To Be Face-to-Face Today or to Be Remote Today: That is the Question

Abstract

In the peri-pandemic era, where HyFlex and blended learning models is considered the new normal, zoom fatigue and student engagement is a challenge. Through this study, we investigated students' perception of HyFlex model in a highly active design thinking course in a 'normal' environment after the COVID surge. The results of the study indicate positive teaching, social and cognitive presence among students. Also, their daily choices to participate in class face-to-face or online did not impact their perception of classroom communities.

Background and Purpose

Globally, educational institutions quickly switched to online and blended learning models as a result of the COVID-19 pandemic. As instructors transitioned to new environments, many, particularly in higher education institutions, attempted to implement similar pedagogical approaches as they would in typical face-to-face environments. Results on the effectiveness of these models were mixed, with many experts referring to it as an emergency model or crisis model (Lang, 2020). In hands-on learning environments, such as those used in design education, transitioning to alternative learning environments was especially challenging as work is commonly group-based, involves discussions, and requires active student participation (Raes et al., 2020; Szoke, 2021). As a result, the HyFlex paradigm of blended learning grew in popularity during the pandemic due to the flexibility that instructors could offer to students to attend class virtually or in-person synchronously or asynchronously (Kohnke & Moorhouse, 2022; Parra & Abdelmalak, 2016). Amidst the pandemic, a variety of approaches to HyFlex course delivery were adopted, resulting in this approach being seen as a 'new normal' for many higher educational institutions (Penrod, 2022). The increased popularity of the HyFlex model has prompted important questions needing consideration: a) how are HyFlex models effectively implemented and b) how are challenges related to student engagement, social presence, and interaction with peers who may be participating remotely or face-to-face effectively managed (Kohnke & Moorhouse, 2022; Parra & Abdelmalak, 2016; Penrod, 2022; Rasheed, Kamsin, & Abdullah, 2020; Rasheed, Kamsin, Abdullah, et al., 2020).

During the pandemic, we began to implement a specific version of HyFlex that we call "Interactive Synchronous HyFlex" where students can choose daily whether to be face-to-face or remote, based on their needs. Remote participation was synchronous, where all students (face-to-

face and remote) worked together using video conferencing software to complete small and large group projects. We continued the Interactive Synchronous HyFlex approach in the Fall of 2021 when our university's attendance policies returned to "normal" such that classroom participation was required (the requirement was suspended temporarily during the 2020-21 academic year). Nationally, "Zoom fatigue" is becoming increasingly recognized as a challenge to online meetings (Peper et al., 2021; Schroeder, 2021). With HyFlex being posited as a new norm and Zoom fatigue emerging along with other challenges related to student engagement and participation (e.g. remote students not turning on their camera and interacting, lack of communication of remote students with instructors and peers), our investigation was driven by the following research questions:

RQ1: To what extent does the Interactive Synchronous HyFlex model meet students' teaching, cognitive, and social presence needs following the COVID surge of 2020?

RQ2: Do students' perception of classroom communities vary based on the ratio of class meetings they participated in face-to-face vs. remotely?

Theoretical Framework

Most innovation in teaching and learning is framed from a constructivist point of view, and in the real world, learning takes the form of a collaborative constructivist approach with inquiry at its core rather than being done in isolation (Garrison & Vaughan, 2008). We chose the Community of Inquiry (CoI) framework to consider students' perceptions of classroom communities in our HyFlex model. The CoI framework aligns with literature on HyFlex and student-centered learning environments and is useful for considering blended learning environments across three constructs: teaching presence (is the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes), social presence (is the ability of participants to identify with the community, communicate purposefully in a trusting environment, and develop inter-personal relationships by way of protecting their individual personalities), and cognitive presence (is the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse). Selected it to consider students' perceptions of classroom communities in our HyFlex model.

Method

This study took place in a required freshmen level design thinking course. The course is offered each semester, including approximately 18 sections. The nature of the course is highly active, where the course is taught in a flipped format. The course contents are shared with the students prior to the class time through the learning management software, and during the class hour, project-based activities including group discussions and hands-on project work happens. The course has three projects during the semester, where the first two projects are small in scope and the third capstone project is 8-week long with the deliverable being a functional prototype

created by student groups aimed to solve an engineering grand challenge. Prior to the outbreak of COVID-19, the course was offered in a face-to-face manner, but in Spring 2020, the course was shifted to a HyFlex format. In Summer 2020, a new HyFlex version called the Interactive Synchronous HyFlex was piloted and since then practiced in our design thinking course.

As we wanted to understand students' perception of classroom communities in our HyFlex model in a 'normal' environment after the COVID surge, we chose the Fall 2021 semester. In the Fall 2021 semester, our university required classroom participation similar to how it was in the past. There was a total of 674 students enrolled in the design thinking course in the Fall 2021 semester. The CoI survey instrument developed by Arbaugh et al. (2008) was distributed to all the enrolled students as a Qualtrics link through the learning management system. The response was asked in the form of Likert scale ranging from 1 to 5 where, 1= Strongly Disagree, 2=Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. Out of 674 students, 422 students (62.6%) responded to the survey. Also, attendance data of all the students who responded to the survey was collected from their respective instructors to calculate each student's face-to-face and remote participation.

In this study, we employed a quantitative data analysis to address the two research questions. To understand students' overall perceptions of classroom communities in the design thinking course in Fall 2021semester, we used descriptive statistics. The second research question was answered using correlation analysis in SPSS software. Each presence was compared with the corresponding student attendance participation to know if there was any relation between students' ratio of attending class remote or face-to-face with their perception of classroom communities.

Results

Overall students agreed to have experienced positive classroom communities in the Interactive Synchronous HyFlex design thinking class. The highest presence was teaching (M=4.37, SD=.62followed by cognitive (M=4.11, SD=.69) and then social (M=4.08, SD=.66) presence. All the presences were higher than four on a five-point Likert scale, indicating an overall positive classroom community. As the distribution was not normal, a Spearman's coefficient was calculated for the second research question. The results of the correlation analysis was non-significant for all the presences for the corresponding ratio of class participation. Based on the results, students' perception of teaching, social, and cognitive presences are similar regardless of how they decided to join and participate in the class on any day. Figures 1, 2, and 3 below show the scatter plot distribution of the mean social, cognitive, and teaching presences to the ratio of students' class participation.

Scholarly Significance

The shift in higher education that has enabled technological competencies inside classrooms and articles published in *Harvard Business Publishing* and *The Chronicle of Higher Education* indicate that it is highly unlikely that education will return to the pre-COVID-19 instructional delivery model (McMurtrie, 2020a, 2020b). HyFlex models are the result of this change and are considered as the new normal. Recent literature on HyFlex was conducted as a part of the pandemic and points towards more literature on effective implementation of the model. Results of this study suggest that students participating in a HyFlex learning environment generally agree that they experience teaching presence, cognitive presence, and social presence. In mentoring students, results suggest that their sense of classroom community is unimpacted by their daily choices to participate in class face-to-face or online. Due to the benefits associated with the HyFlex approach including student autonomy and flexibility to meet students every changing needs, this study supports the implementation of HyFlex approaches in the peri-pandemic era when there exist challenges related to student engagement and Zoom fatigue in HyFlex.

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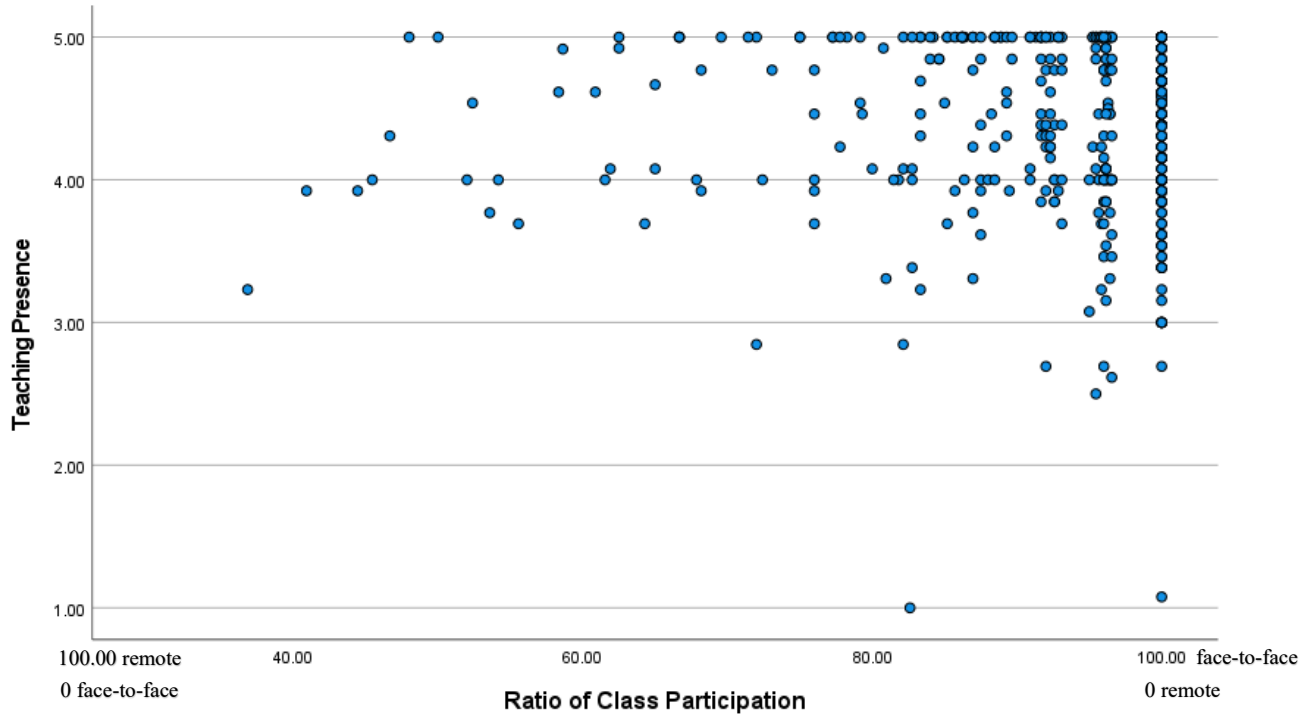

Figure 1: Teaching presence Scatter Plot

Figure 2: Social presence Scatter Plot

Figure 1: Cognitive presence Scatter Plot