

Evaluation Report: Hybrid Teaching Pilot Grants (Summer 2021)

Centre for Teaching, Learning and Technology
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Evaluation Report

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Executive summary

UBCV's Provost's office provided financial resources and central support to five pilot hybrid courses delivered in the 2021 Summer session. For the purposes of this pilot, a hybrid course was defined as one where a portion of the students attend in-person for some/all of the learning activities, while the remainder are remote. The main goals of this fund were to gain insights into the pedagogical value of hybrid teaching from different Faculties, disciplines and course levels, as well as to increase an understanding of the flexible options that accommodate students to learn either on-campus or remotely.

The CTLT's Research and Evaluation team carried out the evaluation of the hybrid teaching pilot at the program level and within individual projects. At the program level, the instructional team's experience was obtained via interviews with instructors and teaching assistants (TAs). Behavioural Research Ethics Board (BREB) approval was obtained for this level of evaluation. At the project level, evaluation plans focused on student learning and experience with the hybrid modalities, as well as instructor interests related to their specific course content.

The instructors mentioned benefits of a hybrid course model for both students and for themselves. These included flexibility and choice, as well an opportunity to reconsider pedagogy and teaching practice. Challenges faced by instructors included being able to offer an equitable learning opportunity for in-person and remote students, heavy workload associated with course design and delivery, and issues with facilities and technology. Instructors stressed that (re)designing a course into a hybrid format and delivering it requires time and expertise, and that for a hybrid model for teaching and learning to be sustainable at our institution, ongoing support in areas such as course design and evaluation would be needed.

TAs' overall experience supporting hybrid courses was positive. However, they reported that communicating with and helping students in-person differed from their experiences with remote students. Direct and clear communication with instructors was a priority need for TAs, as this prepared them to support students in-person and remotely.

For evaluation at the course level, we present course design, evaluation methods and findings at the individual level. When examining the student experience, student sample sizes were too small to perform statistical comparisons between hybrid and in-person cohorts. However, there was also no clear evidence to support that one method was substantially better than the other for any individual course. Across projects, student data indicates advantages and disadvantages for both in-person and online instruction.

Hybrid teaching pilot grant for Summer 2021

In response to growing interest from UBCV Faculties to explore hybrid models of teaching and learning, the Provost's office provided financial resources and central support to five pilot hybrid courses delivered in the 2021 Summer session. Hybrid teaching can occur in many different teaching formats, as discussed by the Centre for Teaching, Learning and Technology (CTLT) [discussion paper on hybrid teaching and learning models](#). These models can support both on-campus and remote students simultaneously, and different formats may suit different teaching and learning needs. For the purposes of this pilot, a hybrid course was defined as one where a portion of the students attend in person for some/all of the learning activities, while the remainder are remote.

The main goals of this fund were to gain insights into the pedagogical value of hybrid teaching from different Faculties, disciplines and course levels, as well as to increase our understanding of the flexible options that accommodate students to learn either on-campus or remotely. It is important to note that the courses of this pilot were taught in the Summer of 2021, while the teaching and learning landscape (and all other aspects of human activity) were still heavily impacted by the realities of the COVID-19 pandemic. In-person instruction had been very limited up till this point, and several restrictions were still in place (e.g. physical distancing, mask-wearing, reduced classroom capacity). This created a unique context for course design and delivery that is important to bear in mind while reading this report.

In this report, we present the findings of a systematic evaluation to understand the benefits and challenges that students, instructors and TAs faced during the planning and facilitation of the courses that were part of this pilot.

Funded projects

ANTH 378 - Anthropology of Media

- Faculty: Arts
- Department: Anthropology
- Funds received: \$18,500
- Instructor(s): Amirpouyan Shiva

APBI 462/PLNT 590: Conservation Agriculture and Biodiversity Monitoring

- Faculty: Land and Food Systems
- Department: Applied Biology
- Funds received: \$15,976
- Instructor(s): Juli Carrillo; Matthew Mitchell

ECON 326 - Methods of Empirical Research in Economics

- Faculty: Arts

- Department: Vancouver School of Economics
- Funds received: \$16,572.40
- Instructor(s): Emrul Hasan; Jonathan Graves

EPSE 514 - Advanced Orientation and Mobility Techniques for Instructors of Individuals who are Blind or Visually Impaired

- Faculty: Education
- Department: Educational and Counselling Psychology and Special Education
- Funds received: \$15,852
- Instructor(s): Kim Zebehazy

FRST 232 - Computer Applications in Forestry

- Faculty: Forestry
- Department: Forest Resources Management
- Funds received: \$13,120
- Instructor(s): Suborna Ahmed

Evaluation approach

The CTLT's Research and Evaluation team carried out the evaluation of the hybrid teaching pilot at the program level and within individual projects. Instructors of each of the hybrid projects were partnered with a Scholarship of Teaching and Learning (SoTL) Specialist, who played an integral role in refining and implementing an evaluation plan, including institutional ethics clearance, data collection and analyses. Projects received up to 45 hrs of SoTL Specialists' time. The SoTL Specialists and the Research and Evaluation team met regularly throughout the duration of the program, to coordinate our approach and learn from each team member's work.

At the program level (Part 1), the instructional team's experience was obtained via interviews with instructors and teaching assistants (TAs). Behavioural Research Ethics Board (BREB) approval was obtained for this level of evaluation. At the project level (Part 2), evaluation plans focused on student learning and experience with the hybrid modalities, as well as instructor interests related to their specific course content. For the purpose of this report, we focus on findings specifically related to the hybrid teaching and learning experience, rather than other evaluation questions or outcomes related to the course content.

Part 1: Instructional team experiences and perspectives

Methods

Interviews with instructors

Pre- and post-course interviews were conducted with five instructors and two course designers (also involved with course instruction) between June and August 2021. For the purpose of this report, they will collectively be referred to as instructors (n=7). Instructors were first interviewed prior to the start of their hybrid course, and then within one week of their course end date. In total, 14 interviews were conducted, recorded and transcribed over Zoom. Interviews ranged between 20 minutes to 1 hour. A semi-structured interview approach was employed. Questions were focused on: student experience with hybrid course(s), including areas for improvement, with a focus on equity of the learning experience between student groups; benefits and challenges of designing and teaching a hybrid course; support needs to facilitate the design and delivery of hybrid courses at UBC; and reflections and recommendations from teaching in hybrid modality (see Appendix A for all interview questions). All instructors were informed about the goals of the project and each provided signed consent agreeing to participate in the interviews.

Interviews with TAs

Post-course interviews were conducted with the course TAs. The course instructors reached out to their TAs, inviting them to participate in an interview about their TA experience in their course and those interested were contacted to arrange an interview. In total, three course TAs for three different courses were interviewed, one of whom also had a key role in assisting the instructor in course design. TA interviews occurred within one week of the course end date. Interviews were conducted, recorded and transcribed over Zoom. Interviews ranged between 20 minutes to 1 hour. A semi-structured interview approach was employed. Questions related to: working with students in a hybrid course; benefits and challenges of TA'ing in a hybrid course; reflections and recommendations from TA'ing in hybrid modality (see Appendix B for all interview questions). All course TAs were informed about the goals of the project and each provided signed consent agreeing to participate in the interviews.

To ensure participant confidentiality, no names are used in this report, and any identifying information that could link the individual to their course was removed.

Data analysis

Thematic analysis (Braun & Clarke, 2012)¹ was employed to generate key themes in the instructor and TA interviews. As Braun and Clarke (2012) observe, thematic analysis makes “qualitative research results available

¹ Braun, V., and Clarke V. (2012). Thematic analysis. In H. Cooper (Ed.), *PA Handbook of Research Methods in Psychology: Vol. 2*. Chapter 4, pp. 57-71. The American Psychological Association.

to a wider audience. It's accessibility as a method also suits multimethods research being conducted by research teams, where not everyone is a qualitative expert" (p. 58). Due to the small number of participants in this study (seven instructors and three TAs), analysis was focused on identifying key areas related to teaching hybrid courses, rather than highlighting commonalities or prevalence. In this way, some of the areas that are identified under "findings" are not common across all instructor or TA interviews, but rather highlight areas that may be significant in future studies of hybrid instruction. Quotations from interviews are presented with the goal of illustrating and contextualizing findings and recommendations, with minor edits made to ensure clarity and flow.

Instructors' perspectives

Student experiences

The student experience in a hybrid course is something many of the instructors reflected on in their interviews. As hybrid classrooms are quite new, these reflections can tell us a lot about what may or may not be working for instructors and students in this format. For example, in their pre-course interviews, some of the instructors talked about their expectations of offering their students with a similar learning experience as well as some of the difficulties of offering a uniform learning environment:

"My expectation is, at some point we can maintain an equity moving forward, but right now, it's gonna be challenging right? To have the exact same experience, to the online students that the in person students are getting." (Instructor 3, pre-course interview)

"There's no way to make it exactly the same. Like of course, there will be differences. But hopefully when they come out of it, they may have slightly different skills or experiences, but overall, they've reached the same place." (Instructor 6, pre-course interview)

"So we, for sure cannot have the same experience for both in person, online students but we try to make it [equal] as much as possible." (Instructor 7, pre-course interview).

Peer interaction was another key aspect of the learning experience that instructors discussed during the interviews. Many of them were pleasantly surprised with the level of peer engagement among their students, regardless of in-person or online cohort. For example, one instructor tried an activity that involved two students in-person and two students online for a group project. The instructor expressed satisfaction with this arrangement saying it worked "really, really well", with both parties of students engaging fully in the project. However, for some, creating spaces of equal opportunity for interaction across cohorts was difficult:

"I think the biggest challenge that our online students had was that they didn't have the same level of interaction with the in-person people despite our best efforts to try something a little... you know, working groups and stuff like that. There's still definitely some obstacle in that area." (Instructor 2, post-course interview)

Instructors also recognized that their interaction and communication with students was different in-person than online, even when they were deliberately aiming to offer an equitable learning experience for all. The challenges of interacting and communicating with the online segment of their hybrid course challenged the equity goal, as many instructors recognized that the limited interpersonal connection with online students created a less favourable learning environment for them:

“Not having the visual signals of being in conversations with people face to face, even over zoom, like, so many [students] would just would not turn on their cameras, that it's just hard to have those conversations when, at least for me, it's very hard... you just can't tell if they're getting what you're talking about? Like, you know, there aren't puzzled looks. There aren't nods. Those non-verbal cues.” (Instructor 1, post-course interview)

“Sometimes I forget to repeat what students in the actual physical classroom were saying back to students online. So sometimes students online told me they couldn't hear [me]...that happened a couple of times, so there was a disconnect between the two groups.” (Instructor 7, post-course interview)

One instructor also reflected that: “When I’m talking to the class, I’m still looking at my laptop” (Instructor 4, pre-course interview). Later this instructor reflected on the fact that their students also tended to look at their computers during the in person component of the class:

“When I'm looking at [students] they're still looking at their laptop. And then I say that, which one would be better if they look at their laptop or if they look at the background monitor. This is where they say they feel better if they look at their laptop. So, in a way, it's like they're almost taking it online, they're just in the physical space, you know?” (Instructor 4, pre-course interview)

It is also important to mention that while some instructors reflected on the general lack of engagement among online students, this was not something instructors saw as being unique to a hybrid course, but rather a characteristic of online teaching in general.

Benefits for instructors and students

The instructors mentioned different benefits of a hybrid course model for both students and for themselves.

Flexibility and choice

Many of the instructors interviewed stressed how a hybrid course model increased flexibility for students. Making the course available to more students was in fact something that the instructors stressed in their pre-course interviews, stating that offering students with more options in terms of how and when to attend certain

components of the course was a key motivation for them to develop their hybrid course. As one instructor reflected:

“The benefits are amazing from the student point of view. I know a lot of students also live in Surrey...so this kind of hybrid course puts them into the same place because if you don't want to come to class, that's perfectly fine, just join online. You don't have to drive like 3 hours to get here, you'd rather spend that 3 hours on studying or doing something fruitful, right? This is the biggest benefit, is that we can accommodate more and more students [who have] more learning constraints.” (Instructor 3, pre-course interview)

Another instructor reflected on the fact that the flexibility of their course provided students the opportunity to take the course from their home cities:

“I think they appreciated being able to be closer to home so having a location option ... I think they appreciated not having to go as far even though they still maybe had to move to the province.” (Instructor 5, post-course interview)

The benefit of flexibility spans beyond personal decisions to learn remotely. As some of the instructors also shared, a hybrid course format offers the benefit of flexibility to remain at home in case of illness to both instructors and students, thus allowing to offset concerns over the spread of illness:

“I would say, there's a lot of benefits for students and for the administration and also for me because I can see that for now, because people were thinking, what will happen in the fall...and they have the choice. So, anytime they feel like they're not feeling well, they can join online.” (Instructor 4, post-course interview)

On a similar point, another instructor suggested that by offering the course in a hybrid style, more students were able to take certain courses that may be limited in class size, due to the current (ongoing) pandemic. This once again points to the flexible learning options that a hybrid course offers students, no matter where they may be located.

“Given what's happening in places like India and Bangladesh, because a lot of our students are from there, and the borders are still closed. So hybrid is probably the way to go, we are doing 50-50 in my course, we are doing 20 in person and 20 online, but we can probably increase this further by having it in bigger classrooms with social distancing, but that's my biggest motivation to develop a hybrid course].”
(Instructor 3, pre-course interview)

Another instructor talked about how they adapted their course content through the use of particular apps in order to make it more flexible for students. As one instructor observed (Instructor 6, pre course interview), the use of the apps enabled students who were taking the course remotely to participate in hands-on activities that

they normally would not have access to without having to be present at the UBC campus. As the instructor explained, the apps made the course more flexible, so students “don’t have to be [on location]”. The use of particular apps may therefore be an important component of hybrid instruction, since it can make the learning more adaptable to a variety of learning contexts.

Reconsidering pedagogy and teaching practice

While designing and delivering a hybrid course proved to be intense for the instructors, some also reflected on the fact that spending the time in revamping their existing course gave them the opportunity to make the course more “organized” (Instructor 6, post interview) and make improvements to the overall course content.

“I like how organized [the course] is now. I was forced to think about things that I probably would change even if it was a normal class. So, in that sense, at least for the first time, I thought there was an opportunity to revise many things ... It was an opportunity in that sense.” (Instructor 7, post-course interview)

With the concerns over student health and safety related to COVID-19, interest in hybrid courses will undoubtedly increase at UBC and across higher education institutions globally. With proper support, instructors and students will be able to continue learning in a way that incorporates high quality instruction during the global health crisis, as well as increase the overall flexibility and accessibility of education for a large(r) number of students.

Challenges for instructors and students

Instructors shared challenges faced during the planning and design of their hybrid courses and throughout the delivery of these courses.

The equity goal

During both course planning and delivery, the most significant challenge for instructors was the constant effort of providing an equitable experience for remote and in-person students, while realizing that online interactions are often harder and less effective than in-person interactions:

“The biggest challenge was again trying to interact with people online versus in the in person section that was always sort of difficult that there's an extra layer of obstacles between them. I know this was difficult for everyone involved... it's difficult for the TA's, it's difficult for instructors. I think that was probably the single largest hurdle. There was also some difficulties, like, like technologically in terms of the interaction just in terms of the limitations of what we have in the facilities like we know the technical problems.” (Instructor 2, post-course interview)

“[with in-person students] we get to see students eye to eye and see what they're thinking and then communicate with them before and after class, talking to them about their interest like we normally do in any in person lecture...the regular conversation that you normally can't have online or you don't do this online for so many different reasons.” (Instructor 3, post-course interview)

This was a tough realization, as instructors had a particular interest in creating equitable experiences for remote and in-person students.

Workload associated to course design and delivery

Many of the instructors reflected on the time intensive practice of designing and delivering their hybrid course. For instance, in their pre-course interviews, a couple of the instructors commented on how the workload (e.g. planning and executing their course) required a large amount of work:

[hybrid] is “a lot of work. And it requires mostly planning, as well as kind of doing it. But the planning is time consuming. Doing it is at least more practical, but also time consuming. That's why we're sort of weeks behind schedule.” (Instructor 2, pre-course interview)

“Whether the work is double, it is right now I feel like” (Instructor 4, pre-course interview).

As a couple of the instructors reflected later in their post-course interviews, the dual nature of the course (attending to students in person and online simultaneously) contributed to this time intensive nature of their course:

“It was a very high workload ... just having to do materials for both and answer questions, not uniform across the two groups ...their experiences were different. So I think that was a challenge...” (Instructor 1, post-course interview).

“A good percentage of students ended up doing the course asynchronously, more than what we expected. ...I really hope that the asynchronous part... if there are students who are taking the course asynchronously [next term] they're just a minority students and only a handful of students... because that was too much work. I had to attend to [students'] questions and be in two places.” (Instructor 7, post-course interview)

For another instructor, the high workload was attributed to this being the first time teaching the course as a hybrid model:

“Especially this time around, there's a lot of upfront time, because we had to develop a lot of the online materials and that sort of stuff...anytime you develop a new course, in a

way, there's a lot of upfront, upfront time. And then, the next time you deliver it, if you deliver it this way, I think that a lot of that would be less than you'd be refining things and hopefully making it more effective, but it wouldn't be quite as much." (Instructor 6, post-course interview)

Another challenge noted by one instructor was that TAs also spent more time doing day-to-day tasks related to the smooth running of the course. However, this instructor was clear that such support is necessary:

"You need more and more and more teaching support for example, you need more TAs. I also see that TAs are working very very hard. I think more because of COVID because they're coming here opening the door. They let the students in and in the classroom, they're walking around helping students, and then also in office hours they're helping online students. So workload - and these are the major challenges as far as the teaching and staff are concerned." (Instructor 3, post-course interview)

As some of these comments suggest, instructors may need additional time to (re)design existing courses into a hybrid format. As this mode of instruction is fairly new to many, but undoubtedly growing in popularity, new ways of thinking about how best to foster learning in both in-person and online modalities will require time to experiment with various pedagogical approaches.

Facilities and technology

Support with technology was a key concern for many instructors, who felt that the classrooms could be better equipped to support large numbers of students in Zoom, including technological features (better audio, adapters, and so on).

"Moving forward, I think if hybrid classes or the hybrid format is UBC wants to have more hybrid classes, probably we need to invest in technology itself. You know, some, probably a mic system that picks up the voices, computers in classrooms that are equipped with webcams or cameras...something more technologically advanced." (Instructor 7, post-course interview)

While technical hiccups were resolved for many instructors early in the term, some reflected on the fact that UBC is not prepared to shift completely to a hybrid course model (or online) because it lacks the infrastructure to support it. As one instructor noted, despite being in a suitable room to run their hybrid course:

"It was still not great, like that we didn't have good video conferencing stuff ...it was like your old laptop, and you hook it into the sound system in the room ...but ...a world leading international education institution like this is pretty Mickey Mouse...it's not serious. It's certainly not at the level that if I was teaching you know, a professional program that I would feel comfortable...you need to invest in the setup for the rooms and stuff like that, you need to have dedicated spaces that are validated to work with

this, so you don't get feedback and you know you have good screens that everyone can see and that you can see the classroom.” (Instructor 2, post-course interview)

The ability to navigate technological issues was another area that created disparity between groups, as it was easier for the students who were in-person to receive help compared to students online:

“[This] becomes a hybrid issue because it's so much easier to troubleshoot the stuff in person versus online. Yeah, when there was this problem, the online people - it would take them a while, maybe 15 minutes to get back on track, whereas the in-person people were like, immediately on that stuff ...If you're in a group of people and yours isn't working...you're kind of stuck, and if it's something your colleagues can't troubleshoot for you then you're really stuck.” (Instructor 2, post-course interview)

Other instructors talked about going into their classrooms much earlier than they normally would, in order to check that technical features such as AV systems, or internet connections were working. Because of the number of students taking the course(s) online, these instructors needed to ensure that everything was running smoothly so that the students attending online could also see/hear the lecture. While many instructors may prepare early for their courses, a hybrid course adds additional “layers” to a course and therefore increases the odds that something can go wrong. Because of this, instructors may end up spending more time ensuring that both the in-person and online technical components run smoothly during each class.

Reflections and lessons learned

A common theme among instructors was that (re)designing a course into a hybrid format and delivering it requires time and expertise. They shared that having support in different areas (i.e., course design, evaluation support) made their experiences easier and discussed how a hybrid model for teaching and learning would only be sustainable at our institution if such support remained available. Support with course design was perceived as important for the development and implementation of engaging and meaningful learning experiences for students:

“You need good curriculum design support for people who are planning to do these things...unless you have a really really clear model for it, it's gonna be really hard to do. Having people who have experience with that and are good at it and have a wealth of knowledge delivering these kinds of courses and designing them is probably helpful.” (Instructor 2, post-course interview).

In addition, support for course evaluation was mentioned as an important piece to help guide decisions when trying pedagogical approaches for the first time.

“So if anyone wants to do the hybrid style of teaching, [I think they] need help from the faculty. More support for hours, TA's, or GAA, evaluation ... [I was provided with a SoTL Specialist] ...so if

CTLT can provide evaluation help, how to do that properly...that's really helpful." (Instructor 4, post-course interview)

Many instructors mentioned that participating in this pilot program gave them the opportunity of working together with colleagues as well as TAs in developing their hybrid course. This is something they seemed to mutually enjoy, and something that strengthened the hybrid course experience:

"For me, it was great connecting with the instructors ... they were positive, they were engaged, they enjoyed it. They said they enjoyed it and so I think that it was good to make those connections and that kind of collaboration. I didn't feel so alone ... it's nice to sort of talk with other instructors and get their perception of the course and their perspectives and their ideas and so that was a big benefit for me." (Instructor 5, post-course interview)

Instructors also expressed satisfaction with how the hybrid pilot gave them the opportunity to redesign their course:

"I like how organized [the course] is now. I was forced to think about things that I probably would change even if it was a normal class. So, in that sense, at least for the first time, I thought there was an opportunity to revise many things ... It was an opportunity in that sense." (Instructor 7, post-course interview)

"One of the things this hybrid fund gave us was the opportunity, so that we can highly organize our materials." (Instructor 4, post-course interview)

At the same time, another theme related to the pilot program was the timing of the courses. Because the hybrid teaching pilot was conducted in the summer, many of the courses were condensed from the typical 12 week format to 2-6 weeks. This provided time challenges for some of the instructors, who felt that the course was rushed, not in depth enough, or too intense for students. Instructors indicated that teaching the hybrid course in a non-condensed term may alleviate some of the workload, as they might have more time to develop resources or seek assistance:

"One thing that we identified pretty early in this course is the online, [in] the summer course format, is not good for this kind of thing. It's so much in such a short period of time, because it's condensed. I think this [hybrid course] probably would have worked better if it was like a regular course or even one that was like you know like 13 weeks instead of six weeks, like the six week format is really, really difficult to do in a hybrid way... it's particularly sort of acutely difficult in the hybrid fashion because there's so little downtime between learning activities that you can't space stuff out... there's no time to adjust and to try to ameliorate any of these gaps that we identified." (Instructor 2, post-course interview)

“Probably [the course] would have a different experience if it was a 13 weeks course ... It's also a lot of work, because [the course designer] was working in course structure and he needs to really build a lot of homework, assignments, exams in five weeks that we normally do in 13 weeks.” (Instructor 3, post-course interview)

While no doubt challenging, these obstacles are not characteristic of a hybrid course specifically, but rather the timing of the course offering (summer term).

Finally, instructors reflected on the meaningful opportunity for in-person instruction these hybrid courses provided to both students and themselves, considering that until summer of 2021, in-person classes at UBC had been pretty limited. For many, this was the first time they got to teach students in a physical classroom since the emergency move to remote instruction that took place in March, 2020.

Teaching Assistant (TA) perspectives

TAs are often the main point of contact for students, playing an integral role in navigating questions and concerns, assisting with assessments, facilitating online discussions, and much more. Within a hybrid context, this role is complicated because they must navigate this support in both the online and in-person realm, while trying to ensure equitable support to both groups.

Supporting students in-person vs online

TAs reported differences in the way they communicated and helped students who attend class in-person compared to those who attended online. Generally, they reported having a harder time communicating, interacting and supporting students online, than doing so with their in-person peers.

“I think it was easier to connect with the in-person students than the remote students. So, I had a really easy time talking and helping out the students who were [in-person] and I think they got a lot out of being able to just, you know, speak to us. I think there's that distance when you're dealing with remote students because they, you know, they're hesitant to ask questions or schedule interviews or even like you know, put their own cameras on. All right, yeah, it was harder for me to get to know the students who are not coming into class.” (TA 1)

“One issue was being fair to all students because I'm not sure if they [all had] the same experience. They were [organized] into these groups, but it was much easier to help someone who has his computer.” (TA 2)

“Communication with the remote students ... it was hard to, well, both to get to know them as people and learn what they're like, if you're just sending them messages, and you really don't see their faces at all. And then also just conveying assignment rules, and what deliverables they should be having. If you can't have those in-person

conversations, and if they're not reaching out, then you don't know if they know what they're supposed to be doing." (TA 1)

TAs also reflected on the differences in course experience among students taking the course in-person, and those online. While each course was unique in its design and course activities, some common themes around the differences in engagement surfaced in the interviews. One TA noted that student engagement was more common among the students taking the in-person component because it offered chances for more impromptu conversation:

"I think that the in-person students like you, it's very easy to just go up to them, and you ask, like, hey, so how's the [work] going? And then if they have a question to ask, I think they'd feel more confident coming up to us and just asking a question like that." (TA 1)

Despite efforts to make the course equitable for all students, one TA noted the challenges of making this a reality in a hybrid course model:

"I think the students who were coming in-person ... got more out of it than the remote students ... you're trying to make it as equitable as possible [as an instructor], but you have all these conversations, like just between people. So I think there's just more room for interaction among the students and with both myself and with the instructor. And I think the remote students are missing out on stuff like that ... you want it to be as equitable as possible, but I just don't think it's fully possible because it's hard to foster the kind of interactions online. I mean, you can try - and I truly did try really hard to be inclusive and like foster those kinds of conversations with the remote students. But, you know, it's hard to even get them to turn their camera on and talk during some of the lectures." (TA 1)

Communication with instructors

Clear ongoing communication and outlining of expectations for both remote and in-person students, was reported as a crucial factor for the TA experience in terms of engagement and performance. Unambiguous communication from and with instructors was also a priority for TAs, whether this be via frequent meetings, email, or other methods, such as Slack, as this prepared TAs to support students:

"I think the best thing would be ... as much communication as possible about how exactly to deal with the remote and the in-person students ... I'm not sure if this is specific to a hybrid course, but making the expectations of what I'm supposed to be doing, as clear as possible. [The instructor] was good at that. But you know, the last course, it wasn't so good. So I think that that really helps alleviate some stress, if I know exactly like: Okay, I need to be in this lecture room for this long, I need to go and I need to do these things in person. And like, each day, this is what you need to be doing. I think that helps." (TA 1)

“In general, it's really important to communicate the outline of the course to a TA. So whatever outline - but the professor or the instructor - settle with it, make sure that they communicate that very very clearly to the TA, because if a TA is kept out of the loop that gets really confusing. Like, especially for courses like ours where we have assignments, we have quizzes, mock exams ... the instructions to the students [should be made] very clear to the TA so that they can communicate that to the students.” (TA 3)

One TA also mentioned how helpful it would have been to have more frequent meetings between the instructor and the other TAs as a way to stay on top of the course material for upcoming weeks:

“I feel like frequent meetings would also be very beneficial ... in the team. Maybe like half an hour a week, or like an hour every two weeks or half an hour every two weeks, like, ‘Okay, this is the schedule for the upcoming two weeks, this is what we're going to do, this is what you should be doing’ ... just to catch everyone up or like keep everyone in the loop, even if the meeting is not directly related to your assignments the upcoming two weeks you should also be there ... it seems like it would be helpful to just kind of check in what's working, what's not working.” (TA 3)

Time commitment and roles

While all three TAs expressed that the hybrid course was not more work, per se, than a traditional (face-to-face) course, one TA suggested that instructors be aware that a course offered during the COVID-19 pandemic can take up more TA time than expected and require them to carry out roles they did not previously perform (e.g. ensuring students comply with safety protocols). The current context played a significant role in how the TAs perceived their duties, and they reflected on the fact that their experience would have been different if the pandemic was not an issue.

Reflections and lessons learned

The interviews with TAs revealed that despite certain challenges due to the current pandemic, their overall experience working with instructors and students were positive. While all three courses were very different in content and delivery, the TAs worked hard to attend to students' questions and concerns throughout the course, and expressed their interest in working face-to-face with the students who attended the course in person.

While unique to the particular course, one TA mentioned enjoying working with the instructor on the course design. This experience was a highlight for them in working as a teaching assistant because it gave the student a unique experience on the course design process:

“Because I took a year online, plus the summer before that, I got to see all of the online courses and what worked and what didn't work, or what I thought worked and what didn't work ... I was able to sort of contribute my personal opinions that way that's directly designed the course ... it was really cool to see my ideas being executed and being taken very seriously.” (TA 3)

Although an experience in course design may be unique in this particular case, there is an increasing interest (in higher education settings) in including undergraduate students in course (re)design. Initiatives such as Students as Partners for example, may pave the way for greater involvement of undergraduate students in hybrid course design, which, as this particular TA suggested, was a key highlight of their experience as a TA.

Recommendations

Based on the discussions with instructors and TAs, we make the following recommendations for ways that future hybrid teaching can be better supported at UBC:

- 1. Make support available for instructors interested in developing a hybrid course** - Course design and evaluation support are available from the CTLT, but support made available to instructors via their departments (i.e., course releases) and professional development opportunities (e.g. workshops and consultations with a focus on hybrid teaching), could further help address issues of workload and support needs.
- 2. Create facilities and infrastructure that accommodate hybrid classes** - Classrooms set up with adequate AV, internet bandwidth and equipment that allow the implementation of activities within and across groups of students is essential for the successful delivery of hybrid courses. Ensuring proper infrastructure and technical support is in place would not only ensure a smooth experience for students, but would open pedagogical choices to instructors while reducing workload and anxiety associated with making technology work properly while teaching.
- 3. Facilitate collaboration and networking among instructors interested in hybrid teaching** - Designing and delivering hybrid courses is a learning process and lots can be learned from peers who have gained experience in these activities.
- 4. Increase TA support** - Compared to non-hybrid courses, increased TA support is needed to facilitate activities in a hybrid course. TAs are required to support and work with online and in-person students, sometimes outside of class time (asynchronous activities), and this poses additional demands on their time and workload. A higher number of TAs is recommended for hybrid courses.

- 5. Offer training for TAs** - Hybrid teaching calls for TAs who have experience with both in-person and online classes. As such, training to be able to TA in different modalities is essential. Offering professional development opportunities to TAs around course design could also be impactful as they could assist with transitioning courses to hybrid format while strengthening the overall course experience for students.

- 6. Encourage clear and ongoing communication between instructors and TAs** - Regardless of the medium (e.g. meetings, email, Slack), TA support is optimized when instructors are clear and timely in communicating course outlines and expectations.

Part 2: Student experiences

As noted above, each project was supported by a SoTL Specialist who worked closely with the PI to develop a unique evaluation plan, create data collection tools and analyse the data. All five projects required the development of surveys as main tools to collect student data. Because each project context was different, the resulting surveys and analyses are unique, and as such each project summary is broken down separately as it is not possible to aggregate data across projects. Overlapping themes, perceived benefits and challenges are discussed at the conclusion of the section. For each project, a detailed report was completed by the assigned SoTL Specialist (see Appendix C).

ANTH 378

Course description and context

Course ID/Name: ANTH 378 - Anthropology of Media

Term taught: Summer Term 2, 2021

TAs: Yes

Enrolment by modality of instruction: In-person (n = 14); online (n = 122)

Hybrid approach: Concurrent; Asynchronous

Brief description of hybrid approach: Online students were able to participate in the sessions synchronously or watch recordings of the lectures at a later time (asynchronous group). In the surveys, students were asked to self-report whether they participated in activities synchronously or asynchronously. Synchronous meetings were shared through Zoom (for online students) and the Zoom interface was projected to students in-person. An external webcam captured the instructor and the blackboard behind him and students on Zoom were able to switch the view between the instructor/blackboard and the slides. During the synchronous meeting, students listened to and participated in a short lecture linking together course content and group activities. For the group based active learning, asynchronous students could either submit them individually or team up with classmates outside of class time to complete them; majority of the group activities were done with students in their own cohort. BREB approval was obtained for this study due to the research intent of the project.

Research questions and methods

Research questions

1. Why did students choose to take the course in-person or online? In future (without COVID-19 restrictions), would students prefer to take the course in person or online? Does their preference change between the start and end of term?
2. Are there differences between in person and online experiences in terms of student collaboration, instructor support, student autonomy and final grade?

3. What suggestions do students have for the course? What are the perceived advantages and limitations of hybrid teaching?

Methods

Two surveys were developed for this project. Both surveys asked about course format choice and preferences, and provided space for feedback on concerns, suggestions, or comments about the course. The second survey additionally examined student interaction and collaboration, instructor support and student autonomy, measured by pre-validated scales (Walker & Fraser, 2005). Final grades were used to compare overall course performance across the in-person and online groups.

All students enrolled in the course were invited to participate. The first survey was available to complete July 6-21, 2021 (n = 40) and the second survey was available August 11-15, 2021 (n = 58).

Findings

Course format preference and reasons for selection

At the beginning of the term, course preference for all groups was in-person (61.6%), however by the end of the term many students shifted their preference to reflect greater interest in taking the course online-synchronously (See Table 1).

| | Modality of participation | Stated modality preference (beginning of course) | Stated modality preference (end of course) |
|---------------------|---------------------------|--|--|
| In person | 12.5% | 61.6% | 41.4% |
| Online-synchronous | 70.0% | 12.8% | 48.3% |
| Online-asynchronous | 17.5% | 25.6% | 10.3% |

Table 1. Survey respondents distribution of and preference for taking the course in person or online

In-person preference

Students in both in-person and the online cohorts indicated in-person as their preferred modality of instruction as it allows for face-to-face interaction. Students in the online cohorts indicated being easily distracted while online as a secondary reason for this preference. By the end of term, students in the online cohorts indicated technical problems (e.g. unstable internet connection) as an additional reason for preferring the in-person format.

Online preference

No students who participated in-person indicated interest in switching to an online format in the future. For students in the online cohort, the top three reasons to prefer the online format were: time flexibility, not living in Vancouver, and COVID-19 restrictions (e.g., not wanting to commute). Other

reasons: in-person section being full, better disability accommodations, and ability to rewatch lectures with captions.

Student collaboration, instructor support, student autonomy and final grade

Between group t-tests were performed to compare the effect of taking the course in-person or online (synchronous/asynchronous combined) on student interaction and collaboration, instructor support, student autonomy, and final grade. There was no evidence that the groups were different with regard to student interaction and collaboration, instructor support or final grade ($ps > .12$), note that this does not imply that experiences between groups were equivalent, merely that the difference is not statistically significant. There was a significant difference in the student autonomy items ($t(43) = 4.09, p < .001, d = 1.16$), indicating that students in the online cohorts had higher autonomy than their in-person peers.

Advantages, limitations and suggestions for hybrid teaching

Qualitative content analysis was employed to analyze students' overall feedback on the course and responses were categorized as positive, mixed and negative, based on course format. A chi-squared approximation indicated that the attitudes reflected in the feedback between the in person and online students do not have statistically significant differences (all $ps > .36$). Note: limited sample size may impact the accuracy of the calculation.

The main advantage of the hybrid mode of teaching was the flexibility. Two students reported *"the hybrid format worked well [and] wished UBC would continue offering hybrid classes to accommodate students with disabilities."*

Concerns of the hybrid mode of teaching were centered on interactions. For example, students reported difficulties interacting between students online and in-person; technical challenges for students online (e.g. hearing the in-person students); concerns about being displayed on screen in front of the class.

In-person students also reported not getting the opportunity to learn from the questions of their online peers. In addition, a few students thought the mix of different cohorts made the group work disorganized and would prefer to work together with students from the same cohort. Group work across cohorts was challenging due to time zone differences. Finally, a student from the in-person cohort expressed a concern around peers not following COVID-19 prevention measures, which led to anxiety and sense of unsafety.

APBI 462/PLNT 590

Course description and context

Course ID/Name: APBI 462/PLNT 590 - Conservation Agriculture and Biodiversity Monitoring

Term taught: Summer Term 1, 2021

TAs: Yes

Enrolment by modality of instruction: In-person (n = 11); online (n = 1)

Hybrid approach: Concurrent

Brief course description: Students participated in a two-week intensive field course located at the Centre for Sustainable Food Systems at UBC Farm. The goal of the hybrid course was to create materials (such as expert demonstrations, lab demo videos, citizen science modules, etc.) to allow students unable to attend in-person to take the course remotely. The course consisted of online lectures in the morning followed by fieldwork, either at UBC Farm (in-person cohort) or in learners' own neighbourhoods (online cohort) in the afternoons. An evaluation approach was best suited to this project, and therefore BREB approval was not obtained.

Research questions and methods

Research questions

1. How did student experiences, such as student engagement, differ between online and in-person cohorts?
2. What was the student experience of the course, particularly related to diversity and accessibility?

Methods

Students completed one survey, available May 18-25, 2021, with a series of matrix and open-ended questions about student engagement (adapted from Handlesman, Briggs, Sullivan, & Towler, 2005); use of course technologies, diversity and representation in the course, and accessibility of the course. Due to small sample size, only 9 students completed the survey during online class time, no statistical analyses were conducted, descriptive statistics are reported alongside student comments which were analyzed using a general thematic approach.

Findings

Mode of instruction and student engagement

Overall, a majority of students (7 of 9) indicated that they would somewhat or strongly prefer to take this course in-person rather than online. However, most students provided advantages of both modes of instruction in their comments.

Advantages to in-person instruction

1. Receiving immediate feedback/guidance ("In person real time advice and guidance for field studies cannot be achieved remotely"), (n = 5)
2. Connection/community with peers/instructors ("Advantage to in person: developing connections with peers and profs"), (n = 3)
3. Ease of in-person over online instruction ("The course is very intensive, and the online portions I find are very hard to concentrate on"), (n = 2)

4. More participation (“There is also a real lack of class participation [online] which hurts the course delivery”), (n = 1)

Advantages to online instruction

1. Accessibility/convenience (“Online, I was able to do the lab portion on my own time which was nice”), (n = 5)
2. Application to own context (“I also liked...applying the concepts we learn in class to my day-to-day surrounding environment”), (n = 2)
3. Independence (“I also liked the independent nature of the labs”), (n = 1)
4. Still feeling supported (“it was flexible to make work best around my own needs and schedule, while still being guided”), (n = 1)

Student engagement (assessed via the Student Course Engagement Questionnaire, SCEQ) was moderate-high, with variability on individual items. Overall, students attending the course in-person provided nominally higher ratings on SCEQ items than those attending the course online (Figure 1).

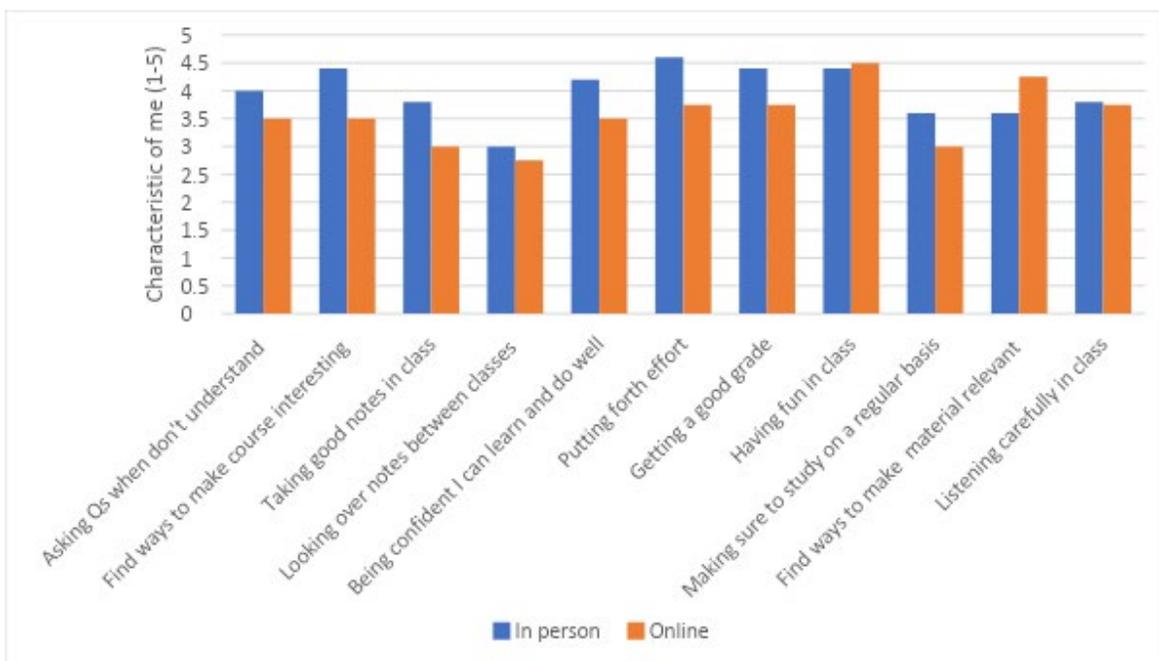


Figure 1. Average responses to SCEQ items by students who attended the course in-person vs. online. 1 = Not at all characteristic of me, 2 = Not really characteristic of me, 3 = Moderately characteristic of me, 4 = Characteristic of me, 5 = Very characteristic of me.

Accessibility

When asked about their own experiences in the course, most (6 of 9) students indicated that they did not have challenges in the course due to physical or mental difficulties. However, when asked about the accessibility of the course overall, most students responded close to the middle of the scale (slightly

disagree, neither, slightly agree), with a few people at endpoints of the scale. Responses to questions asking if improvements could be made to increase accessibility were fairly split.

ECON 326

Course description and context

Course ID/Name: ECON 326 - Methods of Empirical Research in Economics

Term taught: Summer Term 1, 2021

TAs: Yes

Enrolment by modality of instruction: In person (n = 17); online (n = 20)

Hybrid approach: Concurrent

Brief course description: The course involved a lecture component (available synchronously and asynchronously for both groups of students) and a synchronous hands-on problem solving “lab” component with online and in-person students completing the activities together. BREB approval was obtained for this study due to the research intent of the project.

Research questions and methods

Research questions

1. Do student experiences of the course differ between in-person and online students for each of the following components:
 - a. Engagement/interactions with the course materials and activities, with peers and with instructors and TAs
 - b. Perceived barriers that influenced learning and course modality preference
 - c. Skills developed (R and Jupyter software)
 - d. Grades achieved

Methods

Two surveys were developed for this project. Both surveys asked to report on course engagement and interactions, perceived barriers to their current cohort and course modality preference and confidence in R and Jupyter program skills. Course grades for the different assignments and activities were compared between online and in-person groups.

All students enrolled in the course were invited to participate. The first survey was available to complete May 17-26, 2021 (n = 17: 12 in-person, 5 online) and the second survey was available June 12-20, 2021 (n = 22: 11 in-person, 11 online). Due to small samples, descriptive statistics are reported alongside student comments which were analyzed using a general thematic approach. Only grade data was analysed with statistical analyses.

Findings

Engagement/interactions with the course materials and activities, with peers and with instructors and TAs

Overall, student experience was comparable between the in-person and online cohort. Majority (over 80%) of students in both groups reported agreeing or strongly agreeing with the following statements “During this course, I: felt included in the class; enjoyed the lectures; enjoyed the hands-on component; enjoyed interactions with my peers in the online/in-person cohort/instructor/TAs; was actively able to participate in the course lectures/hands-on portion.” Many students reported that they appreciated the application of theory to real-life scenarios and the discussions while working with others, these reports did not differ between cohorts.

Perceived barriers that influenced learning and course modality preference

The most prominent barrier to learning was time zone differences for the online cohort, and both cohorts reported technological problems. Overall most students reported being satisfied with the cohort they were in (Figure 2). For students who would have preferred being in the other cohort, the reasons that prevented them from joining included: COVID-19, and wanting access to lecture recordings (online group): “For in-person, I can not go back to watching the recording when I feel confused about some points in the lecture.”

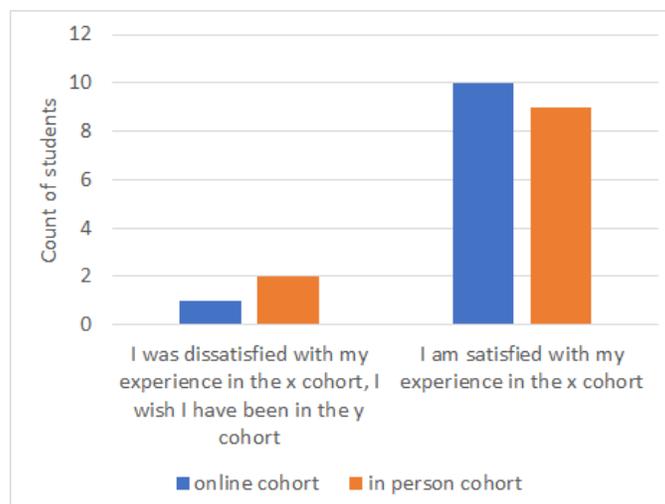


Figure 2. Satisfaction with their own course modality.

Skills developed (R and Jupyter software)

Student confidence in R and Jupyter skills were quite high at the start of term, thus limiting the amount of upward movement of learning during the course, although there did appear to be an increase in confidence. Between the two cohorts, students in the in-person cohort reported greater confidence in all activities (Figure 3), although larger samples are needed to determine statistical significance.

Interestingly, the grade data (reported below) does not reflect meaningful differences in learning as measured by grades achieved.

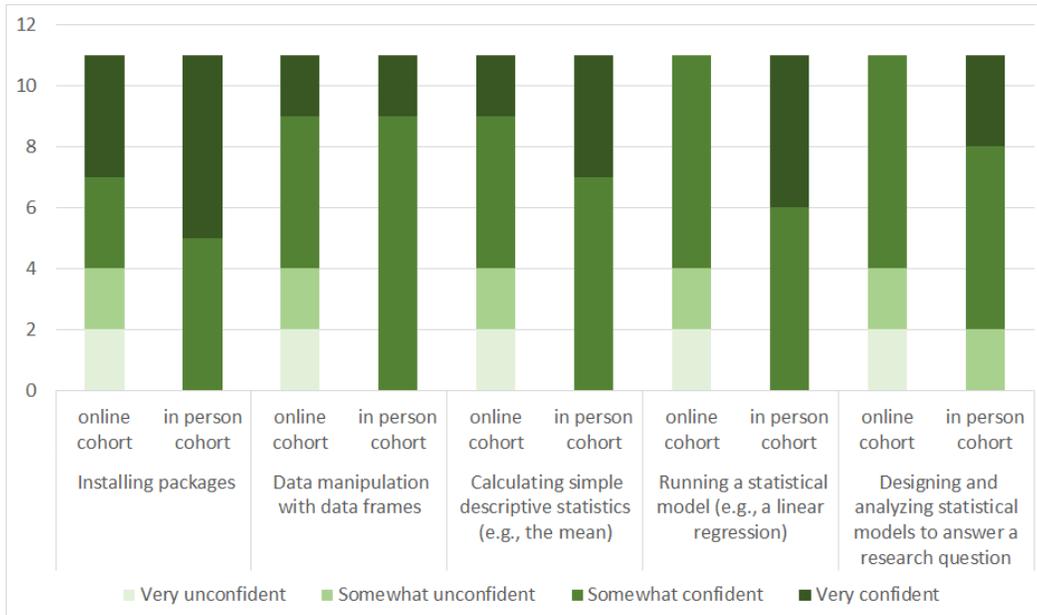


Figure 3. Student reports of confidence in various Jupyter and R activities.

Grades achieved

Grade data was compared for the five assessment components of the course: Participation, Group hands-on work, Midterm and Final reports, Final exam, Peer Reviews; and overall grade. There were no significant differences in group hands-on work ($p > .11$), midterm and final report (take-home) tests ($p > .76$), the synchronous final exam ($p > .20$) or overall grade ($p = .12$). For class participation, in-person students scored 15% higher than online students ($t(28.49) = 3.19, p = .003$). This result was expected given that in-person attendance was always synchronous and thus allowed this, whereas asynchronous activity would not allow for participation in the same way. For peer-reviews, in-person students scored significantly higher (21% higher) than online students (First four peer-reviews: $t(26.67) = 2.74, p = .03$; Final peer-review: $t(21.37) = 2.99, p = .007$). This was attributed to the fact that they were completed in-class and may have resulted in better access to the teacher/TA feedback.

EPSE 514

Course description and context

Course ID/Name: EPSE 514 - Advanced Orientation and Mobility Techniques for Instructors of Individuals who are Blind or Visually Impaired

Term taught: Summer Term 2, 2021

TAs: No

Enrolment by modality of instruction: 16 students were enrolled in the course (Vancouver: 6; Toronto: 5, Moncton: 5)

Hybrid approach: N/A

Brief course description: An asynchronous online component provided course content and opportunities for students to interact in discussions, regardless of location. In each section of the course (i.e., their own location), students participated in in-person blindfold simulations in authentic environments, e.g. navigating business districts and crossing streets without vision, in order to learn necessary practical skills, techniques, and observation and monitoring methods. An evaluation approach was best suited to this project, and therefore BREB approval was not obtained.

Research questions and methods

Research questions

1. Can a hybrid learning model provide consistency in learning across locations?

Methods

An online survey was administered at the end of the course to students in all three locations, with 75% (12/16 students) responding. The survey assessed: interest in increased course duration, perceived skill level obtained, usefulness of in-person components, perception of course components in supporting learning, and overall course experience.

Findings

Students felt the course should be longer. Student feedback was mixed in terms of the helpfulness of the online asynchronous discussion to create a sense of community. Future courses may consider at least one or two Zoom sessions in support of this objective while also considering each city's time zone.

For future course offerings, a recorded assignment overview posted to Canvas will be added to provide levels of expectation for each assignment and suggested time frames for working through activities.

**Analysis of the course surveys is ongoing by the course instructor, and the instructor will be reporting in further detail in her report to the Provost Office/CTLT.*

FRST 232

Course description and context

Course ID/Name: FRST 232 - Computer Applications in Forestry

Term taught: Summer Term 2, 2021

TAs: Yes

Enrolment by modality of instruction: In person (n = 2); online (n = 14)

Hybrid approach: Concurrent

Brief course description: Pre-recorded videos and pre-readings were available for students (both in-person and online cohorts) to complete asynchronously. After completing these activities, students posted any related questions to a shared web document, which were discussed by the instructor during a synchronous session (shared via Zoom for online participants). Students then solved discussion questions with their peers (groups of 3) in Zoom breakout rooms. For the synchronous lab sessions, students were allowed to switch lab sessions from classroom to online formats during the course. During the lab sessions, in-person students worked together with in-class students, and online students worked in Zoom breakout rooms with online students in their group. Two TAs were available to support on-campus students, and two TAs helped remote students in their breakout rooms. BREB approval was obtained for this study due to the research intent of the project.

Research questions and methods

Research questions

1. What were students' learning goals, expectations and experiences (beliefs and affect) in a hybrid format course of a Computer Applications in Forestry course?
2. What demographic factors (prior knowledge, gender, English language proficiency) might influence students' engagement and experiences in a hybrid model? *Given the very small sample size of the study, modeling required to address this question could not be conducted.*

Methods

Three surveys (beginning-of-term, midterm, end-of-term) were shared with the students. They were asked demographic questions, learning goals and expectations on the beginning-of-term survey followed by reflections about their learnings on the end-of-term survey. Level of engagement and self-reported content mastery was assessed via midterm and end-of-term survey responses. Finally, students' perceived self-efficacy and confidence in using computer applications were determined from midterm survey responses.

Open-ended questions were analyzed using qualitative thematic content analysis. Survey scale item responses were analyzed using paired samples tests - these analyses examined changes over the term, since sample sizes were inadequate to compare in-person and online student experiences. Mastery of content knowledge was observed for trends over the term (no statistical analyses were conducted due to small sample size).

All students enrolled in the course were invited to participate. Survey 1 was administered July 6-9, Survey 2 was administered July 16-23, and Survey 3 was administered August 9-13, 2021. Thirteen students completed all three surveys (online: 12, in-person: 1), and four additional students completed only 1-2 of the surveys.

Findings

Confidence, Self-efficacy and Engagement

There was a significant increase in students' average confidence score ($t(14) = 2.22, p = .04$) and total self-efficacy score ($t(12) = 2.28, p = .04$) from midterm to the end of term in the content and skills covered in the hybrid course. There was no significant change in average level of engagement across the course $p = .67$. For mastery scores, large variations in scores were not observed within or between individuals, although individual students did appear to have variable trends, which may reflect students' differing levels of prior experience.

Students' learning goals and expectations

At the start of the term, the main learning goals students reported were to gain "efficiency" and "effectiveness" in computer applications/software tools to solve practical problems, for data management, and analyses/research in the future.

Majority of students reported that the hybrid lab sessions and group activities were most valuable. Reasons listed were that they enabled exploration, ability to practice applications and consolidate learning from feedback received from the teaching team and peers, and that these experiences could be used to complete other parts of the course (e.g. independent assignments). Hybrid discussion sessions were another interactive component of the course that was reported to be interesting to students and an effective way to generate ideas.

Students appreciated and valued the flexibility of asynchronous lectures that allowed them to review content prior to live lectures and revisit content as needed. Students also appreciated the weekly quizzes as "checkpoints" for determining how well they grasped the content. No student reported that they had unmet expectations in their cohort.

General themes from individual project data

Although sample sizes were too small to perform statistical comparisons between hybrid and in-person cohorts in the courses that took part in this pilot, there was also no evidence to support that one method was better than the other for any individual course. Across projects, student data indicates advantages and disadvantages for both in-person and online instruction. For example, in ECON326, while there were some differences between self-reports of engagement and confidence in learning ability, these differences did not appear to be significant (e.g., no reports of strongly disagreeing with statements related to inclusion or interaction quality). Without being able to properly compare student groups, it is unknown whether there were different experiences, expectations, and outcomes across students who choose to attend in-person or online. Despite this, based on the student feedback collected in this pilot project, we are able to identify overall benefits and challenges that instructors should consider when deciding to teach in hybrid format.

Benefits of hybrid learning

The main benefits from the student learning experience perspective included: no evidence that the in-person and online groups were different in areas such as student interaction and collaboration, instructor support or final grade (ANTH 378; ECON 326); feelings of inclusion in peer engagement, enjoying the lecture and course activities (ECON326); and greater autonomy for online cohorts compared to in-person cohorts (ANTH 378). Across courses, the most consistently valuable aspect of a hybrid format was the convenience and flexibility for learning opportunities that the model afforded.

Challenges of hybrid learning

The main challenges of the hybrid model for students included: ineffective communications with peers and teaching team for the remote cohort (due to time differences: ANTH 378; due to delayed feedback: APBI 462), difficulty for the remote cohort to create connections with peers and the instructional team as compared to the in-person cohort (APBI 462), and greater participation ability (and therefore grades) for in-person compared to remote students (ECON 326). In general, student preference was for in-person learning (APBI 462, ANTH 378, ECON 326), although most students in the online cohort reported being satisfied with their choice.

Recommendations

- 1. Be mindful of student engagement opportunities** - As discussed in the recommendations relating to the instructional team experience, student engagement was an area that students highlighted as sometimes not working to its full potential. It is important for instructors to consider course activity design, including the decision to mix cohorts for group projects or require mixed activities, as these will impact the learning experience. Instructors should also be considerate of how time zones will impact any engagement activities for remote students (e.g., participation grades) or remote-in-person student pairings.
- 2. Better technical hardware is needed** - The ability for remote and in-person students to hear and see each other clearly is critical to ensure effective communication and collaboration.
- 3. Continue evaluation efforts to assess impact and needs** - Encourage instructors who are using a hybrid teaching model to evaluate the student experience. The limited sample sizes in the present pilot did not allow for statistical comparisons to assess impactful differences between cohorts, or determining generalizability beyond the courses in the pilot.

Appendix A: Instructor Interview Questions

First interview

1. Have you taught a hybrid course before? (If yes: How long ago?)
2. Can you share your expectations for student engagement in this hybrid course? For students attending remotely or in person, what are your expectations around engagement with the teaching team, including TAs? With peers? With the learning materials and activities?
3. What do you anticipate will be the biggest challenges for you? And for your students?
4. What do you anticipate will be the main benefits or satisfactions for you for using a hybrid teaching model? And for your two groups of students?
5. Could you please describe the process of designing and preparing for teaching your hybrid course? What were the main implications for you and the teaching team, including TAs?
6. What supports were useful for you in the course planning and design stage (e.g institutional, Departmental, external)? What would you want to have had more of?
7. Do you have anything you would like to share with us before going into teaching the hybrid course? Or you think there was a question that I should have asked and I didn't?

Second interview

1. Now that you have taught the hybrid course, were your expectations around student engagement met, for both groups of students? (with peers and with the teaching team)
2. How would you describe the overall learning experience for each of the group of students (remote and in-person)? How did the most essential learning experiences of the course unfold for the two groups of students?
3. What would you say were the main challenges you faced when delivering your hybrid course? What were the main challenges for your students? And the teaching assistants?
4. What were the main benefits or satisfactions of delivering a hybrid course? For you? For the students? For the teaching assistants?
5. Could you please share your perceptions of time commitment for the delivery of the hybrid course? How would you describe the workload for you and the teaching team, including TAs?
6. If you or a colleague were to consider teaching a hybrid course in the future, what advice would you give? What things would you do differently next time?

7. What supports would you need at the institutional and Departmental levels for hybrid courses to remain a sustainable alternative to teaching and learning?
8. Is there anything else you would like to add? Was there a question that I should have asked you and I didn't?

Appendix B: Teaching Assistant Interview Questions

1. Can you explain your role(s) in the hybrid course? And indicating any previous TA experience?
2. How would you evaluate your recent experiences in the hybrid course? (e.g. more difficult or less difficult a) in comparison to purely online course b) in comparison to a purely in-person course)?
3. In your view, what are the main differences between TAing a hybrid course versus a non-hybrid course? (can be fully online or fully in person)? Anything in relation to the time, expectations and commitment that you like to share is welcomed.
4. What were the main challenges you faced during the hybrid course? What do you consider to be the main challenges the students faced during this course?
5. What were some of the benefits of TAing a hybrid course? In your view, what were some benefits for the students?
6. How would you describe the overall engagement of students attending in person and those attending remotely? How did their interactions with TAs like you and with other students compare?
7. Based on your recent experience, what recommendation do you have for instructors interested in developing and teaching a hybrid course in the future to make the TA or student experience better?
8. Anything you would like to add before we depart?

Appendix C: SoTL Specialist Closure Reports

HYBRID PROJECT CLOSURE REPORT: ANTH 378

Project Investigator(s): Amirpouyan Shiva, Eric Simons

SoTL Specialist: Yue MAO

Project start date (course start date): July 5, 2021

Project end date: (course end date): August 12, 2021

Course context (final # of students registered, # of students remote / in-person): 126 registered, 112 remote, 14 in-person

Course Description

Format: A small number of students attended in person, while most students attended remotely over Zoom. Regardless of how they attended the class, students were receiving the same information during synchronous meetings as the instructor shared the slides within Zoom and projected the Zoom interface on the screen in the classroom. An external webcam captured the instructor and the blackboard behind him. Students on Zoom were able to switch the view between the instructor/blackboard and the slides. Each class was organized in a Canvas module. To unlock each of the components of each module students needed to complete the previous components. The first component in the module was an overview of the module. Next, students read the assigned readings for that session, watched one or two pre-recorded lectures (10-20 minutes), watched any assigned ethnographic films or documentaries, and took a very short quiz. Then during the synchronous meeting, they listened to and participated in a short lecture linking assigned readings to previous course materials. The last activity during synchronous meetings was a group active learning activities (ALAs). The ALAs gave students an opportunity to apply their knowledge to a familiar situation or lived experience.

Aim: The instructor has taught the course fully in-person (2018 S2), fully remotely (2020 S2 and W1), and during 2019 W2 when UBC transitioned to online instruction in midstream. Teaching the course with a hybrid approach provides yet another alternative mode of delivery and a valuable additional datapoint, giving an understanding of a full spectrum of options, making the comparison among them more meaningful. Hopefully, the quality of learning in the hybrid case can be improved compared to the fully remote delivery of the course as a hybrid format provides a more meaningful learner-learner interaction. The pilot also helps in understanding the advantages and limitations of the hybrid course delivery method.

Research questions (if applicable):

RQ1) Why did the students take the course in person or online (synchronous, asynchronous)? If this course is offered in a later year and there are no covid-19 restrictions in place, would they prefer to take it in person or online? Does their preference change at the beginning and by the end of the course?

RQ2) Do the three cohorts who take the course in person, online synchronous and online asynchronous, have equitable performance and experiences? In other words, do the three groups differ in grades, student collaboration, instructor support and student autonomy?

RQ3) How do the students feel about the course by the end of the term? Do they have any suggestions for the course and do the suggestions relate to the hybrid mode of delivery? What are the advantages and limitations of hybrid teaching?

Method

Materials

Two surveys were designed to investigate the three research questions. The first survey mainly asked the students' choice of taking the course in person, synchronous online or asynchronous online, and the corresponding reasons, in the current term, and in a later year if there are no COVID restrictions in place. Grades is the only demographic information collected to set a reference for the comparison of performance among the three groups of students. The second survey asked again their choice of taking the course in person, synchronous online or asynchronous online in a later year if there are no COVID restrictions in place, to see whether their preference change after taking the course. Besides, student collaboration, instructor support and student autonomy are measured by three scales in the second survey to examine the second research question. Finally, both surveys contain an open-ended question asking about any questions, concerns, suggestions or comments about the course, to investigate the third research question. Student IDs were collected in both surveys to link the two waves of data and grades of the courses. One of the authors who does not belong to the teaching team deleted the student IDs after matching the data to ensure anonymity. BREB approval was obtained, ethics ID number H21-01713.

Participants

All the students who took ANTH 378 in summer term 2, 2021, were all invited to participate in the study by filling out two surveys. The first wave of data was collected at the beginning of the course from July 6 to July 21. 40 students responded to the first survey. The second wave of data was collected at the end of the course from August 11 to August 15. 58 responded to the second survey. The response rate of the two surveys were around 32% and 46%, respectively.

Measures

Student interaction and collaboration, instructor support and student autonomy are measured by validated scales (Walker & Fraser, 2005). They were measured by 6, 8 and 5 items, respectively, in 5-point scale range from strongly disagree (-2) to strongly agree (2). Scale reliability and factorial validity were examined using Cronbach's alpha coefficient and exploratory factor analyses (EFA) with varimax rotation. The results showed that the scales had acceptable reliability and validity (table 1).

Table 1

Scale Reliability and Validity Evidence (N = 58)

| Measures | Number of items | α Reliability | Factor loadings | % Variance |
|---------------------------------------|-----------------|----------------------|-----------------|------------|
| Student interaction and collaboration | 6 | 0.85 | 0.49-0.94 | 54 |
| Instructor support | 8 | 0.92 | 0.56-0.95 | 60 |
| Student autonomy | 5 | 0.90 | 0.65-0.91 | 66 |

Analysis

Descriptive statistics, i.e., frequency and proportion of each group, were used to answer the first question. To answer the second question, ANOVA was employed to examine whether the three groups differ in grades, student interaction and collaboration, instructor support and student autonomy. To

answer the third question, quantitative content analysis was employed to analyze students' attitude towards the course from open ended survey question. Most of the analyses were conducted in *RStudio* 1.4.

Findings summary

Preference and reasons for taking the course in person or online (RQ1)

Figure 1

Actual Distribution of and Preference for Taking the Course in Person or Online

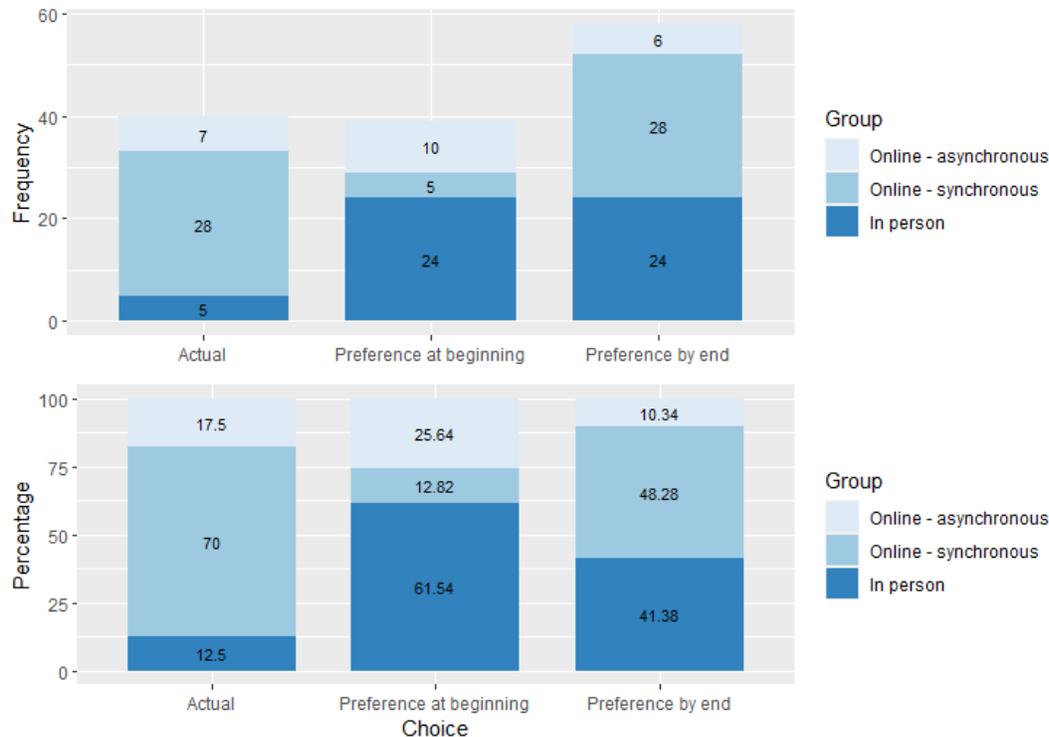


Figure 1 showed the distribution of and preference for taking the course in person or online. At the beginning of the course, there was a discrepancy between the actual status of the students registered to take the course in person or online. While 70% of the students were taking the course synchronously online, only about 12% of them would prefer to take the course this way, and over 60% of them would prefer to be in person if the course is offered in a later year and there are no covid-19 restrictions in place. By the end of the course, their preference changed. The proportion of the students who would prefer to take the course synchronously online increased to 48%, and that of the students who want to be in person decreased to 41%. Online asynchronous seemed to be unfavored. More students (26%) preferred this mode at the beginning of the course than the number of students who were in this mode (18%), but it was less preferred by the end (10%). The discrepancy between the actual status and their preference decreased by the end of the course compared to that at the beginning of the course.

Table 2

Reasons for Taking the Course in Person or Online

| | Frequency | Percentage |
|--|-----------|------------|
| The reasons for you to take the course in person currently are: | | |

| | | |
|--|----|--------|
| I prefer face-to-face interactions (with the instructor and/or other students) | 4 | 100.00 |
| (Beginning of the term) The reasons for you to take the course in person in the future are: | | |
| I prefer face-to-face interactions (with the instructor and/or other students) | 19 | 79.17 |
| I more easily get distracted in online courses | 5 | 20.83 |
| (End of the term) The reasons for you to take the course in person in the future are: | | |
| I prefer face-to-face interactions (with the instructor and/or other students) | 13 | 46.43 |
| I more easily get distracted in online courses | 12 | 42.86 |
| Technical problems (e.g. unstable internet connection) | 3 | 10.71 |
| The reasons for you to take the course online currently are: | | |
| I don't live in Vancouver | 17 | 30.91 |
| Flexibility in time | 17 | 30.91 |
| Covid restrictions | 14 | 25.45 |
| Others (please specify): | | |
| - <i>not know in-person session/ in-person session full</i> (mentioned twice) | | |
| - <i>safety concerns due to covid</i> (mentioned twice) | 7 | 12.73 |
| - <i>shorted staff at work</i> (mentioned once) | | |
| - <i>easier to accommodate for people with disabilities</i> (mentioned once) | | |
| (Beginning of the term) The reasons for you to take the course online in the future are: | | |
| More flexibility in time | 12 | 46.15 |
| Avoid commute to and from UBC | 11 | 42.31 |
| Other (please specify): | | |
| - <i>easier to accommodate for people with disabilities</i> (mentioned twice) | 3 | 11.54 |
| - <i>travel restriction</i> (mentioned once) | | |
| (End of the term) The reasons for you to take the course online in the future are: | | |
| More flexibility in time | 27 | 47.37 |
| Avoid commute to and from UBC | 24 | 42.11 |
| Other (please specify): | | |
| - <i>re-watching lectures and have captions</i> (mentioned twice) | | |
| - <i>benefits of saved time such as sleep health and ability to earn more</i> (mentioned twice) | 6 | 10.53 |
| - <i>attend UBCO, taking the course remotely</i> (mentioned once) | | |
| - <i>only if there are no other options</i> (mentioned once) | | |

Table 2 showed the reason for students' choices. For the students who took the course in person, their reason is that they prefer face-to-face interaction. For the students who would prefer to take the course in person at the beginning of the course, their reasons are they prefer face-to-face interaction (79%) and some can be easily distracted during online courses (21%). For the students who would prefer to take the course in person by the end of the course, face-to-face interaction (46%) and distraction during online courses (43%) are still importance factors; about 11% reported reasons of technical problem such as unstable internet connection, while it was not anticipated at the beginning of the course.

For the students who took the course online, their reasons are mainly flexibility in time (32%), not living in Vancouver (30%) and covid restriction (25%). Other reasons specified by the

students include *don't know in-person session/ in-person session is full* (mentioned twice), *safety concerns due to covid* (mentioned twice), *shorted-staff at work* (mentioned once), and *easier to accommodate for people with disabilities* (mentioned once). For the students who would prefer to take the course online at the beginning of the course, the reasons remain similar. For the students who would prefer to take the course online by the end of the course, flexibility in time (47%) and avoiding commute to and from campus (42%) are still main reasons. Other reasons such as *re-watching lectures and having captions* (mentioned twice) and *benefits of saved time such as sleep health and ability to earn more* (mentioned twice) were mentioned.

Difference in student interaction and collaboration, instructor support, student autonomy, and grades (RQ2)

Four one-way ANOVA tests were performed to compare the effect of taking the course in-person or online on student interaction and collaboration (SIC), instructor support (IS), student autonomy (SA), and final grades (FG), respectively. Results were summarized in Table 3.

Fortunately, there was no evidence that the in-person group and online group have significant differences in student interaction and collaboration, instructor support and final grades. Although it may be too bold to say that the students who took the course in person or online have equivalent experience in these aspects, at least the difference is not statistically significant.

The only significant difference is seen in student autonomy. Group difference explained about 28% of the variance in student autonomy. The mean score on student autonomy of the 37 students who took the course online was higher than that of the 8 students who took the course in person.

Table 3

Results of One-way ANOVA Testing the Effect of Being In-person or Online on Outcome Variables

| Outcomes | In-person | | Online | | F (df1, df2) | p | η^2 |
|----------|-----------|-------|--------|------|---------------|--------|----------|
| | M | SD | M | SD | | | |
| SIC | 6.25 | 8.43 | 8.94 | 2.71 | 2.59 (1, 41) | .12 | .06 |
| IS | 9.25 | 10.79 | 11.08 | 4.95 | 0.55 (1, 42) | .46 | .01 |
| SA | 1.62 | 7.07 | 7.92 | 2.98 | 16.76 (1, 43) | < .001 | .28 |
| FG | 75.56 | 10.09 | 77.44 | 7.46 | 0.42 (1, 52) | .52 | .01 |

Feedback from open-ended question about the course experience (RQ3)

13 students provided feedback to the open-ended question about the experience in the first survey and 36 in the second survey. Table 4 showed the number of students who expressed positive, mixed and negative feedback, broken down by whether they took the course in person or online. Although the Chi-squared approximation may be incorrect because of limited sample size, it indicates that the attitudes reflected in the feedback between the in person and online students do not have statistically significant differences.

Table 4

Number of Positive, Mixed and Negative Feedbacks, Broken Down by Being In-person or Online

| | In-person | Online | Chi-square | p |
|------------------|-----------|--------|------------|-----|
| At the beginning | | | 2.04 (2) | .36 |
| Positive | 1 | 2 | | |
| Mixed | 1 | 2 | | |
| Negative | 0 | 5 | | |
| By the end | | | 1.82 (2) | .40 |

| | | |
|----------|---|----|
| Positive | 3 | 7 |
| Mixed | 3 | 12 |
| Negative | 1 | 10 |

Student attitudes towards the hybrid mode of delivery were mainly mixed, especially by the end of the course. Two students thought *the hybrid format worked well and wished UBC would continue offering hybrid classes to accommodate students with disabilities*. The main advantage of the hybrid mode of teaching was the *flexibility*. The concerns of the hybrid mode of teaching were centered on interactions and there seemed to be a *division between online and in-person discussions etc*. For example, some said that *it was hard for the online students to hear what the in-person students say because they were far away from the professor’s microphone, and some were worried that if a person who was taking the course through zoom talked, they would be displayed on a big screen in front of everyone, while they never see the faces/avatars of students on campus*. In contrast, a student said *the students in-person never got to see questions and answers between the students online and teaching assistants*. In addition, a few students thought *the mix of different cohorts made the group work disorganized and would prefer to work together with students from the same cohort*. Finally, a student from the in-person cohort expressed a concern that *some people stopped wearing masks during class and it made they felt anxious and unsafe specially knowing that some people in class were not yet fully vaccinated*.

Implications for practice

Student perspectives revealed something that wasn’t expected. For example, the teaching team thought that the quality of learning in the pilot case could be improved compared to fully remote delivery of the course as a hybrid format provides a more meaningful learner-learner interaction when on-campus and remote students collaborate with each other and take on unique responsibilities that require their active participation and collaboration (e.g., serving as team’s ambassador in in-person classroom or on the discussion board). However, the mix of on-campus and remote students received quite a lot of complaints from the students because of the time differences or inefficient communication. Besides, when choosing the hybrid mode of delivery, technique solutions are needed to ensure that the students online and students on campus can see and hear each other clearly so that they can communicate and cooperate effectively.

HYBRID PROJECT CLOSURE REPORT: APBI 462/PLNT 590

Project Investigator(s): Dr. Juli Carrillo

SoTL Specialist: Natasha Pestonji-Dixon

Project start date (course start date): May 10, 2021

Project end date: (course end date): May 21, 2021

Course context (final # of students registered, # of students remote / in-person): 12

Course Description

APBI 462/PLNT 590: Conservation Agriculture and Biodiversity Monitoring is a two-week intensive field course located at the Centre for Sustainable Food Systems at UBC Farm. The purpose of the course is to introduce concepts of biodiversity conservation in agricultural systems by (1) providing experiential learning and skills practice in ongoing biodiversity monitoring using real-world survey techniques and assessment protocols, (2) evaluating how different management actions across diversified landscapes influence biodiversity, and (3) discussing how biodiversity contributes to ecosystem services and food production.

The goal of the hybrid course was to create materials (such as expert demonstrations, lab demo videos, citizen science modules, etc.) to allow students unable to attend in-person to take the course remotely. The course consisted of online lectures in the morning followed by fieldwork (either at UBC Farm or in learners' own neighbourhoods) in the afternoons.

Research/Evaluation questions:

The primary goals of this project were to:

- 1) Investigate the overall student experience of the course, particularly around areas of diversity and accessibility.
- 2) Compare student experiences (particularly student engagement) of online and in-person cohorts.

Method

We determined that an evaluation approach was best suited to this project, and therefore did not obtain BREB approval.

Participants and Design. In Summer 2021, 9 students in APBI 462/PLNT 590 participated in the evaluation of the course, during online class time.

Procedure. Students completed a brief Qualtrics survey online during class (please see below). The survey included a series of matrix and open-ended questions about student engagement (adapted from the SCEQ, Handlesman, Briggs, Sullivan, & Towler, 2005), use of course technologies, diversity and representation in the course, and accessibility of the course. At the end of the survey, participants were invited to provide their email address to enter an incentive draw (\$25 gift card to UBC farm). This identifying information was used to complete the incentive draw, and then immediately removed from the data file. The instructional team was only provided access to the de-identified data file, and only after course grades were submitted.

Data analysis. Due to small Ns, we ran descriptive statistics only. Student comments were analyzed using a general thematic approach.

Findings summary

Mode of instruction and student engagement

Overall, a majority of students (7/9) indicated that they would somewhat or strongly prefer to take this course in-person rather than online. However, most students provided advantages of both modes of instruction in their comments.

Advantages to in-person instruction included:

- 1) **Receiving immediate feedback/guidance** (“In person real time advice and guidance for field studies cannot be achieved remotely”), n=5
- 2) **Connection/community with peers/instructors** (“Advantage to in person: developing connections with peers and profs”), n=3
- 3) **Ease** (“The course is very intensive, and the online portions I find are very hard to concentrate on”), n=2
- 4) **More participation** (“There is also a real lack of class participation [online] which hurts the course delivery”), n=1

Advantages to online instruction included:

- 1) **Accessibility/convenience** (“Online, I was able to do the lab portion on my own time which was nice”), n=5
- 2) **Application to own context** (“I also liked...applying the concepts we learn in class to my day-to-day surrounding environment”), n=2
- 3) **Independence** (“I also liked the independent nature of the labs”), n=1
- 4) **Still feeling supported** (“it was flexible to make work best around my own needs and schedule, while still being guided”), n=1

Student engagement in the course was moderate-high, with variability on individual items of the Student Course Engagement Questionnaire (SCEQ). Overall, students attending the course in-person (n=5) provided higher ratings on SCEQ items than those attending the course online. Due to small Ns, we cannot perform inferential statistics or draw strong conclusions.

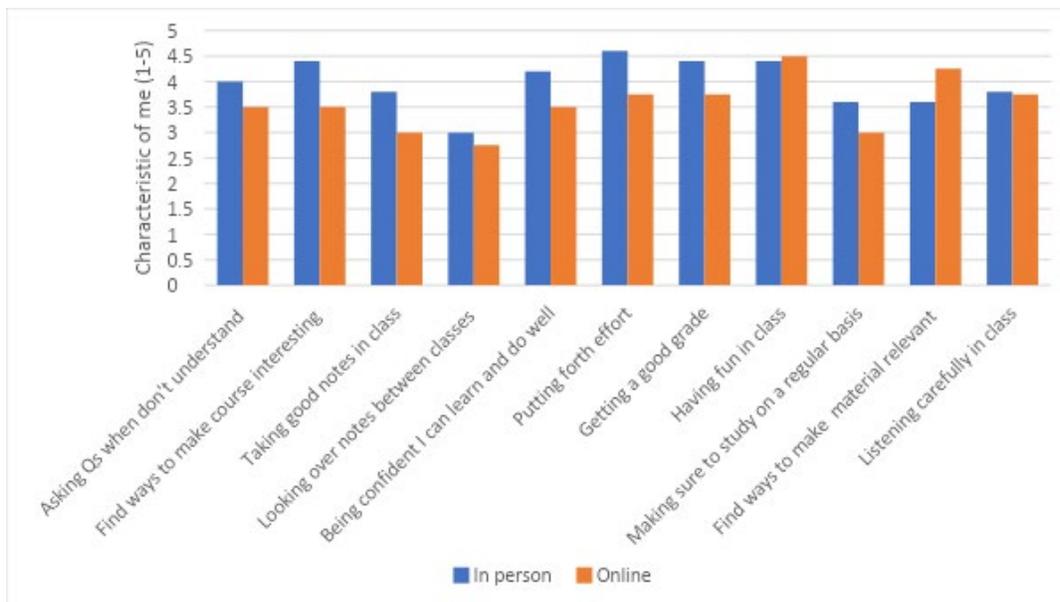


Figure 1. Average responses to SCEQ items by students who attended the course in-person vs. online. 1 = Not at all characteristic of me, 2 = Not really characteristic of me, 3 = Moderately characteristic of me, 4 = Characteristic of me, 5 = Very characteristic of me.

Diversity/representation

Overall, students indicated that there was sufficient diversity in the reading materials, experts, and resources used in the course, with 100% of students indicating that they slightly agreed, agreed, or strongly agreed (See Figure 2 below). More variability in answers was seen on a question asking about whether students would like to see more representation/diversity. Student comments suggested that they noticed and appreciated the diversity (“I have noticed that the imagery and examples selected to be a part of the course are diverse and represent communities from many backgrounds. This has been a highlight of lectures”), while acknowledging that there is always room for growth (“As with most science-based courses, I think greater diversity in the authors whose writing is represented can always be achieved (i.e. this course was neither better nor worse than the norm in that regard)”). The frequency distribution below illustrates answers to individual questions.

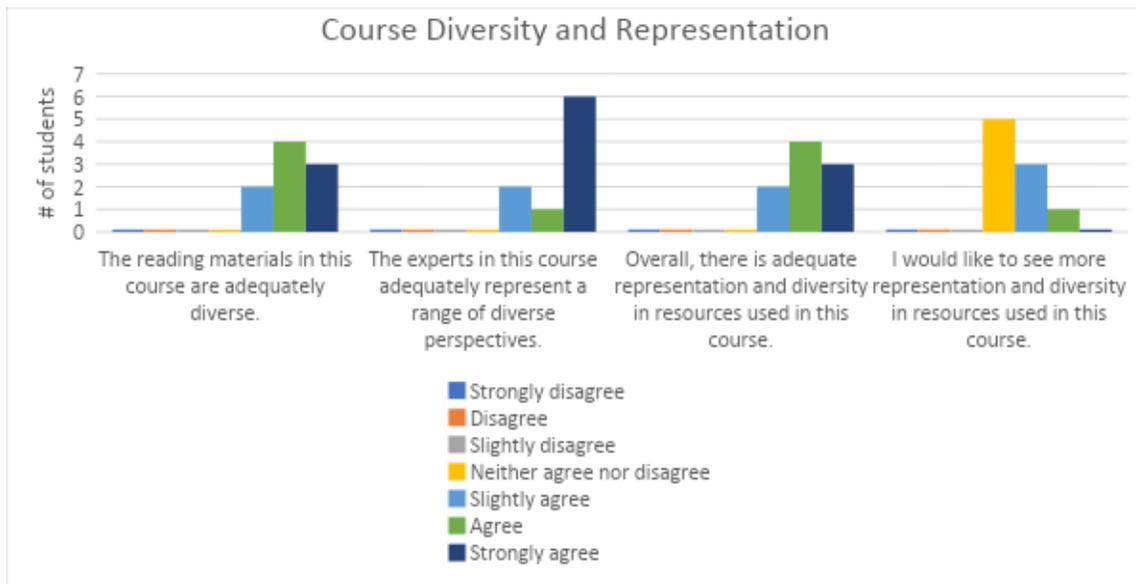


Figure 2. Frequency distributions (overall N=9) of student responses to diversity/representation survey items.

Accessibility

Responses to accessibility questions demonstrated a fair bit of variability. When asked about their own experiences in the course, most (6/9) students indicated that they did not have challenges in the course due to physical or mental difficulties. However, when asked about the accessibility of the course overall, most students responded close to the middle of the scale (slightly disagree, neither, slightly agree), with a few people at endpoints of the scale. Responses to questions asking if improvements could be made to increase accessibility were fairly split.

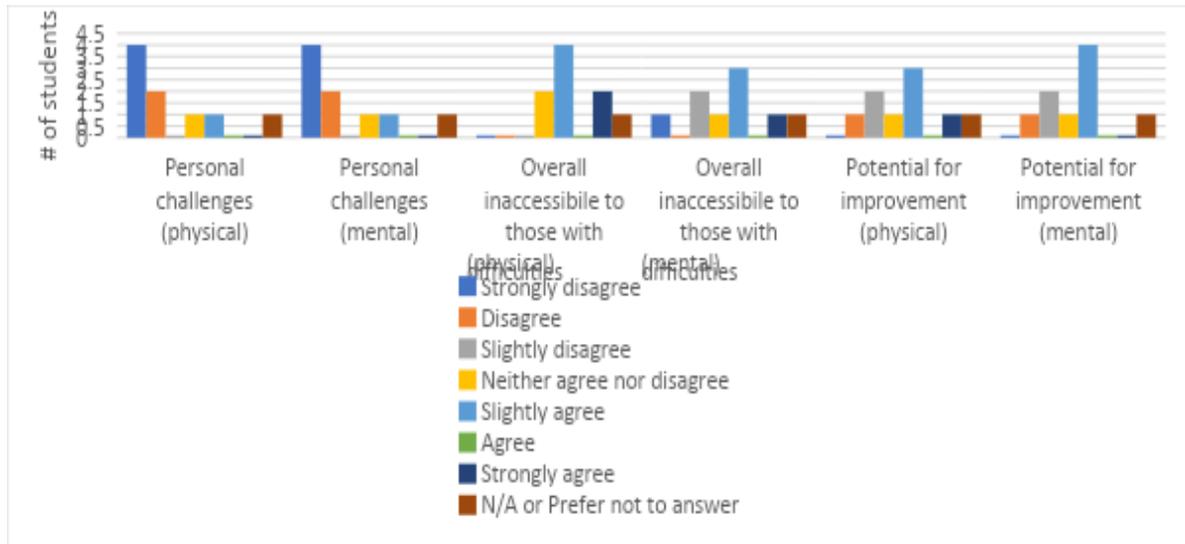


Figure 3. Frequency distributions (overall N=9) of student responses to accessibility survey items.

Implications for practice

Findings on modality of teaching suggest that there is an overall preference for in-person instruction. However, students highlighted a number of advantages of both modes of instruction. Using this feedback, there is potential to continue with a successful hybrid model that incorporates the flexibility, independence, and application to own context of online instruction with the support, feedback, and community/belonging of an in-person course experience.

Findings on diversity and accessibility suggest that students appreciate the thoughtfulness in current teaching practices, and that there is always room to grow. This course is unique in the potential accessibility challenges. Upon Dr. Carrillo's request, a list of resources is included below to highlight additional steps to consider to increase equity, diversity, and accessibility in the course.

Moving forward, incorporating both positive and constructive feedback helps inform the parts of the course appreciated by students and provides ideas for growth for the next iteration of the course, and iterative rounds of student feedback.

Resources for Dr. Carrillo

Inclusive Teaching @ UBC Faculty Resources: <https://inclusiveteaching.ctlt.ubc.ca/resources/resources-for-faculty/?login>

- This webpage includes a series of introductory online courses on creating more inclusive learning environments, additional resources, academic literature, links to other institutions' documentation, etc. A wealth of resources!
- Module 4 (*Universal Design for Learning*) should help consider ways to make the course more accessible to all learners.
- Resources on *Cultivating an Inclusive Climate in Online Classrooms* might also help with equity/diversity considerations.

- Consider some of the teaching guides (e.g. *Inclusive Teaching Guide* at Columbia University) for practical steps to put into practice.

Open Education Resources Accessibility Toolkit

- Includes a series of mini-modules to consider best practices for accessibility of course materials

HYBRID PROJECT CLOSURE REPORT: ECON 326

Project Investigator(s): Emrul Hasan and Jonathan Graves

SoTL Specialist: Trish Varao-Sousa (Evaluation & Research Consultant); ShunFu Hu (briefly)

Project course start date: May 11, 2021

Project course end date: June 18th, 2021

Course context (final # of students registered, # of students remote / in-person):

ECON 326 (Methods of Empirical Research in Economics); N = 37: 17 students in-person, 20 students online

Course Description

The course (ECON 326: Methods of Empirical Research in Economics) was taught in Summer Term 1 (2021) and involved a lecture component (available synchronously and asynchronously for both groups of students) and a synchronous hands-on problem solving “lab” component with online and in-person students completing the activities together.

Research/Evaluation questions:

The goal of this project was to understand the student experience of a hands-on experience in a data-focused economics course offered with a hybrid model (ECON 326).

The overarching research question was “Do student experiences of the course differ between in person and virtual students?”. Student experience was assessed via items relating to:

1. Engagement/interactions with the course materials and activities, with peers and with instructors and TAs.
2. Perceived barriers that influenced learning (based on cohort).
3. Enjoyment of various course activities.

4. Skills developed (R and Jupyter software).
5. Grades achieved

Method

Two surveys were administered to students: one in the first 2 weeks of the course and the second in the last 2 weeks of the course. The start of term survey (16 items) assessed prior experiences in online and in-person courses in terms of feelings of inclusion, engagement and interactions with peers. The survey asked students to report on perceived barriers to their current cohort (online or in-person) and if they had wished to be in the other cohort, what prevented them from doing so. Students were asked to rate their confidence in R and Jupyter program skills. Finally, GPA, gender identity and program were asked as these were thought to be factors which may impact outcomes. The end of term survey (13 items) duplicated the start of terms items, with the exception of the demographic items.

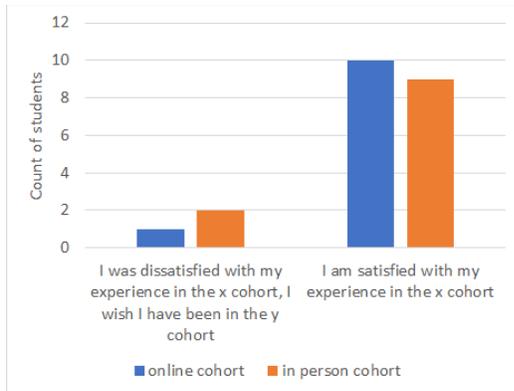
Because this project had research intent, a BREB application was completed (H21-01222). Student IDs were collected so that pre-post survey data could be compared. Raw survey data was accessible only by Trish Varao-Sousa, Evaluation and Research Consultant, raw data is stored on UBC OneDrive, and only aggregate data summaries were shared with the PIs.

Findings summary

Survey 1: n = 17 students (12 in-person, 5 online)

Survey 2: n = 22 students (11 in-person, 11 online)

Survey data sample sizes were too small to conduct statistical analyses with sufficient power to detect effects. However, overall, student experience was comparable between the in-person and online cohort. Students did report that in past courses their online and in-person experiences differed (with the in-person experience reported as more favorable) and this trend seems to be the same in the current course, however the degree to which this impacted their learning experience is unclear. Overall, majority (over 80%) students in both groups reported agreeing or strongly agreeing with the following statements “During this course, I... felt included in the class; enjoyed the lectures; enjoyed the hands-on component; enjoyed interactions with my peers in the online/in-person cohort/instructor/TAs; was actively able to participate in the course lectures/hands-on portion”. Overall most students reported being satisfied with the cohort they were in (see Figure below).



The most prominent barrier to learning was time zone differences for the online cohort, and both cohorts reported technological problems. Student confidence in R and Jupyter skills were quite high at the start of term, thus limiting the amount of upward movement of learning during the course although there did appear to be an increase in confidence. Between the two cohorts, students in the in-person cohort reported greater confidence in all activities, although these differences may not be statistically significant. Interestingly, the grade data (included below) does not reflect meaningful differences in learning as measured by grades achieved.

Students also reported on what they liked least and most about the hands-on feedback. Many students reported that they appreciated the application of theory to real-life scenarios and the discussions while working with others, these reports did not differ between cohorts. In both cohorts, students reported that they struggled with team member/communication as well as network/website issues. Almost no student comments were directed explicitly to the hybrid format of the course.

Course grades

Grade data was compared for the five assessment components of the course: Participation, Group hands-on work, Midterm and Final reports, Final exam, Peer Reviews; and overall grade.

1. In-person students scored 15% higher in class participation (from attendance as well as Piazza participation) which was expected given that in-person attendance was always synchronous and thus allowed this, whereas asynchronous activity would not allow for participation in the same way. $t(28.49) = 3.19, p = .003, 95\% \text{ CI: } .05, .21$
2. In-person students scored slightly higher (2.4%) in group hands-on works where the students completed about 60% of the work in class and 40% at home. Groups had mixtures of about two in-person and two online students. *No significant differences (all $ps > .11$)*
3. In-person students scored slightly higher (3.7% and 0.5% respectively) in midterm and final report (take-home) testing hands-on practical materials. *No significant differences (all $ps > .76$)*

4. Online students scored higher (5.3%) in the synchronous final exam testing mostly theoretical materials. *No significant difference* ($p > .20$)
 5. In-person students scored significantly higher in peer-reviews (21% higher on average). Emrul attributed this possibly being due to better access to the teacher/TA so they contributed more, as well as resulting from about 60% of the works being completed in class.
 - a. First four: $t(26.67) = 2.74, p = .03, 95\% \text{ CI: } .14, .27$
 - b. Final: $t(21.37) = 2.99, p = .007, 95\% \text{ CI: } .08, .41$
2. For overall grade, in-person students scored slightly higher (2.7%) than the online students. *No significant difference* ($p = .12$)

A complete summary of the data can be found here:

<https://docs.google.com/presentation/d/11sH8ZJI0BQDUZw-1u2Z6BXYfk3BdHf8CYwLbmsBCTTc/edit?usp=sharing>

Implications for practice

How can this work further understandings of teaching and learning practices? Use this space to translate the key findings into actionable outcomes; this will help PIs connect your work to their teaching practice. For example: Do findings shed light on what teaching modality works/doesn't work? Do student perspectives reveal something that wasn't expected? In line with this, highlight any questions that remain unanswered or next steps you would suggest.

The research goals of this course were to examine the student experience between an online and in-person cohort of a hybrid model Economics course, the first of its kind. Overall, although there were some differences between subjective reports of engagement and confidence in learning ability, these differences did not appear to be substantive (e.g., no reports of strongly disagreeing with statements related to inclusion or interaction quality). Unfortunately, because the sample sizes were small it is impossible to know whether the results found here are statistically significant, or whether they are likely to generalize to future courses. Future iterations of the same format of the course could look at course activities at various points in the term to see whether there are differences in performance between the groups, as well as probing further into any inequity perceived in the interactions. To the latter point, there were nominal differences in enjoyment of interactions (more “strongly agree” for the in-person cohort) and determining why this was the case would be useful. Focus groups or interviews with a few students from each cohort, or additional text responses related to these items (i.e., “What could improve your enjoyment of the interactions with the instructor/TA/course peers?”).

HYBRID PROJECT CLOSURE REPORT: EPSE 514

Project Investigator(s): Kim Zebehazy

SoTL Specialist: Scott Robertson (also credit Zahra Chaudary)

Project Start Date: March 25, 2021

Project End Date: September 2021

Course Context (final # of students registered, # of students remote / in-person)

Course enrolment was 16, as follows:

- 6 in Vancouver
- 5 in Toronto
- 5 in Moncton

One student dropped mid-course due to health issues.

Three instructors were subjects, i.e. study respondents while the P.I. was both a course instructor and coordinator.

Course Description

The aim of the hybrid course was to coordinate three locations where instructors taught the same in-person Orientation & Mobility (O&M) course content to future instructors (students). In each O&M course, students participated in blindfold simulations in authentic environments, e.g. navigating business districts and crossing streets without vision, in order to learn necessary practical skills, techniques, and observation and monitoring methods for teaching individuals who are blind or visually impaired. An on-line O&M component provided supportive content and opportunities for students to interact in discussions regardless of their face-to-face location and also served as a way to provide students with consistent O&M course content.

Research/Evaluation Questions

Main Question: Can a sequential hybrid learning model offered for the first course in the Graduate Certificate in O&M program provide consistency in learning across locations to allow for possible future off-campus locations to expand the accessibility of the program?

Method

Mixed Methods Surveys

BREB approval was not sought for this project.

Two post-course surveys were designed separately, one for students and one for instructors. Surveys contained both quantitative and qualitative questions. Initial survey design followed an inductive adaptation of Burrell et al. (2018) but ultimately took an “atheoretical” approach (DeVellis, 2003, p. 8) simply aimed at gathering subjects’ responses.

Students were surveyed at the end of the course, with 75% response rate (12/16 responding). Survey anonymity was ensured via the Qualtrics survey platform, which did not collect personal information.

Instructors were also surveyed at the end of the course, with 67% response rate (2/3 responding); instructors who co-taught the course may have completed the survey collaboratively. Instructors also met weekly (openly, not anonymously) for regular debriefing and to review student assignments, which served as an informal focus group discussion.

Survey Analysis (still underway)

- descriptive statistics of quantitative questions
- qualitative analysis of open-ended questions for common themes and suggestions
- qualitative summary of instructor debriefing notes and checklists of skills covered
- comparison of final exam marks and open-ended answers by location

Findings summary

Both students and instructors felt the course should be longer. There was mixed review of the helpfulness of on-line asynchronous discussion to create a sense of community across the larger cohort; future courses may consider at least one or two Zoom sessions in support of this objective while also considering each city's time zone.

Debriefing meetings revealed that all three sites covered about the same content over a similar time frame; teaching notes provided to off-site instructors by the P.I. instructor / coordinator were helpful in facilitating this consistency. During the course, questions that instructors had regarding assignments as well as questions they had from students were posed to the P.I., also as a way to maintain consistency.

For future O&M courses, a recorded assignment overview posted to Canvas could provide levels of expectation for each assignment and suggested time frames for working through activities.

Implications for practice

- 5-week course duration
- at least 1–2 synchronous sessions
- a posted assignment / activity guide to answer anticipated questions across locations
- 'cleaner' teaching notes for instructors to use, e.g. a 1-page reference sheet for each week
- incorporating additional videos, which students found helpful

HYBRID PROJECT CLOSURE REPORT: FRST 232

Project Investigator(s): Suborna Ahmed

SoTL Specialist: Zarah Chaudhary

Project start date (course start date): July 5th

Project end date: (course end date): August 20th

Course context (final # of students registered, # of students remote / in-person):

The initial total number of student participants for the study was 17 with four students completing the study only partially/were lost to follow up (e.g. dropped the course). Of the 13 students who completed all three components of the study, one primarily attended in-person while 12 attended online. Note that there was one additional student registered for the course joining in-person that chose not to complete the study.

Course Description

Please give a brief overview of the hybrid course - what was the initial aim of this hybrid course, what was the format (ie. students attended lectures in the AM and field placement in the PM, etc.).

Computer Applications in Forestry (FRST 232) emphasizes learning data analysis techniques using programming routines. Students participated in learning activities to proceed with the advanced materials and received extensive support from the teaching team. A concurrent hybrid model was adopted to create an adequate environment for students to learn in a collaborative environment with their peers and engaged with course materials in real-time when their instructor and teaching assistants were present to support on-campus and remote students together.

The course also had synchronous lab sessions facilitating direct interactions between students and the instructor and the teaching assistants and enabled students to receive immediate feedback. Students were allowed to switch lab sessions from classroom to online formats during the course. During the lab sessions, in-person students worked together with in-class students, and online students worked in Zoom breakout rooms with online students in their group. Discussion sessions were online, and students worked with random peers in groups of three and had a chance to work with many peers over the weeks.

Additional Details the Format of Hybrid sessions:

Hybrid lab session design: First, the instructor demonstrated a significant portion of the lab activities with both groups of students in a lab session. Then, students solved computing problems in groups of three on a shared platform. Finally, remote students joined via Zoom and worked with their group members in Zoom breakout rooms. Both on-campus and remote students posted their questions on a shared web document, and the instructor responded in real time. Two teaching assistants helped on-campus students, and the other two helped remote students in their breakout rooms.

Hybrid discussion session design: A semi-flipped classroom style was incorporated in the hybrid discussion session. Students brought in their questions to discuss synchronously with the instructor after learning lecture materials from the pre-recorded videos and pre-readings at

their own learning pace. The instructor live-streamed the session on Zoom and took questions on a shared Google document from students. Students then solved discussion questions with their peers in Zoom's breakout rooms. At the end of the session, the instructor briefly introduced the next learning module and provided a guideline.

Research questions (if applicable):

The goal was to examine students' learning goals and outcomes, engagement and experiences with hybrid teaching in a computer applications course in Forestry (FRST 232)

The research question(s) that drove the hybrid project were:

What are students' learning goals, expectations and experiences (beliefs and affect) in a concurrent hybrid format course of a Computer Applications in Forestry course?

What demographic factors (prior knowledge, gender, English language proficiency) might influence students' engagement and experiences in a hybrid model?

Method

What did you do? How did you do it? *What methods were employed (surveys, interviews, focus groups, etc.)? Be as detailed as possible in regards to # of students involved (demographics, if relevant), # of focus groups, etc. How did you ensure anonymity? Was BREB required and obtained? How was the data analyzed?*

Three web-based surveys were developed in collaboration with the SOTL specialist and administered on the UBC Qualtrics platform (beginning-of-term, midterm, end-of-term) during FRST 232 and took students approximately 30-45 minutes to complete in total. Students were asked demographic questions and about their learning goals and expectations on the beginning-of-term survey followed by reflections about their learnings on the end-of-term survey; students' level of engagement during course sessions were determined from midterm and end-of-term survey responses; students' perceived self-efficacy and confidence in using computer applications were determined from midterm survey responses; self-reported mastery of content knowledge from individual modules covered in FRST 232 were also collected on midterm and end-of-term surveys.

Open-ended questions on the beginning-of-term and end-of-term surveys were analyzed using qualitative thematic content analysis. Survey scale item responses were analyzed using descriptive and inferential statistics to measure changes in confidence, engagement, self-efficacy over the term using paired samples tests and trends were observed for the mastery of content knowledge over the term. Given the very small sample size of the study, additional modeling using demographic factors could not be conducted and the second research question

will be answered in a subsequent study where the relationship factors of interest will be modeled using correlational and regression analyses.

BREB approval was obtained on July 2nd, 2021 prior to the start of the course. To ensure anonymity, a co-investigator (ZC) who was not part of the instructional team had access to the survey responses containing identifying information (names and student IDs). At the end of the term, she provided the instructor with a list of students who completed each of the three surveys to be assigned course credit. This co-investigator also linked study surveys using student IDs, before removing the personal identifiers of each participant. Only de-identified data are available to the research team for additional analyses. A separate password-protected and encrypted master sheet linking student names and IDs with study codes and responses is kept separately in case students wish to withdraw from the study at a later time.

Study data files will be encrypted and stored on password protected computers and shared between team members using a UBC OneDrive folder.

Findings summary

What were the outcomes of the project? What were the main lessons learned? Were the evaluation/research questions answered? Please provide a few examples from the data to support your claims in each area – for example: a few student quotes, brief survey stats, etc.

Pilot Statistical Analyses

Since inter-individual comparisons across students who attended in-person vs. online could not be conducted, the current pilot analyses focused on determining intra-individual changes in some of the variables of interest for the new concurrent hybrid format of the course (confidence, self-efficacy, engagement) that were measured on the midterm and end-of-term surveys.

Summary scores were computed for these variables on their respective scales at each time point and paired samples t-tests using were conducted. Results can be found in Tables 1 and 2.

Table 1. Descriptive Statistics

| | N | Mean | Median | SD | SE |
|---|----|-------|--------|-------|-------|
| Midterm Total Confidence Score (11 items) | 13 | 49.00 | 51 | 6.964 | 1.932 |
| End of Term Total Confidence Score (12 items) | 13 | 57.54 | 58 | 6.319 | 1.753 |
| Midterm Average Confidence Score | 15 | 3.86 | 4.64 | 1.673 | 0.432 |
| End of Term Average Confidence Score | 15 | 4.78 | 4.83 | 0.506 | 0.131 |
| Midterm Self Efficacy Score (5 items) | 13 | 22.77 | 23 | 3.113 | 0.863 |

| | | | | | |
|---|----|-------|----|-------|-------|
| End of Term General Self Efficacy Score (5 items) | 13 | 24.54 | 25 | 3.643 | 1.010 |
| Midterm Engagement Score (14 items) | 13 | 50.31 | 50 | 7.931 | 2.200 |
| End of Term Engagement Score (14 items) | 13 | 51.00 | 50 | 8.155 | 2.262 |

Table 2. Paired Samples Statistics

| | | | statistic | df | p | 95% Confidence Interval | | Cohen's d |
|---------------------------------------|---|-------------|-----------|------|-------|-------------------------|---------|-----------|
| | | | | | | Lower | Upper | |
| Midterm Confidence Average (11 items) | End of Term Average Confidence Score (12 items) | Student's t | -2.216 | 14.0 | 0.044 | -1.80 | -0.0295 | -0.572 |
| Midterm Self Efficacy Score (5 items) | End of Term Self Efficacy Score (5 items) | Student's t | -2.275 | 12.0 | 0.042 | -3.46 | -0.0752 | -0.631 |
| Midterm Engagement Score (14 items) | End of Term Engagement Score (14 items) | Student's t | -0.441 | 12.0 | 0.667 | -4.11 | 2.7295 | -0.122 |

There was a significant increase in students' average confidence score ($t(14)= 2.22, p<0.05$) and total self-efficacy score ($t(12)= 2.28, p<0.05$) from midterm to the end of term in the content and skills covered in the new hybrid course. There was no significant change on average for the level of engagement within individuals throughout the duration of the hybrid course (See Figures 1-3). Ratings of perceived mastery of content knowledge scores within individuals is also presented in Figure 4.

Figure 1. Midterm Confidence Average Vs. End of Term Average Confidence Score

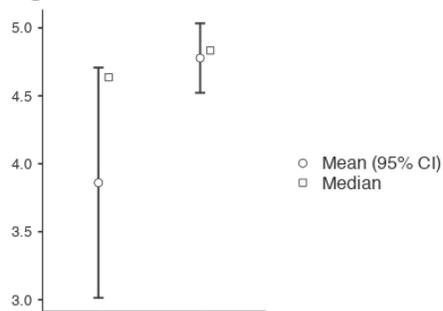


Figure 2. Midterm Self Efficacy Score (5 items) Vs. End of Term General Self Efficacy Score (5 items)

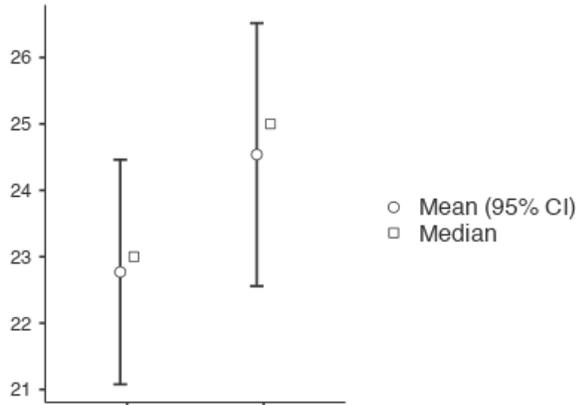


Figure 3. Midterm Engagement Score (14 items) Vs End of Term Engagement Score (14 items)

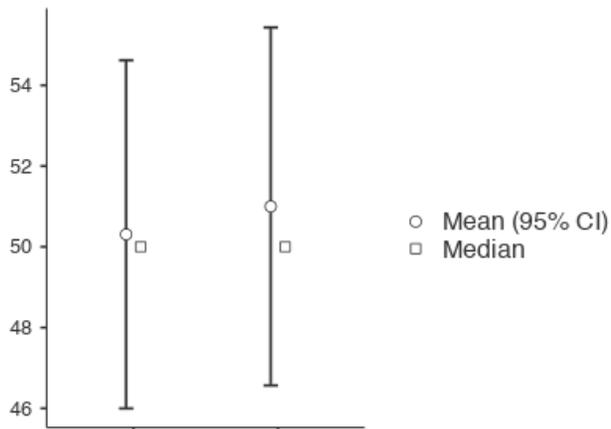
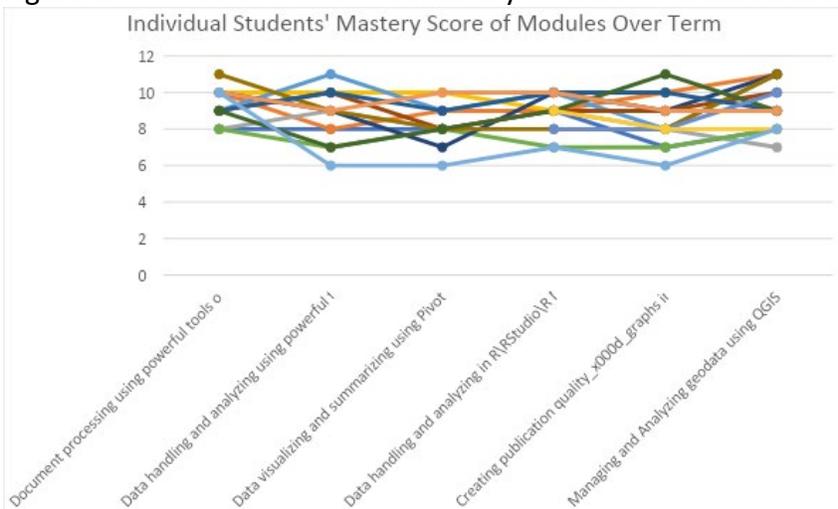


Figure 4. Individuals' Perceived Mastery of Content in Modules over Hybrid Course



Content Analysis Summary of Students' Learnings and Expectations:

At the start of the term, students primarily listed learning goals specific to the computer applications they were unfamiliar with and wanted to develop proficiency and skills to more effectively make use of software tools and their functions to solve practical problems and conduct data management, analyses/research in the future. The words “efficiency” and “effectiveness” were commonly used in describing these skills-based learning goals.

Hybrid lab sessions and group activities were reported to be most valuable to the large majority of students because they enabled exploration, practice applications and consolidate learning from feedback received from the teaching team and peers that could be used to complete other parts of the course (e.g. independent assignments). Hybrid discussion sessions were another interactive component of the course that was reported to be interesting to students and an effective way to generate ideas.

Students also appreciated and valued the flexibility of asynchronous lectures that allowed them to review content prior to live lectures and revisit content as needed. Students also appreciated the weekly quizzes as "checkpoints" for determining how well they grasped the content.

No student reported that they had unmet expectations in this cohort. There was some acknowledgement that the level of difficulty experienced was manageable which could have facilitated meeting individual learning goals and/or expectations set out by the instructional team.

Implications for practice

How can this work further understandings of teaching and learning practices? Use this space to translate the key findings into actionable outcomes; this will help PIs connect your work to their teaching practice. For example: Do findings shed light on what teaching modality works/doesn't work? Do student perspectives reveal something that wasn't expected? In line with this, highlight any questions that remain unanswered or next steps you would suggest.

The current study sheds some light on the effectiveness of the revised concurrent hybrid format of the FRST 232 course with respect to outcomes such as confidence and self-efficacy in content and skills covered in the course as well as students' appreciation of non-traditional formats of course sessions (hybrid lab session, hybrid discussions) and resources such as asynchronous lectures to support individual learning goals. It is still unclear whether there could be different experiences, expectations, beliefs and outcomes across students who choose to attend in-person or online as well as the interaction of teaching modalities and demographic factors that may be associated with these differences. A limitation of the current study was the small sample size that did not allow us to conduct inter-individual analyses (e.g. the level of engagement, perceived confidence and self-efficacy between students attending the course in-person vs. online). The PI is currently collecting additional data in the fall/winter to reach target sample sizes to this end. Efforts to answer the remaining questions using the data collection

tools developed for the pilot study over the spring and summer are ongoing.