HYBRID COURSES: LESSONS LEARNED FROM MULTI-CAMPUS INSTRUCTION

Winter Institute, 2021

CHRISTOPH SIELMANN, CASEY KEULEN

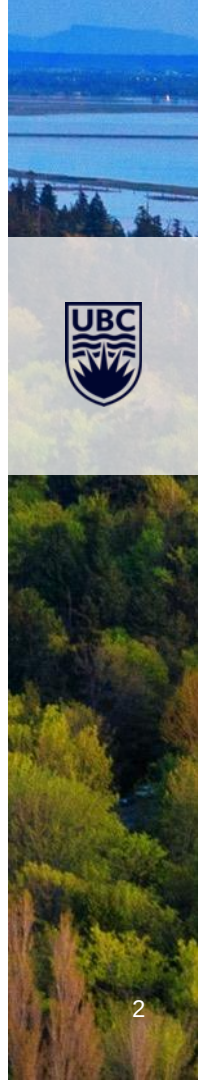
ABOUT US

- Christoph Sielmann, Mechanical Engineering
- Casey Keulen, Materials Engineering

- Assistant Professors of Teaching at UBCV

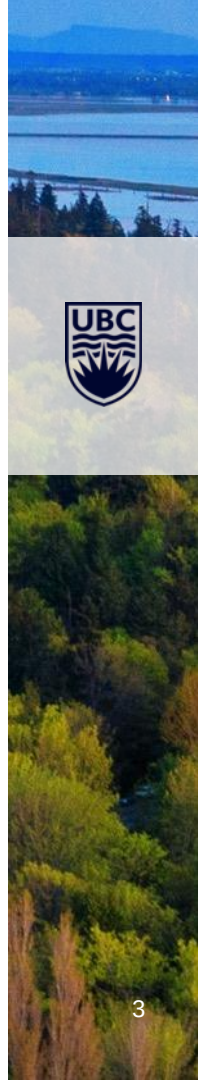
- Manufacturing Engineering Program
  - Faculty of Applied Sciences
  - Joint program with UBCO, including shared courses

- Actively researching multi-campus instruction



AGENDA

1. Introduction to multi-campus and hybrid instructional formats
    - Listening to audio and viewing slides
    - Contributing through Zoom chat
2. Technology in hybrid courses
    - Listening to audio and viewing slides
3. Ongoing evaluation
    - Listening to audio, speaking (microphone), and viewing slides
    - Access to a web browser and Google Docs
    - Reading Zoom chat
    - Entering/Leaving Zoom breakout rooms
4. Interpreting feedback
    - Listening to audio and viewing slides



IMAGINE…

- You are an undergraduate student at a small, rural college
- Attending an engineering program

- You and 15 colleagues attend classes at a remote campus
- ***Teleconferencing*** with a large university in a nearby city
- A Teaching Assistant stands to the side watching the screen where the instructor is drawing on a whiteboard.

- **Suddenly** the screen goes blank
  … the TA looks startled and pulls out his phone
  … minutes pass with no change

- In **Zoom chat**: What are you experiencing as a student (<6 words)?

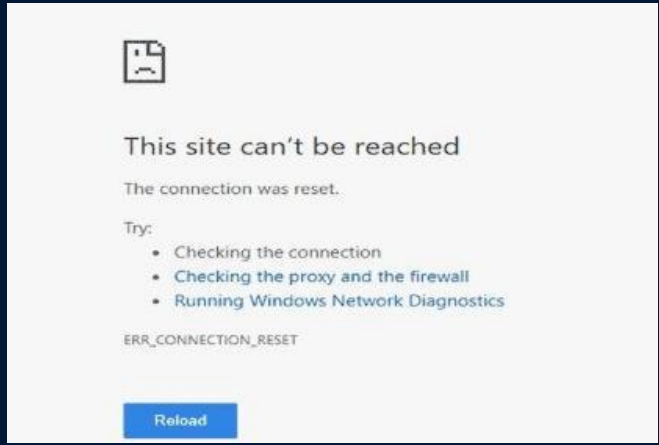
IMAGINE…

- You are an undergraduate student at a large university
- Attending a course remotely from home

- One hundred students are attending in person
- Fifty students are attending ***through Zoom***
- Some, but not all content is available asynchronously
- The class is in the middle of a Q/A discussion

- **Suddenly** audio disappears and video freezes
  … Is it a local problem with your headset or Internet?
  … minutes pass with no change

- In **Zoom chat**: What are you experiencing as a student (<6 words)?



LEARNING OBJECTIVES

1. Discuss the importance of technology in hybrid and multi-campus education.

2. Using contextual case studies, contrast pedagogical technological factors that can affect equity and accessibility in multi-campus and hybrid settings.

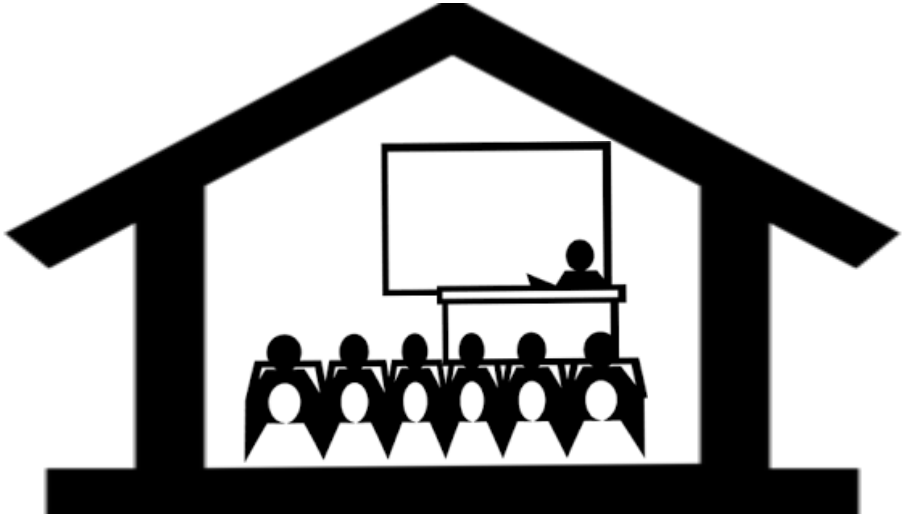
3. Apply the Community of Inquiry (CoI) survey to assess student experience in a simulated hybrid course.

4. Reflect on CoI survey results as part of continuous improvement in multi-campus and hybrid teaching.

WHAT IS MULTI-CAMPUS AND HYBRID INSTRUCTION?

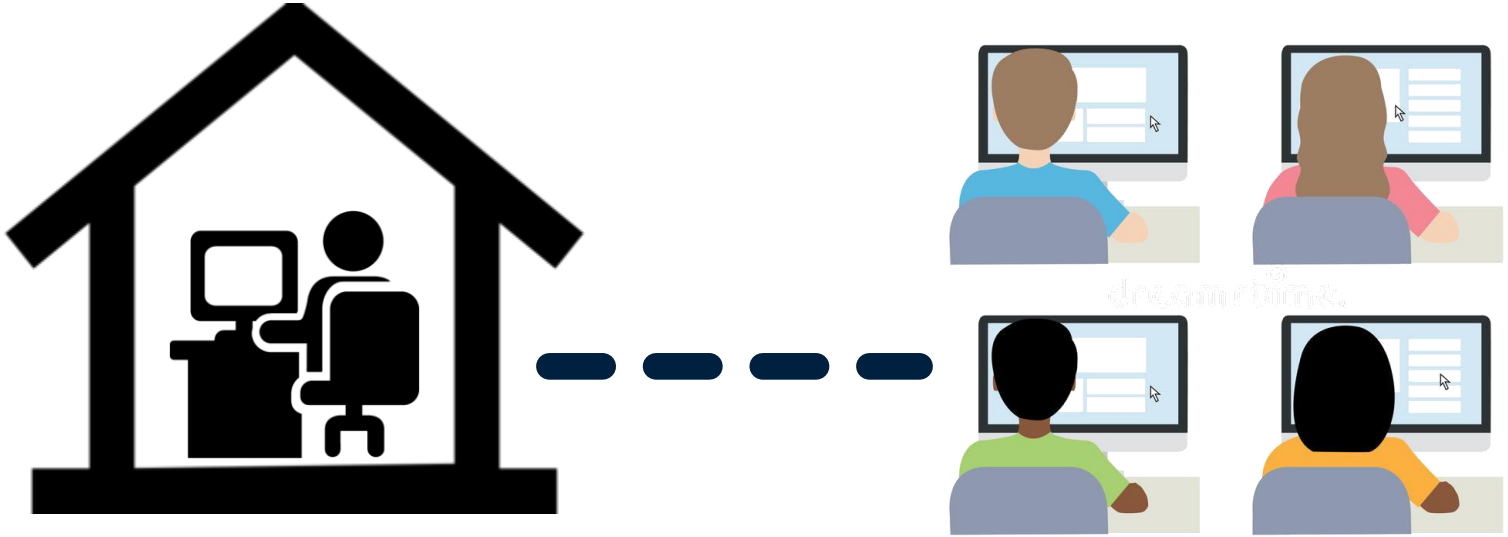
CLASSICAL LECTURING

- Professor and students co-located at a single location
- Learning primarily happens in the classroom and through take home learning activities and assignments



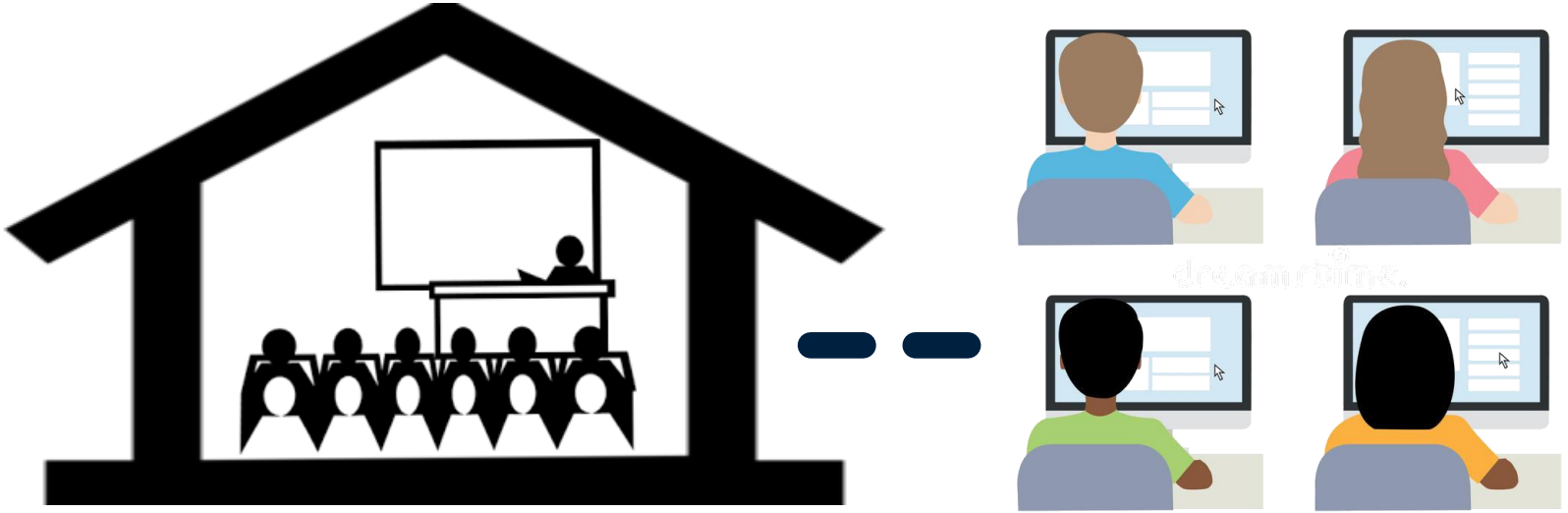
REMOTE (VIRTUAL) LEARNING

- Professor and students all separated from one another
- ICT (Information Communication Technologies) used to communicate
- Can include synchronous and asynchronous components



HYFLEX

- Flexible hybrid model
- Student choose remote, in class, or purely asynchronous learning
- Emphasis on student choice (flexibility) in learning experience

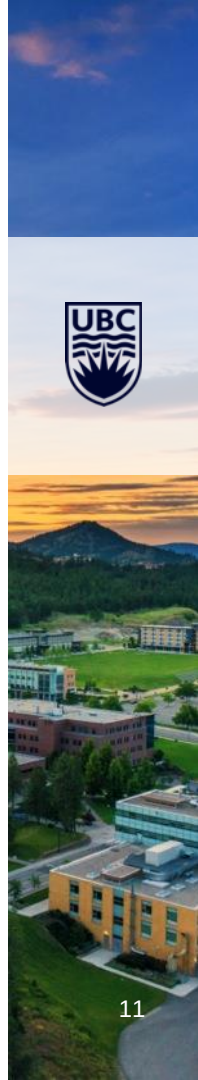


HYBRID LEARNING

- **Hybrid learning** is an educational approach where some individuals participate in-person and some participate online. Instructors and facilitators **teach remote and in-person learners at the same time** using technology like video conferencing.

versus

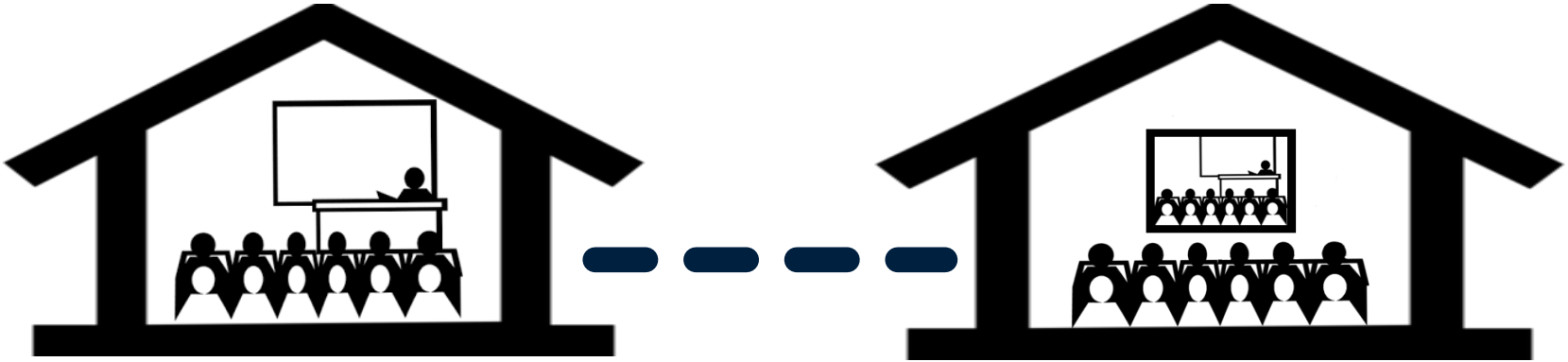
- With **blended learning**, instructors and facilitators **combine in-person instruction with online learning activities**. Learners complete some components online and do others in person.



https://www.leadinglearning.com/hybrid-vs-blended-learning/

MULTI-CAMPUS LEARNING

- Multiple groups of students at separate campuses in classrooms
- Single presenter at one campus (local)
    - ICT (teleconferencing) to the other campuses (remote)
- Variation on hybrid learning
- Campus may be in the same area, or another part of the world



MULTI-CAMPUS CHALLENGES AND BENEFITS

- Delivered as a CTLT Winter Institute Session in 2020
- Slides available: http://www.sielmann.ca/MCWinter.pdf

TECHNOLOGY IN HYBRID COURSES

IMPORTANCE OF TECHNOLOGY

Synchronous

Instructor engages students in real-time

- ICT-equipped room, real-time chat, face to face (F2F) in class, Zoom
- Concurrent, instructor paced activities
- Less flexibility for learners
- Stronger sense of social and teaching presence
- Technology failure = disparity between local and remote students

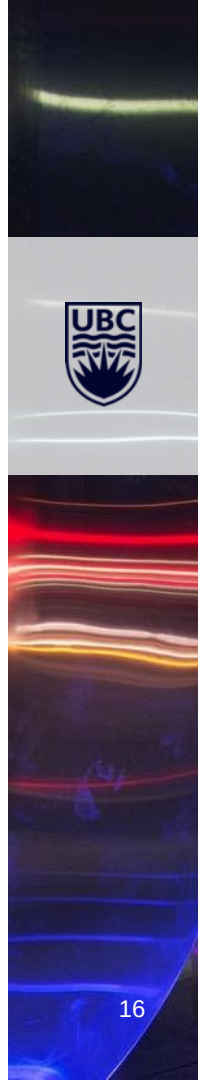
Asynchronous

Materials and activities online

- Enabled by Learning Management Systems (LMS)
- Videos and learning content
- Independently paced activities
- Students assume greater responsibility for learning (self-efficacy is a factor)
- Social engagement activities are usually short, distant (e.g. discussion board)

TYPES OF TECHNOLOGY

- Classrooms equipped with Information and Communication Technology (ICT)
  - Multi-campus teaching
  - Cameras and microphones throughout all classrooms
  - Hardware/Software is controlled by the University
- Streaming/Broadcasting technology (e.g. Zoom)
  - Hybrid teaching
  - Less consistency in classroom technology (e.g. laptop microphone and camera)
  - Students responsible for Internet, computer, software
  - Students responsible for finding a suitable location
- Learning Management System
  - Managed by the University
  - Student access through personal or University-owned hardware



TECHNOLOGY EQUITY AND ACCESSIBILITY

- Do all students have access to the technology necessary for the course?
- Do all students have a quiet, private place to experience remote course content?
- Do the course delivery methods disadvantage certain student groups?
    - Financial hardship
    - Noisy/Unsafe environments
- What if technology goes down?
    - During a class?
    - Asynchronous?

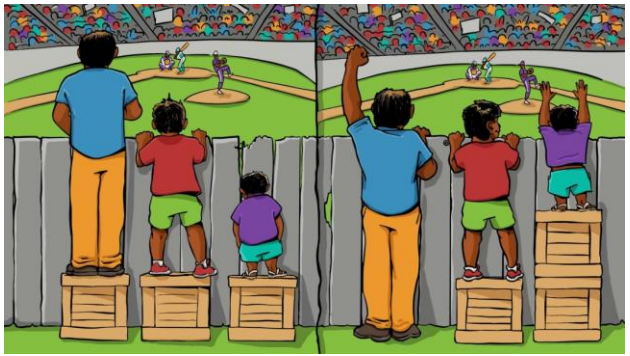
- Hybrid: Students who experience the course in-person vs. remotely.
    - Equity of learning experience?
    - Engagement?
    - Community?

BEST PRACTICES IN DESIGN

- Equity
  - Remote and Local students have comparable, “fulsome” learning experience
  - *Context* is considered

- Engagement
  - Activities designed to encourage **interaction** and **motivation** for all participants
  - Adhere to learning outcomes

- Interaction
  - Student ↔ Instructor
  - Student ↔ Student
  - Student ↔ Content



ANGUS MAGUIRE // INTERACTION INSTITUTE FOR SOCIAL CHANGE

BEST PRACTICES IN INSTRUCTION

- Contingencies and Training
  - What if a key piece of technology goes down?
  - What are my responsibilities, what are TA/student responsibilities?
    - Lay out expectations/contingencies in your syllabus

- Fairness
  - Minimize cohort favouritism
  - Fulsome when equitable is not possible

- Ongoing evaluation
  - Monitor each cohort
  - Respond *quickly* if problems occur
  - Reflect and improve

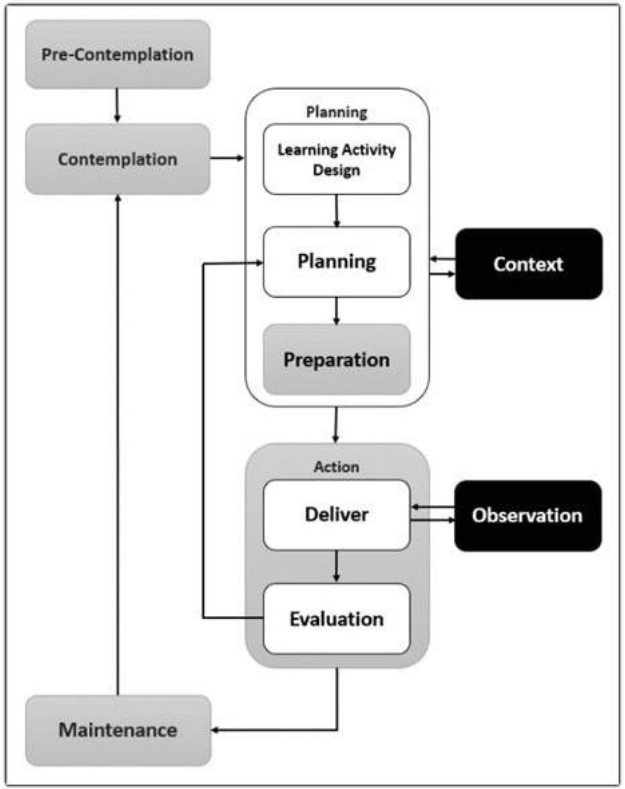
SUMMARY

- Contemplation: Programs, training, and technology

- Context-sensitive course design
  - Equity and Accessibility
  - Engaging activities
  - Plan for interaction

- Contingency-driven course delivery
  - Have a plan in place should technology fail
  - Intentionally engage remote cohorts
  - Observe and evaluate

- Maintenance: Adapt with technology



Bahmani and Hjelsvold, 2020

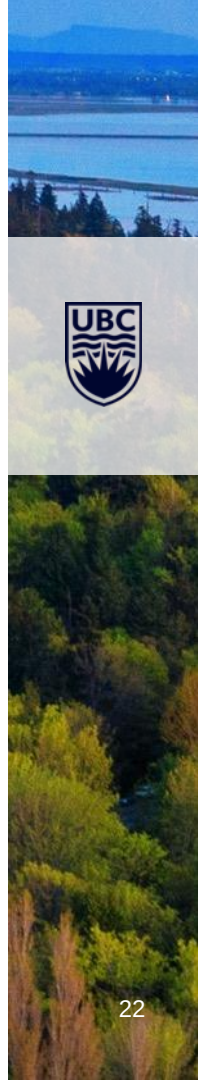
ONGOING EVALUATION

IMPORTANCE OF ONGOING EVALUATION

- **Multi-campus instruction**: Self-reinforcing social bubbles with each cohort
- **Hybrid instruction**: Remote students experience isolation leading to disengagement

- Evaluation must inform the instructor of
  - A culture of disengagement within the course
  - Perceived inequity in student experience
  - Inter-cohort animosity/competition
  - Lack of trust in the instructor
  - Opportunities for short and long term improvement

- Inadequate evaluation → Inconsistent learning experience for students

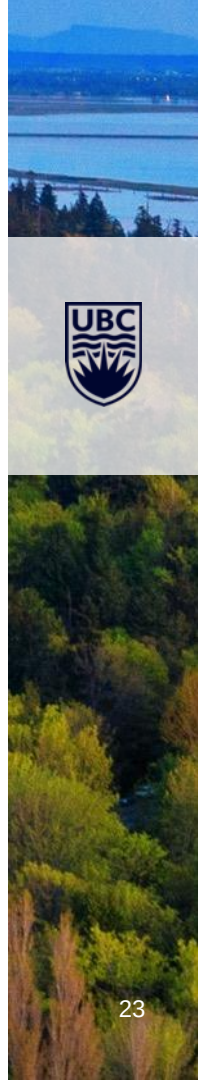


TYPES OF EVALUATION

- Self-reflection
  - Post-lecture journaling

- Qualitative
  - Interviews and focus groups
  - Informal discussions with students
  - Check in questions during lectures

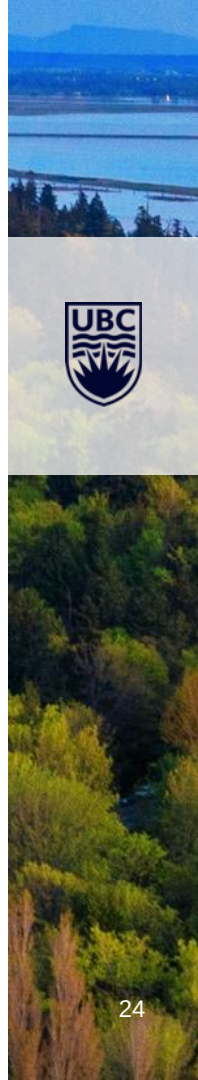
- Quantitative
  - Course surveys
  - SEoT



SELF-REFLECTIVE EVALUATION

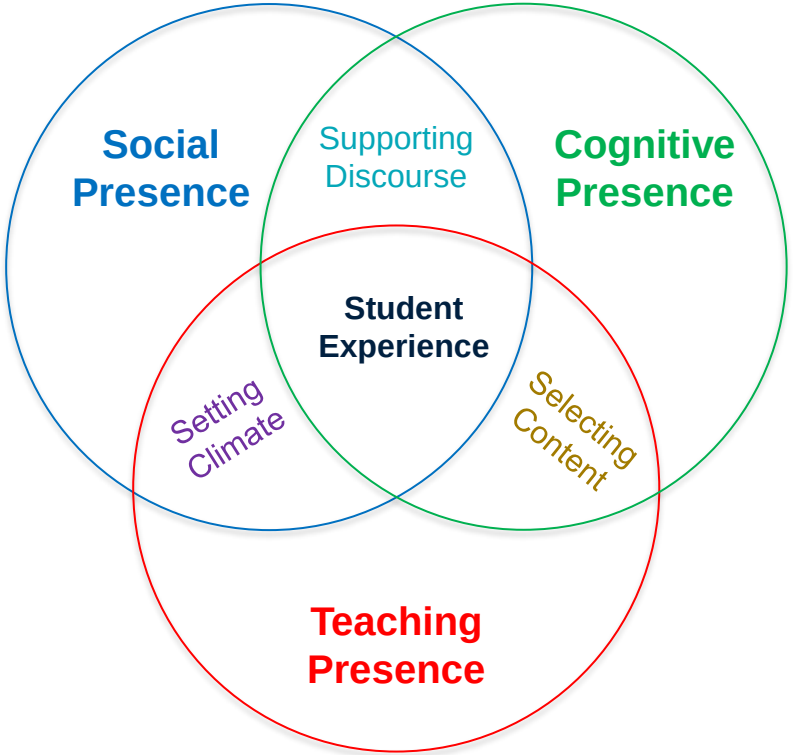
- Self-motivated, journaling

- Sample questions
  - How many students attended synchronously?
  - Are all students on schedule with homework?
  - Did local and remote students ask questions?
  - Did local and remote students participate in discussions?
  - Were there any technical problems?
  - What did I say “off camera”?
  - Overall, what worked, what didn’t work?
  - What can I do better next time?



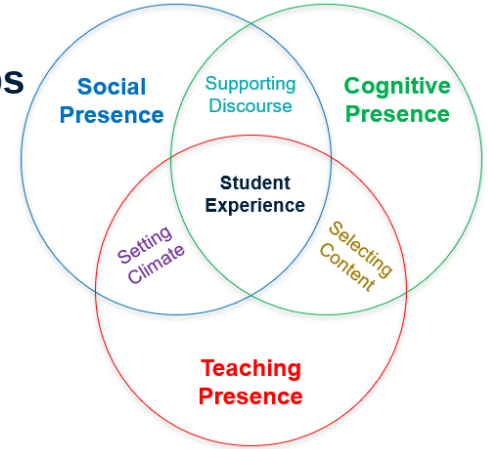
EVALUATING STUDENT EXPERIENCE

- Community of Inquiry (CoI) Framework
- Social Presence
  - Community
- Cognitive Presence
  - Alertness
  - Engagement
- Teaching Presence
  - Trust
  - Clarity



SOCIAL PRESENCE

- **Sense of being and belonging in a course**
  - We define social presence as the ability of participants in a community of inquiry to project themselves socially and emotionally, as ‘real’ people (i.e. their full personality), through the medium of communication being used. – Garrison, et al., 2000
- **Intra and inter-cohort social presence managed separately**
  - Group activities locally vs. remote cohort
  - Technical challenge of bridging local and remote students in activities
  - Social interaction between students and instructor
- **Adversarial relationship between local and remote groups**
  - Can be healthy if course is otherwise equitable
  - Dangerous if left unmanaged



COGNITIVE PRESENCE

- **Alertness, Engagement**
  - Triggering event: Identify and engage
  - Exploration: Question and brainstorm
  - Integration: Construct meaning
  - Resolution: Apply new knowledge

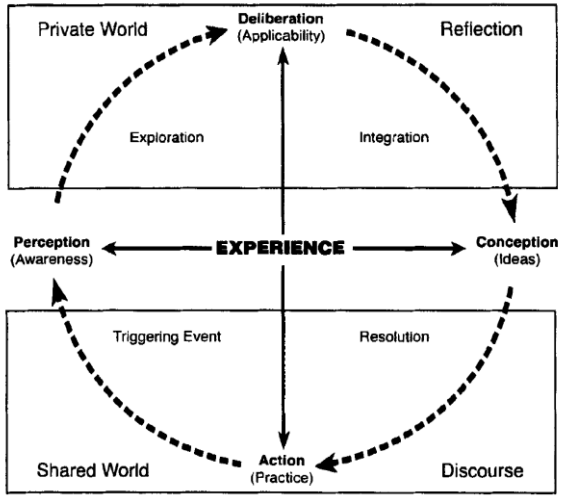
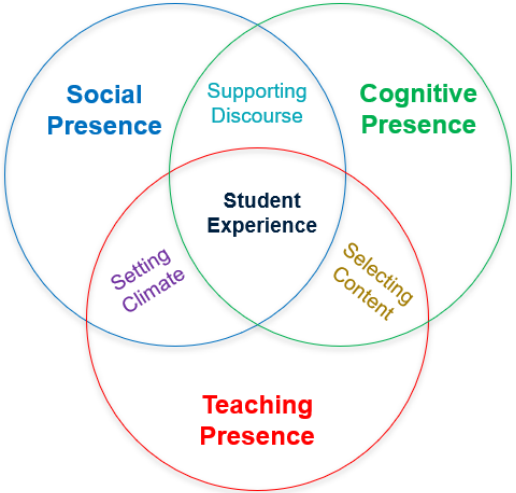


Figure 1. Practical inquiry model for cognitive presence (adapted from Garrison et al. The Internet and Higher Education, 2(2-3), 1-9.

- **Activities may not resolve neatly for all students**
  - Another problem with equity: local vs. remote cohorts
  - Need to sustain a critical community of learners

- **How to keep the learner engaged when staring at a screen?**
  - Remote cohorts talking among themselves, disinterested
  - Poor retention and focus

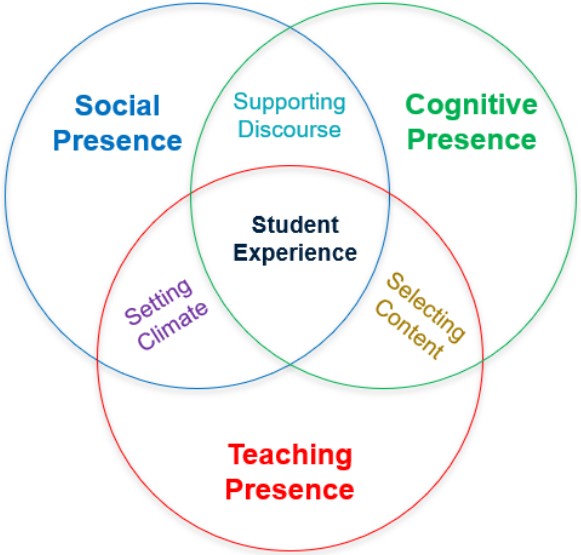
TEACHING PRESENCE



- **Educator presence in the classroom**
  - The binding element in creating a community of inquiry for educational purposes is that of teaching presence.
    -- Garrison, et al., 2000
- **Quality of instructor interactions**
  - Student satisfaction, perceived learning, and sense of community
  - Poor teaching presence → disrespect, disengagement, dissatisfaction
- **Educator influence in and outside the classroom**
  - Inclusivity: Are remote students really part of the class?
  - Equity: Do remote students matter as much to the instructor?
  - Authority: Does the instructor command the attention and respect of all students?

COI SURVEY TOOL

- **How do we assess the quality of these presences?**
- In 2008, Arbaugh, et al published a paper on the development of a CoI survey tool
- 34 question, 5 point Likert scale survey
- Results broken down into the following categories:
  - *Teaching Presence*
    - Design and Organization
    - Facilitation
    - Direct Instruction
  - *Social Presence*
    - Affective Expression
    - Open Communication
    - Group Cohesion
  - *Cognitive Presence*
    - Triggering Event
    - Exploration
    - Integration
    - Resolution



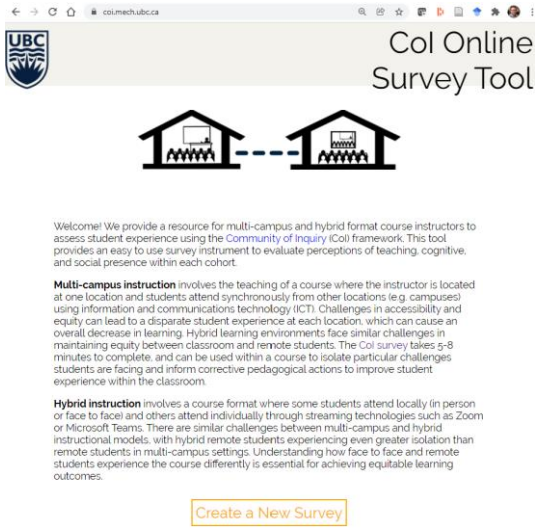
Arbaugh, J.B., Cleveland-Innes, M., Diaz, S.R., Garrison, D.R., Ice, P., Richardson, & Swan, K.P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *The Internet and higher Education*, 11(3-4), 133-136.

UBC'S COST APPLICATION

- In order to help instructors evaluate and react to student's feedback we've attempted to automate the CoI survey tool
- Affectionately nicknamed: 'COST'
  - CoI Online Survey Tool

- Instructors create a unique survey link for their course
- Students complete the survey
- The tool plots the data and performs a MANOVA analysis

- Currently a WIP but the tool is live
- *We'll use it after our activity*



COI LEARNING ACTIVITY

- Now let’s use role playing to better understand how students feel in these learning environments
- In doing so, we’ll highlight some common issues that come up
- At the end of the activity, you will be asked to fill out the CoI Survey as one of the students you roleplay

COI LEARNING ACTIVITY

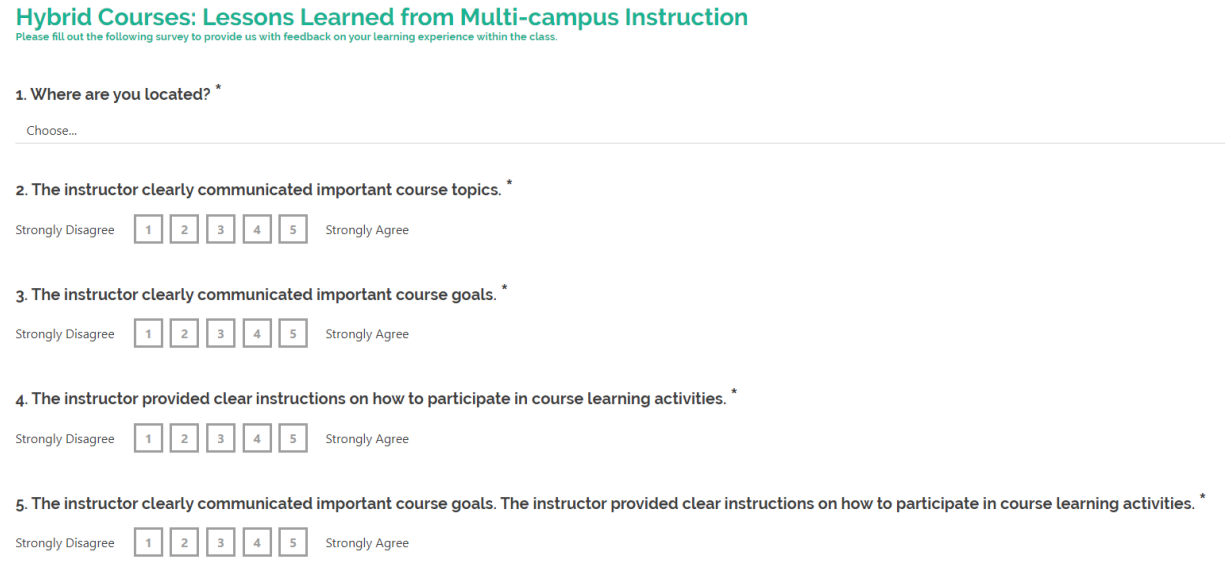
- How it works:
  - The main group will be divided into four groups/breakout rooms
  - Each group will assume the role of one student that is either a local or remote student
  - You will read journal entries from the student and discuss with the group (~7 minutes)
    - A link to the journal entries will be in the chat

  - After the discussion, gather with your cohort in a second breakout room and discuss your student's learning experience with other students in your cohort (~8 minutes)

  - Return to the main room
  - Complete the online COI survey (link in chat)
  - Please raise your hand in Zoom (reactions) once you complete the survey so we can continue

COI SURVEY - COST

- Please spend the next five to ten minutes on this survey
- Please raise your hand when you're done so we know to continue



Hybrid Courses: Lessons Learned from Multi-campus Instruction

Please fill out the following survey to provide us with feedback on your learning experience within the class.

1. Where are you located? *

Choose...

2. The instructor clearly communicated important course topics. *

Strongly Disagree 1 2 3 4 5 Strongly Agree

3. The instructor clearly communicated important course goals. *

Strongly Disagree 1 2 3 4 5 Strongly Agree

4. The instructor provided clear instructions on how to participate in course learning activities. *

Strongly Disagree 1 2 3 4 5 Strongly Agree

5. The instructor clearly communicated important course goals. The instructor provided clear instructions on how to participate in course learning activities. *

Strongly Disagree 1 2 3 4 5 Strongly Agree

COI SURVEY RESULTS

- Before we look at our results, let's have a look at results from a real course
- Comments on the course:
  - Local students had instructor for previous classes
  - Material was used in class that local students were previously taught but remote students were not
  - Remote students often distracted in class
  - Remote students had trouble interacting with instructor
  - Remote students had little support from their TA

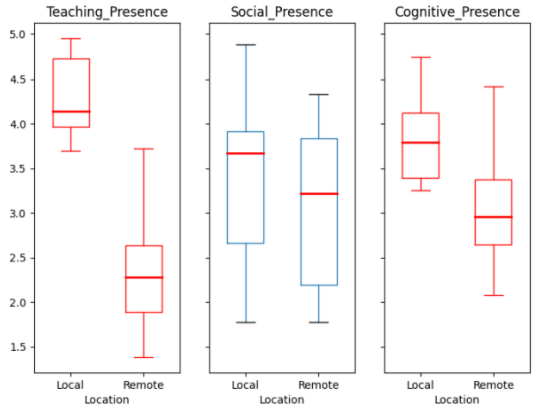
CoI Online Survey Tool

Status: Inactive Active

Results for Trial Data Set #1 at UBC for survey created 2021-05-11 11:53:35.

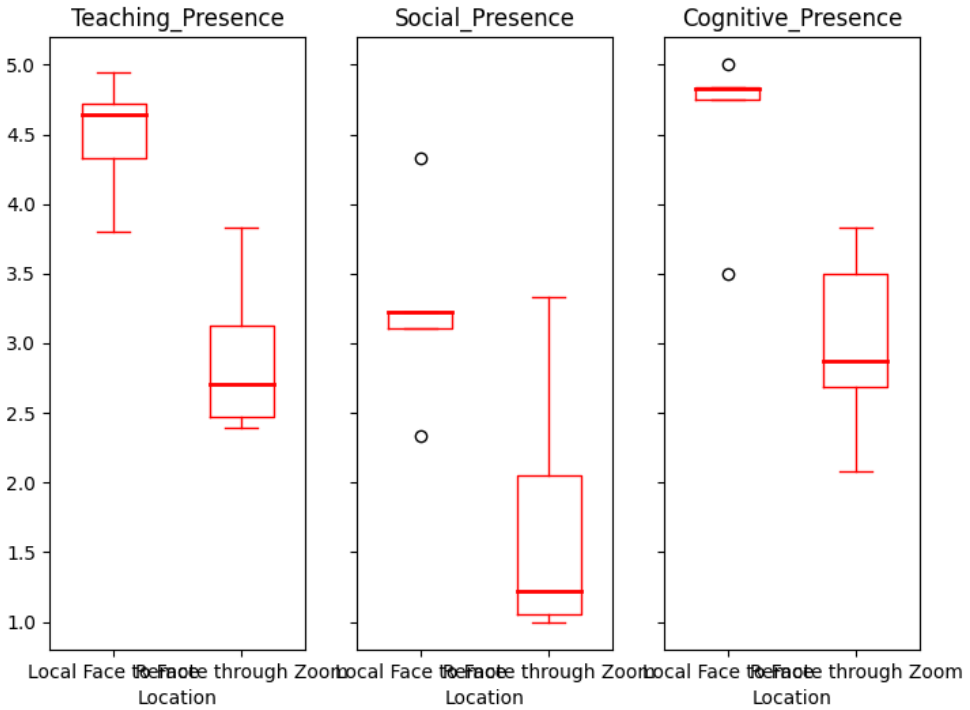
Plot by COI Category

The following boxplots summarize the results collected from the survey participants in each of Teaching Presence, Social Presence, and Cognitive Presence. The bar in the box plot represents the median average of the responses in each category. The boxes represent standard deviation around the mean average. Bars at the top and bottom of each category represents the maximum and minimum value of each category. Plots that are red indicate categories where a statistically significant difference is detected between locations. Note that the range [Strongly Disagree to Strongly Agree] has been numerically encoded as [1 to 5] for display and analysis.



COI SURVEY RESULTS

- Now let's look at the results from the survey you just took



INTERPRETING FEEDBACK

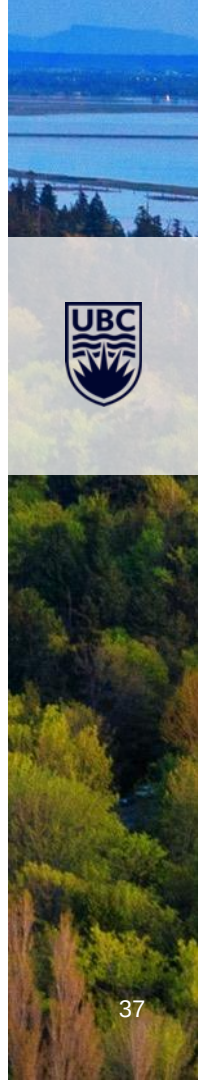
DIVERGING TEACHING PRESENCE

- Perceived inequity between the instructor's attention
  - More focus on local cohort

- Poor facilitation
  - Remote students not able to participate in group activities
  - Low engagement/attention – competing with distractions

- Direct instruction
  - Ineffective or hard to understand remote / asynchronous material
  - Students may need to be taught how to learn in a hybrid/multi-campus setting

- Varying trust in the instructor
  - Some cohorts have lower confidence in the instructor

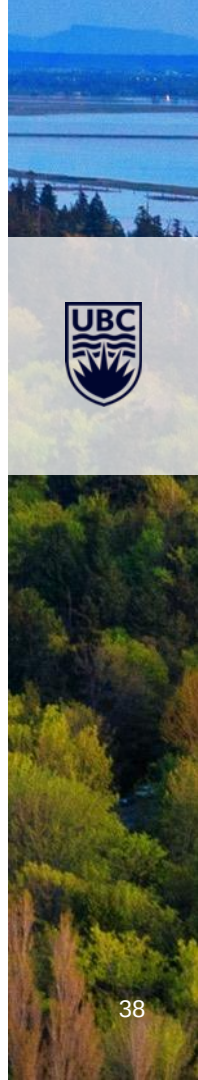


DIVERGING SOCIAL PRESENCE

- Affective expression within the course
  - Lack of community, access to peers
  - Limited emotional engagement and expression in course materials

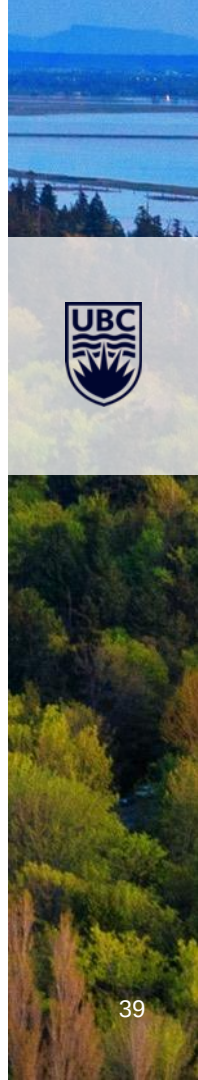
- Open communication
  - Difficulties with technology
  - Students are unable to form connections through technology available

- Group cohesion
  - Some students feel uncomfortable expressing themselves in group activities
  - Lacking acknowledgement, feeling heard



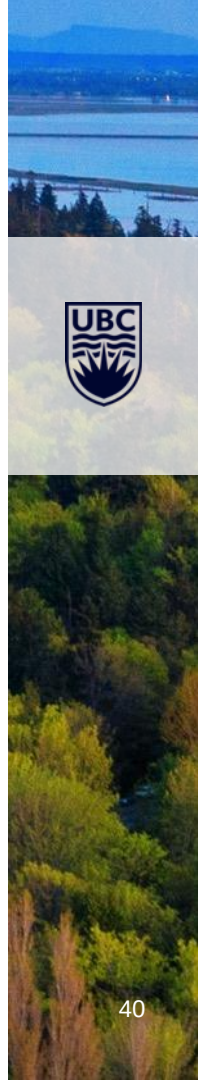
DIVERGING COGNITIVE PRESENCE

- Interest
  - Certain cohorts feel less inspired/engaged in the course content
- Exploration
  - Varying levels of access to resources
- Integration
  - Learning activity outcomes are not consistently reaching all students
- Resolution
  - Divergence in concept synthesis
  - Can’t achieve higher level learning outcomes



ADMINISTRATOR RESPONSIBILITIES

- Hybrid and multi-campus courses need **time** and **resources** to execute successfully
- Encourage **training** of instructors and TAs on best practices and technology
- Provide appropriate classroom **technology**
  - Students need access to high quality microphones, cameras, laptops
  - Classrooms need to be appropriate equipped
- Recognize differences in **student experience**
  - Virtual labs vs. in person labs
  - Student clubs, study spaces, library resources



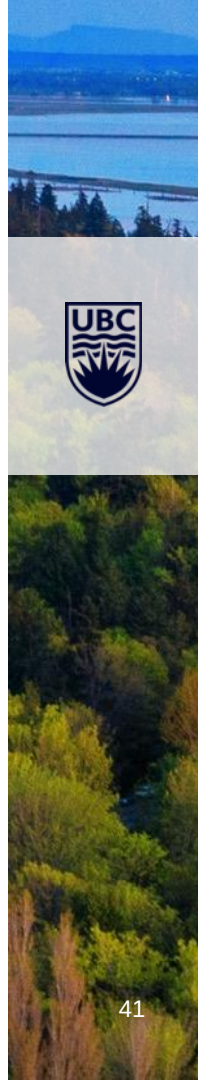
INSTRUCTOR RESPONSIBILITIES

- Recognize that hybrid is **not** the same as F2F + video feed

- Design learning activities for **engagement** that encourage
  - Student ↔ Instructor, Student ↔ Student, and Student ↔ Content interaction
  - Healthy student community

- Provide teaching assistants with training and **planning** on remote training
  - Understand how to use the technology in the course
  - What to do if technology fails

- Consider enabling **equity** and **accessibility** through inclusive pedagogy



CLOSING

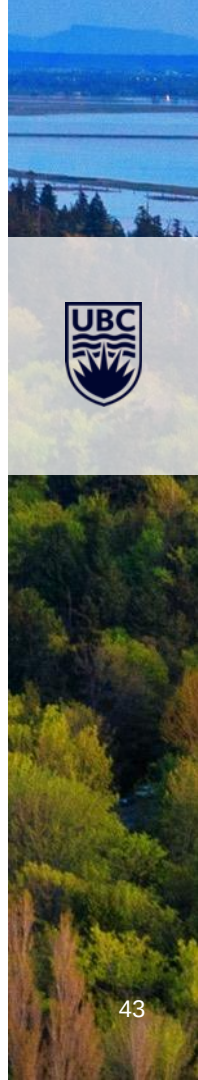
- Good luck with your future hybrid courses!

- Additional resources on the following slide and shared Google Doc.
- Slides will be made available.

- COST tool: https://coi.mech.ubc.ca
- Workshop survey: https://ubc.ca1.qualtrics.com/jfe/form/SV_9FWmfbnvil45Vvo

RESOURCES

- “Take your teaching online” open course (free): https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=78123
- Instructional resources from Memorial University: https://blog.citl.mun.ca/instructionalresources/
- “6 Tips for Teaching Online and In Person Simultaneously”: https://www.insidehighered.com/advice/2020/08/26/strategies-teaching-online-and-person-simultaneously-opinion
- “Engaging Students Equitably in an Online or Hybrid Course”: https://www.brandeis.edu/teaching/continuity/engaging-students-equitably/index.html




THE UNIVERSITY OF BRITISH COLUMBIA