Assessing Online Teaching: A Peer-Review Methodology in a Multidisciplinary Setting

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הערכת למידה מקוונת: מתודולוגיה למשוב עמיתים בסביבה רב-תחומית

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Abstract

The abrupt transition to online teaching due to Covid-19 has created new challenges for academic learning. Such challenges are further compounded in multidisciplinary programs, where lecturers and students from radically different fields interact with each other. This article addresses the question of how to assess and improve online teaching in a multidisciplinary ecosystem. We present a methodology of teaching evaluation and feedback grounded in a peer-review process, which we created and implemented at the Department of Multidisciplinary Studies at HIT to address both pedagogical challenges, such as the loss of face-to-face communication, and technical challenges, as the use of digital platforms. The methodology consisted of several stages: a focus group of students to understand their perspective; a peer-review process in which colleagues viewed and evaluated online classes of other lecturers; and finally, a survey about the effectiveness the peer-review process. The article describes the methodology, analyzes its qualitative and quantitative results, and offers suggestions for evaluating and improving online teaching, highlighting the importance of active learning and nonverbal communication. We propose that our experience should be useful to academic institutions facing similar challenges of implementing effective online teaching, and particularly, to multidisciplinary ecosystems.

Keywords: multidisciplinary, online teaching, active learning, teaching evaluation, peer review.

1. Introduction

The abrupt shift from physical to online teaching found the academic world puzzled. While responses varied, successful switching depended on lecturers' adaptation to such challenges as the loss of face-to-face interaction, which created obstacles for effective learning (Langford & Damşa, 2020; Lederman, 2020; Rapanta et al., 2020). Techno-pedagogical challenges became all the more acute in multidisciplinary ecosystems, as in our Department of Multidisciplinary Studies at HIT. The objective of cross-field communication among students from diverse departments became virtually unattainable.

Within the growing discussion of online teaching, little attention was given to the question of how to assess and improve online teaching in a multidisciplinary setting (Al-Taweel et al., 2020): Which aspects should be preserved and which should be improved to maintain effective multidisciplinary interaction?

In this article we present a methodology that we created and implemented in our department to assess and improve online teaching, particularly related to a multidisciplinary ecosystem as ours, where topics range from technology to the humanities, and teaching methods from lectures to project-based-learning courses. The methodology consists of three phases: first, a focus group of students to gain insight into their experience of online learning; second, a peer-review of teaching (PRT) by colleagues observing online classes; and finally, a reflection survey of lecturers' view on the PRT.

Following the methodology's implementation, we first describe the focus group and the peer-review process. We then analyze the results of the PRT and the reflection survey. We conclude with the significance of this methodology.

2. The methodology

2.1 Focus group: An exploratory research

To understand students' perspective, crucial for identifying the challenges, we conducted a focus group collecting information regarding their hardships as well as satisfaction, and how lecturers could address those. The group consisted of ten students from five faculties, selected for their strong involvement in class (demographics: 7/3 female/male; 7 first-year students; age range 23-30; average age: 26.4).

Sessions were conducted by a professional researcher and a moderator. The researcher led a discussion asking open questions on various issues: adaptation to the digital technology, student-lecturer communication, ability to study, and "best practices" to learn from.

Three substantial themes stood out:

1. Problems of communication especially due to impaired interpersonal feedback.
2. Lack of active learning and unstructured sessions, obstructing students' understanding.
3. Loss of multidisciplinary interaction, a key asset of the department.

To address points 1 & 2, we carried out a theoretical examination of effective online learning, hereby presented. Insights from this and from the focus group served to define the peer-review assessment criteria.

2.2 Theoretical background

Two interrelated aspects infringed by the online setting emerged as crucial for effective learning. First, active learning – "anything that involves students in doing things and thinking about what they are doing" – focuses on the learners' needs by employing techniques such as discussion and simulations to engage students, resulting in deeper understanding (Al-Shalabi, 2015; Bonwell & Eison, 1991). Second, nonverbal communication relays important information. Facial expressions and gestures convey emotions such as boredom and delight (Dewan et al., 2019; Goldin-Meadow, 2017). Furthermore, reciprocal teacher-student mimicry promotes empathy and responsiveness, leading to learning satisfaction and better student performance (Zhou, 2012). These concerns guided the peer-review process.

2.3 Peer-review of online teaching

A meaningful PRT should include concrete review experience, reflection and recommendation (Donnelly, 2007; Drew & Klopper, 2014; Webb & McEnerney, 1997). We formed ours based on a sequence of steps offered by Torbeck and Dunnington (2020), described in Figure 1.
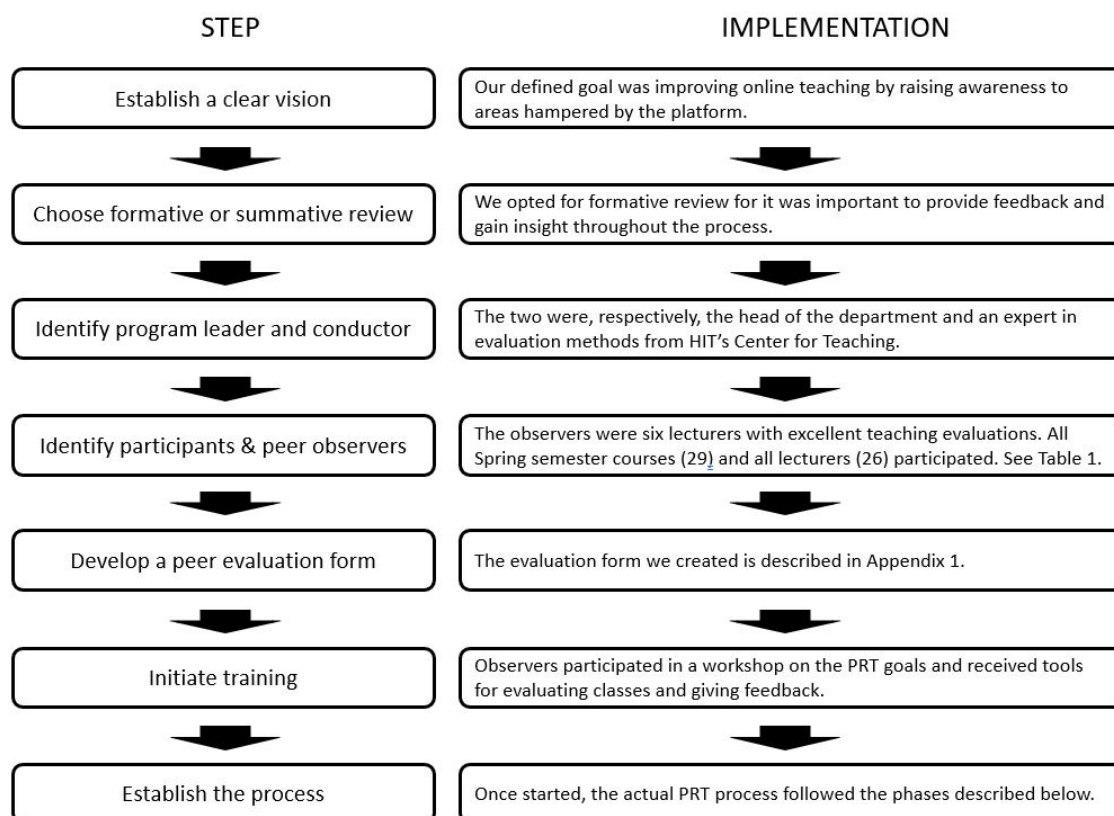

STEP	IMPLEMENTATION
Establish a clear vision	Our defined goal was improving online teaching by raising awareness to areas hampered by the platform.
Choose formative or summative review	We opted for formative review for it was important to provide feedback and gain insight throughout the process.
Identify program leader and conductor	The two were, respectively, the head of the department and an expert in evaluation methods from HIT's Center for Teaching.
Identify participants & peer observers	The observers were six lecturers with excellent teaching evaluations. All Spring semester courses (29) and all lecturers (26) participated. See Table 1.
Develop a peer evaluation form	The evaluation form we created is described in Appendix 1.
Initiate training	Observers participated in a workshop on the PRT goals and received tools for evaluating classes and giving feedback.
Establish the process	Once started, the actual PRT process followed the phases described below.

Figure 1.   PRT formation sequence.

Establishing the process in practice followed this procedure:

- Lecturers' consent was obtained.
- Courses were assigned to observers.
- Observers watched and evaluated classes using the evaluation form (Appendix 1).
- Observers gave feedback to each observed lecturer.

- Observers reported their overall assessment (Appendix 2).
- Observed lecturers reported on their experience (Appendix 3).
- The conductor analyzed the data; Conclusions were shared with all academic staff.

Table 1. Demographics of observers and observed lecturers

	total	female/male	teaching experience (average in years)	# courses taught last academic year (average)
Observers	6	3/3	9.3	5.5
Observed	26	13/13	10.0	3.9

3. Results & analysis

3.1 Peer-review of teaching

Peer-review evaluations and overall assessment questionnaires were analyzed and scored by two reviewers. Frequent themes (three occurrences or more) were highlighted and integrated into a list of categories (Appendix 4).

Common themes that received positive review included pleasant atmosphere and personal attention by the lecturer. The most common themes regarding points for improvement were:

- **Drawbacks of online learning**: Lack of face-to-face interaction and loss of nonverbal communication negatively affect understanding; Home distractions disrupt concentration; Lack of fieldwork in PBLs and loss of interaction impede multidisciplinary work.
- **Activities that promote online learning**: Prior uploading of content to facilitate preparation; Use of "breakout rooms" and other digital tools to improve understanding; Recording lectures for absent students; Use of active learning methods to engage students; Attention to lecturer's own body language and to students' nonverbal cues.

Consequently, the results were classified into a SWOT model – a strategic planning technique used to identify Strengths, Weaknesses, Opportunities and Threats, (Figure 2).

Strengths	Weaknesses
• Quick organization of classes tailored to the circumstances • Collaboration between academic and administrative staff • Commitment to learning the online format to ensure the continuity of the semester • Using the tools of the Zoom platform (chat, screen sharing, etc.) to improve online teaching • Creating a learning flow despite disruption of routine • Responsiveness and collaboration in the peer-review process	• Reduced communication among students, and between students and lecturer • The need to adapt the course structure and content to online learning • Low student attendance • Many questions due to uncertainty • Students require support around the clock • Doubts about how to compose and proctor online tests • Technophobia
Opportunities	**Threats**
• Learning an effective and innovative teaching platform • Flexibility for students despite their schedule limitations • Opportunities for shy students to participate and express themselves • Diversification of learning strategies • Flexibility of teaching and studying location	• Diminished multidisciplinary communication • Limited connectivity between students from different departments • Course failure due to low attendance • Reduced discipline • Lecturer-student miscommunication

Figure 2. A SWOT model of online teaching in a multidisciplinary setting.

3.2 Reflection questionnaire

In terms of lecturers' perspective, the PRT was successful (Figure 3), reflected in a high rating for four variables. However, only 36% reported that they gained new insight (M=3.79, SD=1.53).

Qualitatively, lecturers suggested that in future PRTs a written feedback would be useful for improving online teaching, though some responded that the process mainly served to get an external viewer's feedback. Yet, other lecturers commented that they learned effective online teaching skills.
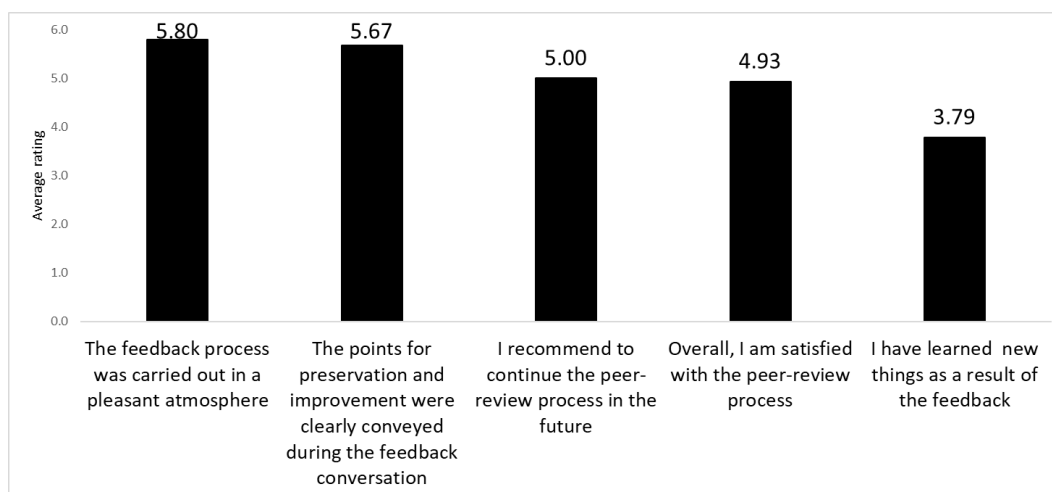

Figure 3.   Assessment of the peer-review feedback process.

4. Conclusion

In light of the analysis, we formulated a set of recommendations for enhancing online teaching. Key among these were: using active learning tools to intensively engage students; keeping a clear and simple structure of lecture; checking understanding frequently; paying attention to nonverbal cues; and maintaining communication out of class. All were emphatically guided by the goals of multidisciplinary interaction.

We plan another PRT process to follow up on our results and conclusions, which should be particularly relevant to multidisciplinary programs. We also took note of the unintended benefit of greater departmental interconnectedness at a time of social isolation.

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Appendix 1. Peer review of online teaching: A peer evaluation form

Peer review of online teaching: A peer evaluation form

Name of observer: _____

Course observed: _____

Name of observed lecturer/s:_____

Date: _____

Time: _____

Duration of observation: _____

Does the observed lecturer agree to share other lectures in the course?_____

Review of observed lecture:

Criterion	Question	Was it observed (y/n)? What was your impression?	aspects to be preserved	aspects to be improved
Structure of the lecture	Were the structure and goals of the lecture presented at the beginning of class?			
	Were there any breaks taken?			
	Was the lecture divided into several topics?			
	Was time allocated for Q&A?			
	Was the lecture recapped at the end?			
	Was the topic of next class presented?			
Lecture flow	Were various activities embedded in the class? (for example, work groups / assignments in breakout rooms / presentations / video clips, etc.)			
Organization of the content	Was the content of the lecture properly organized?			
	Was the content fully explained and clarified?			
	Did the material include user-friendly and updated presentations/visualizations?			
	As an observer, were you able to understand the lecture?			
	What pedagogical means were used to facilitate learning?			
	Were examples and explanations provided? Did students request any?			
Clarity of the lecture	Was the lecture taught in a clear way, taking into consideration			

	the limitation of the digital format?			
	Did the lecturer check students' understanding?			
Response to students' feedback	Were students asked questions during the lecture?			
	Did students use their mics and cameras?			
	Did the lecturer encourage students' participation? In what way?			
	Did the lecturer check students' attention? Did the lecturer try to preserve it?			
	Did students share related content during the lecture? (for example, links, etc.)			
	Did students use the "raise hand" button?			
	Did the lecturer address messages on "chat"? If so, was it done during the flow of the lecture?			
	Did the lecturer check whether their answer was satisfactory to ensure understanding?			
Pace of lecture	Did the pace of the lecture enable understanding of the material?			
	Did students comment on the pace of the lecture? Was the lecturer responsive?			
Command of the digital platform	Did the lecturer have the teaching materials prepared?			
	If relevant, were breakout rooms used properly?			
	Were there any interruptions due to technical failures? Were there any background noises?			
	Was the lecturer confused or stressed by the platform?			
	Did the lecturer record the class?			
Online office hours	Can students set up an appointment with the lecturer to discuss course material?			

Overall impression of the observed class:

1. Positive aspects worth preserving:

   _____
   _____
   _____

2. Aspects requiring improvement:

   _____
   _____
   _____

3. Recommendations:

   _____
   _____
   _____

Appendix 2. Observer's overall assessment of online teaching

Observer's overall assessment of online teaching

After having completed observing various classes, we would like to have your opinion regarding the following questions and other issues you may wish to discuss in a comprehensive manner:

- How, in your opinion, could we improve the means of receiving feedback from students regarding their understanding of the course material?

- How, in your opinion, could we improve teacher-student communication during online classes?

- What is the optimal length of an effective class?

- How should the class be divided in terms of the time dedicated to lecture vs. other activities (such as discussions, teamwork, etc.)?

- To what degree does text chat contribute to the learning process? And, to what extent does it cause distractions?

- How can we increase students' commitment to actively taking part in class (answering questions, sharing screens or relevant links, taking part in tasks, preparing tasks prior to class and sharing during it, proposing issues for discussion, etc.)?

- During the peer-review process, did you ever quit watching an online class before it ended? If so, please elaborate.

- How, in your opinion, could we improve students' communication with the lecturer between classes?

- Can you provide an example of an online course that was exceptionally successful? What made it so?

Appendix 3. Reflection Questionnaire (assessment of the PRT by observed lecturers)

Questionnaire: Assessment of the peer-review process

Please evaluate the feedback process according to the statements below:

	Strongly disagree 1	2	3	4	5	Strongly agree 6
1. The feedback process was carried out in a pleasant atmosphere.	☐	☐	☐	☐	☐	☐
2. The points for preservation and improvement were clearly conveyed during the feedback conversation.	☐	☐	☐	☐	☐	☐
3. I have learned new things as a result of the feedback.	☐	☐	☐	☐	☐	☐
4. Overall, I am satisfied with the peer-review process.	☐	☐	☐	☐	☐	☐
5. I recommend to continue the peer-review process in the future.	☐	☐	☐	☐	☐	☐

General comments

Were there any positive aspects of the peer-review process that you wish to mention?

_____
_____
_____

Do you have any suggestions for changing or improving the peer-review process?

_____
_____
_____

Thank you for your cooperation!

Appendix 4. Analysis of the PRT: based on the evaluation forms and the overall assessment questionnaires

Categories	Sub-categories	Sample comments
Organization of class structure and academic aspects	• breaks • division into topics • lesson sequence • time for queries • division of tasks • field work • active learning	*"The class includes a lot of material that requires concentration. It is important to note that the students did not request a break, and participated very actively throughout the lecture"* *"Recommend a short break, also because of the load of information and especially because of the period."*
Organization of the material	• clarity of the material studied and its arrangement • pedagogical and visual means of conveying the material • receiving feedback from students	*"The students took an active part in the class, shared presentations, and explained them excellently."* *"There was excellent communication between the lecturers and the students. Lots of questions and full participation of students. Comprehensive discussion"*
Interface with technology	• technology use by the students • lecturer's control of Zoom software • lecturer's command of digital learning tools • lack of face-to-face interaction	*"Extensive participation of students, using microphones and cameras. Good communication with the lecturer and also among students"* *"Smooth flowing class, full control of zoom, students participating, asking questions, answering questions, sharing experiences"*
Student experience	• students' communication during class; alertness test • room for questions and expression of opinions and ideas • lecturer encouraging participation • class pace and checking understanding • recording of session • student disruptions or background noises	*"The lecturer created great interest, thinking, and high emotional involvement, and thus a perfect learning experience!!!"* *"The lecturer raises questions and is thought-provoking; Sharpens dilemmas and asks students to share the feelings and thoughts that arise."*