Insights for Teaching During a Pandemic: Lessons From a Pre-COVID-19 International Synchronous Hybrid Learning Experience

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BACKGROUND AND OBJECTIVES: Medical educators and researchers have increasingly sought to embed online educational modalities into graduate medical education, albeit with limited empirical evidence of how trainees perceive the value and experience of online learning in this context. The purpose of this study was to explore the experiences of hybrid learning in a graduate research methods course in a family medicine and primary care research graduate program.

METHODS: This qualitative description study recruited 28 graduate students during the fall 2016 academic term. Data sources included qualitative group discussions and a 76-item online survey collected between March and September 2017. We used thematic analysis and descriptive statistics to analyze each data set.

RESULTS: Nine students took part in three group discussions, and completed an online survey. While students reported positive learning experiences overall, those attending virtually struggled with the synchronous elements of the hybrid model. Virtual students reported developing research skills not offered through courses at their home institution, and students attending the course in person benefited from the diverse perspectives of distance learners. All stressed the need to foster a sense of community.

CONCLUSIONS: Quality delivery of online graduate education in family medicine research requires optimizing social exchanges among virtual and in-person learners, ensuring equitable engagement among all students, and leveraging the unique tools afforded by online platforms to create a shared sense of a learning community.

Distance models of instruction became the dominant mode of course delivery when the COVID-19 pandemic forced virtual learning for health professions and other trainees in medicine.[1,2] Hybrid e-learning brings in-person and virtual students together in one synchronous learning environment.[3,4]

While there is a need for evaluative assessment of e-learning across health professions,[5] research on how to integrate virtual learning with existing pedagogical approaches remains especially underdeveloped in family medicine.[6-8]

This brief report explores a 2016 synchronous hybrid learning initiative in a family medicine research training program—termed HyFlex,[9] this educational modality has increased its popularity following the onset of the COVID-19 pandemic.[10] We aimed to explore how virtual and in-person learners perceived their learning experience, and their suggestions for improvement.

Methods

Research Design and Setting

We conducted a qualitative description study[11] of HyFlex learning experiences following a three-credit family medicine graduate course in qualitative research. The course was delivered in person to students in Montreal and virtually to students in Switzerland using the Zoom videoconferencing platform. The 3-month course involved 3 hours of weekly instruction, including interactive activities, as well as prelecture quizzes completed asynchronously.[12] The McGill University Institutional Review Board reviewed and granted ethics

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approval for this study (A03-E24-17B).

Participants

All 28 enrolled students (22 in-person, six virtual) were invited to participate after final grades were submitted.

Data Collection

First author (C.R.) facilitated three focus groups[13] with students between March and June 2017: two in Canada in English, and one in Switzerland in French. The interview guideline is provided in Appendix 1. Focus groups, the main source of qualitative data, were complemented with an online survey based on the Community of Inquiry Instrument (COI)[14-15] and the Online Learning/Distance Education Questionnaire, which was applied between July and September 2017. We decided to triangulate data from focus groups and surveys to better assess three interrelated elements of the HyFlex learning experience, namely social cohesion, cognitive learning outcomes, and teaching quality.

Data Analysis

We applied an inductive, semantic thematic analysis[16] to the focus group data according to Braun and Clarke.[16] Focus groups were audio recorded and transcribed verbatim. The first author generated initial codes using the ATLAS.ti software. Codes were then discussed and refined through exchanges with the co-authors before applying the consensus codebook to the remaining qualitative dataset. We calculated basic descriptive statistics (medians, averages) from the survey data.

Results

Four virtual students (67%) and five in-person students (23%) consented to participate in 2-hour focus groups that took place in both Montreal and Lausanne.

Theme 1: Positively-Perceived Learning Experience

Students expressed satisfaction with the HyFlex learning experience overall (Question [Q]1). Virtual students greatly appreciated the convenience of hybrid learning (Q2 and Q3) and the ability to enroll in a graduate course not otherwise available at their home institution. Most in-person students were motivated by the HyFlex model (Q4 and Q5) despite some apprehension at the start of the course about the quality of the learning experience (Q6). All students found that engaging with virtual peers during open class discussions was especially enriching because they brought "a different perspective" to the discussion (Q7 and Q8).

Theme 2: Difficulties Learning Synchronously While Virtual

Students who attended the course virtually reported that synchronous learning proved challenging given the length and duration of the course (3-hour weekly sessions over almost 4 months) and the time difference contributed to screen fatigue (Q9). Some students reported feeling more like "observers" than active participants during in-class group exercises (Q10 and Q11).

Theme 3: Difficult to Create a Sense of Community

Whereas virtual students felt isolation (Q12), all students lamented the lack of togetherness (Q13 and Q14). In-person learners, in particular, reported greater disconnect when virtual students turned off their webcams (Q15), but nonetheless appreciated diversity and quality of social interactions the Zoom platform afforded (Q16).

Theme 4: Need for Nurturing Opportunities for Social Exchanges

Q17 illustrates how the instructor's physical presence greatly influenced the quality of the learning experience for in-person students and highlighted the need to improve the quality of these exchanges in the virtual setting. Virtual students likewise emphasized how important direct engagement is to the quality of learning experience (Q18). In addition to the instructor's physical presence, the need for more frequent and better-quality exchanges was unanimously identified as an area for improvement. Virtual learners suggested gathering during the synchronous online sessions (Q19), whereas in-person students recommended making more use of the learning management system to enhance virtual exchanges (Q20).

Nine students (89% female, 66.7% in-person) consented to participate in the online survey (response rate 32%). Six students reported attending sessions "in-person all the time," one attended "in-person most of the time" (11.1%), and two attended virtually "most of the time." Survey responses corroborated findings from the focus groups, notably an overall satisfaction with the course but limited perceived interactions with others. Moreover, most respondents reported having a positive attitude toward the use of computers, felt comfortable and extremely competent working with the video conferencing technology, and appreciated the HyFlex learning environment. Appendix 2 includes a detailed summary of all survey results.

Discussion

E-learning experiences in family medicine education have been reported in postgraduate education[17] and continuing professional development,[18] but thus far there has been no reports concerning HyFlex learning experiences. Both in-person and virtual students considered the experience worthwhile, and our findings suggest there is a perceived value-add for HyFlex modalities in family medicine and primary care research training. This study therefore integrates the current body of knowledge that highlights the benefits of e-learning and other virtual learning in relation to traditional modes of teaching and learning in medical education.[19,20]

Table 1: Illustrative Quotations Associated With Four Themes Identified

Code	#	Quote
		Theme 1: Positively-Perceived Learning experience
Positive course impressions	Q1	Me, in general, I am very happy… At the end of the day, really… compared to my expectations, it is very positive…I have the honesty to say that when reading qualitative research papers, I skipped all the method part where there were words that I did not understand, so I said to myself … the subtleties of everything related to epistemological positioning, the inductive, deductive approach, finally the way of processing data… I said to myself: "I trust them, they know how to do it." And I was going straight to the results or the discussion. And today, we have acquired … well I think, maybe not in an expert way, but in any case, skills to read the papers better. (Virtual Student)
Inform future professional directions	Q2	It was an opportunity for me. Because I was just thinking should I go on a master's degree or go back to school, I don't want to go abroad, etc., so this was an opportunity to test if I was interested in the subject again, really. In 6 months, I didn't need to move, I could stay with my job which is still very important for financial, organizational, etc. issues, and it's true that in addition to the fact that it was McGill, I thought: "Ah! Moreover, it's with a university that has a good reputation, so it's probably interesting." And that I was still thinking about my CV… (Virtual Student)
Overcoming challenging material	Q3	But as [name of another student], when you're in, you suffer, but once you have done it, you're very happy you did it… I didn't think it would be that sharp, that we would go so much into the details actually. I was amazed of the deepness… In any case I had the impression […] Over five months? […] Even less. And I didn't expect it to be that sharp actually. But I'm pretty surprised for the best. […] Rich in detail. Yes!" (Virtual Student)
Effects of distance on class dynamics	Q4	I think my initial reaction was "Wow!", and yes… the question was: "How do we make this happen?" This is really hi-tech, you know, I was curious and excited, and I was curious to see how it was going to happen over time and how we were going to integrate sort of the two groups together and how far we would go in terms of doing the activities together, how much sharing that would happen and whether or not there'd be any sort of cultural issues that would arise, or cultural differences that we would notice in terms of their perceptions and the context they live in versus our Canadian context. So, I was curious to see how that would be different… (In-person Student)
Embracing novel learning experience	Q5	It was my first time having that type of blended learning experience. So I think it was a bit… I was curious but it didn't really faze me, kind of like [name of another student] was saying, I didn't… I wasn't shocked or… it was nothing… just like: "OK! This will be interesting, a new experience". Yeah. (In-person Student).
Low expectations	Q6	I'm going to be fully 100% honest, the first time that we came in, I thought that it would slow down the classes a bit, just the connectivity and waiting to hear for their responses and stuff like that, … (In-person Student)
Different perspectives	Q7	I really enjoyed having them, there is that they brought their different perspectives than what we had, so being in one room I think we all kind of thought, at least towards the end of the course, relatively homogeneous, we were taking the same classes, we had similar experiences and frameworks and mindsets, and to hear their perspectives, contextualize sometimes to the Switzerland current situation, and often a lot of them were physicians too, and practicing physicians, that was… I think that really added to our class. And every single time someone said something I was like: "Oh yes… I did not even think about that, and we didn't bring it up"; so… (In-person Student)
	Q8	I was curious to see…how we were going to integrate sort of the two groups together and how far we would go in terms of doing the activities together, how much sharing that would happen and whether or not there would be any sort of cultural issues that would arise, or cultural differences that we would notice in terms of their perceptions and the context they live in versus our Canadian context… (In-person, Student)

Table 1: Continued

Code	#	Quote
Theme 2. Difficulties Learning Synchronously While Virtual		
Screen fatigue	Q9	I would say that rather than three hours behind the screen, I would see this time cut out. So, I don't know if it would be possible to have an hour and a half, your class and then an hour and a half where either we do readings if we are together, or there is a teaching assistant as you say, here, well that there are… not necessarily interactions, but three hours to listen, it is… Finally, it's easy to be there behind the computer, but really listening carefully, it's not easy. (Virtual Student).
Voyeur vs. learner	Q10	But I think those who made the focus group there, they really experienced the situation, there was the note taking, we were observers, it was already not bad, it was better than nothing, but in any case, we were really in a situation of withdrawal, even more withdrawn than an observer on the spot. And… as if we were watching TV. (Virtual Student).
Not a substitute	Q11	I think, as it has been said, that for us in Switzerland who participated electronically, it is not the same as being there. Obviously, we have the image, we have the sound, but that still does not convey all the training that is useful for properly integrating a practice of a research activity. (Virtual Student)
Theme 3: Difficult to Create a Sense of Community		
Isolation	Q12	What I missed also maybe, it is finally by following this course by e-learning, well, me, in any case I felt very alone in the… Well, we were far away from the other students, we were far from the teachers, we were far between us, and finally, in fact, I didn't know the projects of the other students, I didn't know your projects [looking at the other students participating in the group interview] before the presentations. And then, I missed that, because as a student, at least in my memory when we are in a class, at the end of the class we discuss, we say: "What is your research question? Me, that's it! What do you think of mine?" And that, we have never been able to do and … (Virtual Student).
Lack of connection to distant learners	Q13	The fact they weren't physically there, you don't have a face, you don't have… I kind of remember the names very vaguely but you know, you don't have the interaction that happens… the dynamics inside the classroom. They're not part of those dynamics. So, you forget or it's like all of a sudden: "Oh right, we haven't heard from the Swiss students yet," and all of a sudden, the students start talking, so oftentimes I didn't even remember that they were there until you said¨: "Oh. it's time for the Swiss students" and then I go "Oh yes! That's right! We have those six students with us. (In-person Student)
Lack of interaction	Q14	I thought there was very little direct interaction between us and the Swiss students […] When we did activities in groups, it was like the McGill students together and the Swiss students together… Of course, because we were in different countries, but I think I would have liked to… to have a more I guess enriching experience, I would have liked to communicate with them more directly somehow, whether it's on-line or in-person. (In-person Student)
Out of site and mind	Q15	But it's true that not seeing the students was… I thought it was really complicated. Or in class when they ask questions … (Virtual Student).
Platform pros and cons	Q16	I find the Zoom platform that I did not know, well really, I found it great! The quality is really good! I find that I can have the speaker, the PowerPoint, all at the same time, frankly, you can chat at the same time… I was so impressed. I thought it was great! […] It doesn't bug at all. Well, 3 hours in a row … Frankly … (Virtual Student)
Theme 4: Need for Nurturing Opportunities for Social Exchanges		
Physical presence	Q17	From my point of view, having you physically present in our classroom was the most important thing for us… for me, sorry. And I can see how if I didn't have that… it would impact perhaps their engagement with the course content and their ability to expand their knowledge too because you know, you were present, you would see when one of us was confused, when we asked a question you would wait until it was clear that we understood. All of those I think are really important in this course especially because we had so much interaction with you as an instructor and I can't say that that's the same for other courses even though the instructor was physically present. So there was something about… particular but I think we really benefited from being in your presence in the same room, just because you are by nature a very engaging person and I think that it would be difficult for you to do that and for them to receive that on-line. So that was the big enabler, I think … (In-person. Student)

Table 1: Continued

Code	#	Quote
Theme 4: Continued		
Direct engagement	Q18	I think that meeting you once, quite frankly, we said yesterday, with you [name of another student], when we gave the presentations in 15 minutes, the feedback that you give us, it is already so constructive. It is that we have lots of clues, we have many things, and finally it is much more effective than the exchange by email or exchanges … so I find that meeting once during the course is necessary." (Virtual Student)
In-person learning from a distance	Q19	… there are also videoconferencing rooms which could very well be used so that there is only one screen, that there is only one class, and that people are gathered in that class with a facilitator and that it actually happens via video, classroom to classroom. This is still an opportunity. Me, it's something that I wouldn't have … well first we would have really had the opportunity to get to know each other before waiting for the end of the training, and then it creates the group dynamic. (Virtual Student)
Need for improved connectivity	Q20	"… [T]hey introduced themselves at the beginning, I just… I don't remember because we got to see each other in-person, like physically every week, and with the Swiss students, it would have been nice to have a little section in MyCourses where they put a little …, if they feel comfortable, like a profile, like "My name is …, I'm taking this course because bla bla bla", and then… and we could do it as well, like for them so they know us. Just to have that online." (In-person Student).

Challenges associated with the instructional and learning processes of this educational experience were particularly acute among virtual students, who reported feeling isolated from the instructor and their in-person classmates. Indeed, some in-person students were concerned with how students attending virtually would affect in-class dynamics. Our experiences support the findings of others that fostering a sense of community is critical to the effectiveness of all learning environments.[21-24] This could be attained, for instance, if virtual learners gathered in a shared space with a local teaching assistant during the synchronous session. Working with the course instructor, the virtual teaching assistant could coordinate in-class activities, diversifying content delivery using both didactic and interactive approaches. Also, distance learners could remain on webcam for the duration of the session to enhance togetherness and facilitate more fluid engagement. Additionally, the local presence of the course instructor at least once at the end of the course would facilitate in-person feedback, something considered paramount as a capstone to the hybrid learning experience reported here.

In summary, our findings highlight that to better sustain hybrid learning experiences, (i) social exchanges among virtual and in-person learners should be maximized; (ii) the instructor should engage with virtual students several times during the course to exchange and provide feedback in-person; and (iii) the various capacities afforded by online platforms to create a shared sense of a learning community should be optimized.

The COVID-19 pandemic brought about a swift and immediate change to course delivery including for graduate medical instruction. The pandemic likewise motivated institutions to discover innovated ways to combine the strengths of in-person learning with those of virtual learning and carved a new empirical agenda for evaluating the effectiveness of new hybrid models going forward.[25] Our findings unveil the complexities of offering high-quality courses in hybrid learning environments in graduate medical education ahead of their more widespread adoption and provide insights for how to effectively prepare instructors for such changes.

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