Dentistry's (SSMD) 12-month Master of Public Health (MPH) program. The program follows a case-based teaching method in which complex real-life scenarios, often times with incomplete data, are presented to students to promote innovative decision-making and active listening. The use of an interdisciplinary approach encourages students to think critically from multiple perspectives and equips them with skills to analyze and aggregate information in order to deduce solutions to many complex public health problems. With cohorts of students from diverse academic backgrounds, students are able to interact with their peers to practice flexible thinking and develop team-based learning skills. Students also work within smaller groups, in what are called learning teams, where they engage in thoughtful discussions to complete assignments and develop leadership skills. Larger discussions take place in a classroom with horseshoe-shaped seating where professors stimulate dynamic, conversation-based learning. Additional opportunities, such as practicum placements and integrative workshops, facilitate application of knowledge obtained in the classroom and allow students to collaborate and build partnerships with various public health professionals, allowing for increased knowledge of the field (Schulich School of Medicine & Dentistry, n.d.). Practicum placements are typically 'off-site' (not on campus) where students, immersed in a public health context, experience public health practice in action by working with an organization.

Western University responded quickly to the COVID-19 pandemic, cancelling classes from March 12 to March 17, 2020. Classes then transitioned online for the remainder of the Winter term with a commitment to maintain a high-quality learning experience (Western University, 2020). Alongside most educational institutions, Western University adapted a hybrid model for the 2020-2021 school year. With the majority of classes continuing online synchronously or asynchronously, a few exceptions were made for labs and clinical and graduate programs to be delivered in-person (Western University, 2020). Campus facilities – such as libraries, the campus recreation centre and most other indoor spaces – were also closed, and only services determined as essential remained open (Brenk, 2020). Individuals with exceptions to return on campus were required to practice physical distancing, comply with mask mandates, and complete the 'Return to Campus' questionnaire, which screened for COVID-19 symptoms or exposure, before each visit to campus (Western University, 2020). Practicum placements for the MPH program meant to start May 11, 2020, just 6 weeks after the pandemic was declared, required swift adaptations. Along with the program, learners from the 2020 MPH graduating class were forced to adapt quickly. With the support of the Career Development Coordinator

and faculty, placements shifted online (where possible), and new placements were created with more focus on research.

There were many challenges experienced across different classroom settings and levels of education. In this chapter, we share the challenges and lessons of the SSMD MPH Program in delivering the case-based method online. While these challenges are not necessarily unique to the case-based classroom, they are ones we found ourselves grappling with longer or simply requiring swift action in order to achieve success in our teaching.

I. Challenges of Remote Teaching

With the closure of many university classrooms and labs, teaching and learning was moved to remote settings; education drastically changed. Professors faced numerous pedagogical and technological challenges as they grappled to find the best way to transition teaching techniques and materials to a fully online format without compromising pedagogical integrity or the students' learning experience. Many teachers and professors, inexperienced with various technological platforms, were challenged to translate their lectures into online materials that remained aligned with the learning objectives and goals of the curriculum (Ali, 2020). The push for inclusion of multimedia materials to maintain creativity in lectures further challenged educators. More importantly, with the uncertainty of the duration of the school closures, educators were forced to adapt regarding course delivery, which resulted in tight timelines and many logistical constraints. Under pressure to transform their lecture delivery, there were many lessons to be learned from the shift to remote learning, some of which led to positive outcomes.

1) Information Technology

a) Faculty

Many educational institutions invested resources into hiring information technology (IT) specialist supports, developing appropriate IT infrastructure to maintain online learning, providing their lecturers with access to educational platforms, as well as educating members on how to access and effectively integrate these educational platforms in their teaching (Ali, 2020). The MPH program received dedicated IT support from SSMD to translate materials online and to support faculty wanting to try innovative platforms and tools for online engagement.

Lecture delivery was further complicated by technological issues such as variable network connectivity and security of online meetings. Even minor technological setbacks such as screen sharing, problems with clear audio, and lags or freezes during teaching sessions took time and effort to resolve and resulted in increased frustration and decreased teaching time (Mishra et al., 2020). Security for platforms improved both from the provider's side and the university's side. Passwords were required to join meetings, and students were required to join meetings via their provided institutional log-in.

b) Students

Factors such as differences in socioeconomic status and income meant students experienced a 'digital divide' created by inequitable access to technology (Lake & Makori, 2020). Those in rural areas faced additional challenges with power outages and obtaining reliable Internet connections (Lake & Makori, 2020). The assumption that most students would have access to technology was hugely inequitable. Challenges surfaced immediately including lack of access to a computer, or only shared access; inadequate Internet service; outdated programs or services; and unaffordability of broadband Internet service, among others. Many students were also unable to access district-provided laptops or communal computers in libraries, Internet cafes, etc. (Lake & Makori,

2020; Rapanta et al., 2020). The financial challenges of lockdown and job loss lead to additional stress on students and educators. In some ways, accessibility was increased for students who may not have been able to come to the usual in-person classes as they were now able to access educational materials in the same way as their peers. In these instances, students were able to direct their learning, having the freedom to re-watch lectures and study at their own pace (Ali, 2020).

c) Solutions

Having support staff who fully understood both the learning objectives and teaching points of each session, along with being well-versed with technology and educational platforms, contributed to a smooth and effective online learning session (Bao, 2020). Faculty had access to administrative support to help with coordination and setting up "Zoom meetings," as well as access to IT support to help move lecture material online. The design of online sessions is important, therefore having a professional background environment can minimize distractions and support clear audio and video. These solutions resolved the faculty challenges only, it is unknown whether students who had IT difficulties had their challenges addressed by the university or if they had to seek external resources.

2) "Class – Course – Program"

a) Platforms

The MPH program used the platform Zoom which allowed for pre-assigned as well as random breakout rooms. These breakout rooms worked to facilitate engagement by providing an opportunity for students to discuss course content in smaller groups. Breakout rooms could be used at multiple time points during a lecture and allowed the faculty to visit each breakout room independently. Another cased-based online instructional strategy that allows for a combination of synchronous and asynchronous learning is that of monitoring communication platforms. The use of teaching assistants, colleagues, and the students themselves can be beneficial in monitoring platforms such as the online chat and direct messaging to support student questions.

b) Logistics

MPH faculty and staff met frequently to support this change. Program level decisions were made and supported by program staff (for example: all classes used the Zoom platform, and breakout rooms would be pre-assigned to align with the Program's existing learning team approach). Faculty meetings had dedicated time to share learnings and discuss ways to continue the case-based pedagogy online.

We found that it was helpful in the case-based method to use both online and offline teaching material in lessons. Rapanta et al. (2020) emphasized the inclusion of all asynchronous, synchronous, online, and offline components of learning in successful course design and delivery. The co-presence of students and instructors through synchronous sessions can enhance student engagement in case-based discussions, encourage collaboration amongst peers or learning teams and provide a channel for live student-instructor communication. Having an awareness of the various practicalities that exist around online components – for example, issues with the Internet or inaccessibility to printing and scanning services – is important on the part of the instructor and encourages the inclusion of offline learning components (Rapanta et al., 2020). A fully offline course design can prevent opportunities for applying class concepts to meaningful and interactive discussions and can decrease student engagement.

3) Being Present

a) Students

With decreased levels of student engagement and increased stress and anxiety due to the pandemic, engagement was further impacted through students keeping their cameras off. Especially in the case that the students' cameras were turned off, instructors could find it more difficult to judge the students' mood and tone as well as interactions with and understanding of material (Mishra et al., 2020). The MPH program implemented a "Camera on Policy" to decrease presenteeism, increase engagement, and enhance active participation. With face-to-face teaching, understanding physical cues or gestures and body language comes more easily. With online learning, voice tone and volume are the main source of information for students and faculty; body language (e.g., hand gestures, posture, and movement) and eye contact are much less apparent on camera. Therefore, emphasis of certain words, pauses in speaking, and avoidance of a monotone voice can make remote learning a better experience (Mahmood, 2020). Many students reported a lack of attentiveness when participating in online classes, with major distractions (such as video games and televisions) and competing demands (Mishra et al., 2020). With increased time at home, some students reported having to complete more household chores and assist with daily errands, preventing them from spending sufficient time on their education (Mishra et al., 2020).

b) Faculty

Many educators taught from home, with competing demands for their focus (e.g., children who were also studying from home, or family members and pets who required assistance). One concern that appeared in the Fall 2020 semester was a lack of professor office hours; however this was greatly improved in the Winter 2021 semester after receiving this feedback from students. There was also a large increase in the level of satisfaction with the availability of faculty for consultation – from 40% neutral, 40% satisfied and 20% very satisfied in the Fall semester to 20% neutral, 40% satisfied and 40% very satisfied in the Winter semester. A key component of the MPH program is that professors serve as academic advisors to the learning teams. Once again, there was marked improvement in satisfaction with respect to the academic advising received from faculty and staff from the Fall 2020 semester (with 10% unsatisfied, 30% neutral, 40% satisfied, and 20% very satisfied) to the Winter 2021 semester (with 20% neutral and 80% satisfied).

4) Integrated Learning

Opportunities for experiential learning were severely limited, further disadvantaging learners. Many students missed professional networking opportunities. While literature has pointed to the fact that some students, especially those in the caring professions, may have learned from their personal experiences caring for family while learning online, other learners simply missed out (Hueston & Petty, 2020). Careers Day became entirely online, which worked well for the panel session and roundtables (using breakout rooms), but the lunch and networking opportunities were lost.

II. Case-based Online Instructional Strategies

A defining feature of a case-based classroom is interactive dialogue. The transition to online case-based learning presented several challenges. Active student participation in class discussion became more difficult to facilitate and monitor in a virtual setting. In order to maintain case-based pedagogical practices, classes within the MPH program resumed synchronously with an aim to maintain the integration of critical thinking as well as analytical and communication skills.

Material that promotes participation can foster communication with the instructor and with peers (Hollander, 2002; Park & Howell, 2015). Activities that challenged critical thinking, such as enhancing students' opportunities to apply the content they have learned, can lead to more impactful learning (Murawski, 2014). Having classes run in real-time also meant students could directly engage with the course content in real-time. Students themselves were creative with their background – for example, when teams presented work, all team members shared a common background scene or colour.

With reflection on the pillars of the MPH program and through much trial and error, faculty in the MPH program developed diverse strategies to suit a dynamic case-based learning approach: (1) bite-size content; (2) blended flexible learning opportunities; (3) balance of control; and (4) streamline platforms.

1. Bite-size Content

Using smaller chunks of content helps to deliver material effectively. While sessions (lectures) ran between 60-80 minutes, faculty broke up material and gave students regular breaks (active and passive). Bao (2020) recommends sessions of 20-25 minutes to maintain students' attention and ensure that they are developing a clear understanding of the material. Other instructional strategies included recording online lectures as well as dividing larger lecture material into smaller chunks, which aids in keeping students attentive in class and allows students flexibility in when they complete lecture-based course components (Mahmood, 2020).

2. Blended Flexible Learning Opportunities

A blended learning design protects the instructor and students from burnout, providing asynchronous opportunities for students to engage in self-paced work with consultation of the instructor for questions or feedback (Rapanta et al., 2020). In the MPH program, blended learning was achieved through the use of both synchronous and asynchronous approaches. While most classes were done 'in real-time', live with the faculty, some classes were designated as asynchronous to support learners in different time zones as well as to promote different levels of engagement.

With the added stress of the pandemic, flexibility with due dates and extensions is recommended. Similarly, requests for academic accommodation, if reasonable, should be considered with a new lens which considers many inequities and challenges students have faced due to COVID-19.

3. Balance of Control

A learner-controlled environment allows students to identify effective studying strategies (Ali, 2020). In some cases, interactions in online settings can be more efficient using electronic breakout rooms; group work can take less time to set up and conduct, allowing for increased time for teaching and further discussions. This was not always the case, such as when technological challenges or low technology literacy slowed the learning process and caused greater frustration. Accessibility in terms of asking for help increased as well; students could ask for help in subtle ways (e.g., using the chat feature) as compared to having to raise their hand in front of peers in a classroom setting, and peers could respond and support one another more freely (Dwivedi et al., 2020). The MPH program made use of breakout rooms, chat "reactions" and other now standard online teaching functions.

Dwivedi et al. (2020) encourage opportunities for sociability during online lectures through opportunities for students to talk informally amongst themselves to establish a more comfortable relationship. This should be accompanied by an emphasis on the key expectations, rules of

engagement and etiquette for online chats/forums for students participating in online sessions. Creating a visual presence through encouraging students to have their cameras on can also foster a sense of community and support for students (Dwivedi et al., 2020).

4. Streamline Platforms

While the implementation of various communication platforms (e.g., Zoom, Microsoft Teams) can allow students to engage more fully with course content and enable interaction with other students, teaching assistants, or professors about the content, it can also be a barrier to learning. This can happen when multiple platforms are being used in different ways or across different courses. An example of this is when an instructor may want to use Gradescope for assignments and quizzes, Microsoft Teams for live lectures, Perusall for reading material, and VoiceThread for participation activities. This can easily become overwhelming for students as they are then required to constantly check multiple platforms for important announcements and to complete course requirements. Having a standard set of platforms may be beneficial from the outset, as it can allow students to better track their progress in the course. This would also save students and faculty the time that would otherwise be spent learning how to use new platforms, as each one has its own nuances. That said, platforms develop and change rapidly, and it is inevitable that new platforms may need to be incorporated to enhance the learning experience. In the case that multiple platforms are being used, faculty members are encouraged to have one main platform with links to the rest that would make it easier for students to navigate.

Going Forward

The pandemic required increased flexibility in course delivery and the lessons learned from the changes are transferable to teaching back in the classroom. Future course design, using online, in-person or even blended format, can benefit from the challenges identified with online education during the pandemic. From a global survey conducted by the International Association of Universities on the impact of COVID-19 on higher education, Marinoni et al. (2020) share how the pandemic has pushed educators to try novel platforms and new teaching styles for their content delivery. Some educators may continue offering online or blended format courses and integrate both synchronous and asynchronous learning strategies into their material. Small pedagogical decisions can transform learning into the digitalized world we operate in today and provide accessible opportunities for students who may not otherwise be able to participate in learning (Marinoni et al., 2020). Lack of participation in learning throughout the COVID-19 pandemic could have been due to multiple factors including, but not limited to: time zone differences, social determinants, and the continuing stressors from the pandemic (including but not limited to uncertainty and anxieties surrounding potential COVID-19 exposure, provincial mandates, closures etc.). Other factors could be related to the various social determinants including socioeconomic status, access, and equity with regard to the ability to attend virtual classes. This highlights a bigger issue which needs consideration around entry into a program. Having online learning can simultaneously open opportunities for some and exclude others. While it may be more flexible and convenient for some, it could lead to the exclusion of certain demographics of students who, due to economic and accessibility issues (such as insufficient Internet connection), would be unable to attend the MPH program. This highlights rampant inequities exacerbated through the pandemic. Students studying from home may have competing priorities, for example, taking care of family members or children or other domestic duties, which may limit study opportunities.

As is standard for the MPH program, ongoing surveys were conducted throughout the year to gather reflections, comments, and concerns from students. During the 2020-21 online year, students appreciated the various teaching methods used over Zoom (including flipped classrooms [Where the students teach the class], breakout rooms, and larger class

discussions). Overall, students indicated that the MPH faculty and staff's flexibility, accommodation, and compassion during this period of online learning during the pandemic was to be commended.

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