



Hybrid Flexible Teaching and Learning in Higher Education – What have we learned? Technology, experience, and perceptions

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Abstract

Hybrid flexible (HyFlex) course designs—that is, multi-modal courses which combine online and in-campus components—have been successfully used in higher education for over a decade and have become popular around the globe following COVID-19 outbreak, as it enables inclusive participation. Notably, the massive use of such designs helped identify not only their benefits but also their challenges. This paper brings together findings from 3 studies that shed light on HyFlex courses from multiple points of view. Study 1 examined to what extent do HyFlex classrooms support and enable active learning ($n_1=29$ faculty and $n_2=1215$ students in a large private university in the USA, based on online questionnaires, October 2020). Study 2 explored instructors' ($N=695$) and students' ($N=4159$) perceptions of aspects related to technology, pedagogy, engagement, and communication in HyFlex courses ($n_1=695$ faculty and $n_2=4159$ students in a large research university in Israel, Summer 2021). Study 3 investigated metaphorical perceptions of instructors and students from Israel towards HyFlex lessons ($n_1=130$ faculty and $n_2=80$ students across Israel, Summer 2021). Taken together, findings from these studies emphasize the challenges that instructors and students—mostly, remote students—face in HyFlex course designs, hence are important for the improvement of such designs.

Keywords: Hybrid flexible courses, higher education, instructors, students, perceptions, metaphors

1. Introduction

COVID19 pandemic has led to major changes in higher education. Universities around the world faced decisions about how to continue teaching and learning while keeping public health. In this spirit, many institutes were forced to make a quick shift and move from traditional face-to-face classes to online education (Khan, 2021; Stewart, 2021). Subsequently, as “community immunity” increased, as a result of vaccination or acquired immunity, and the overall risk decreased, many restrictions and mandates were eased. Then, the main dilemma in the higher education sector was about whether to bring students back to campus full time or to continue with the online classes. One of the solutions for this complicated situation was to provide students with full control over their decision to participate online or in the classroom, by using Hybrid Flexible—shortened as HyFlex—classes.

HyFlex course designs are multi-modal courses which combine online and in-campus components in various modes, and have been successfully used in higher education for over a decade (Beatty, 2019). Past experiences with HyFlex method have produced high satisfaction among students. Beatty (2007) suggested that HyFlex has proven to be effective in increasing student satisfaction, engagement, and access. Furthermore, other studies have found that students who can choose their learning style characterized with a high level of course satisfaction (Blankson, Godwyll & Nur-Awaleh, 2014).

However, alongside its benefits, the main challenges with the HyFlex approach, as experience during COVID-19 days, were driven by the quick shift to it. Without enough time for proper preparation—both in training and in technology—it was difficult to appropriately address the pedagogical and technological needs that will suit instructors and students in class and online (Detyna, 2022). Therefore, our overarching goal in this paper is to identify the affordances and pitfalls of HyFlex teaching and learning as experienced during COVID-19 days in both Israel and the USA. As this is a compilation of three individual studies that took different methodologies, we first describe each study separately with its findings, and then discuss their findings together, to get a broader picture.



1. U.S. Instructors' and Students' Perceptions of HyFlex Lessons

The main goal of this study was to explore how well was standard classroom experience enhanced during teaching and learning in HyFlex classrooms. To meet this goal, the following research questions were addressed: 1) How were classrooms updated for COVID-19 social distancing, and how could HyFlex classrooms be improved for future semesters?; 2) How can the experiences of in-person and remote learners and instructors be improved to increase flexibility in the future?

1.1. Context and Methodology

This study took place at a large, top-ranked private university in the Midwest of the USA. It has an enrolment of about 13,000 students (9,000 undergraduates and 4,000 graduates), and about 1400 instructors. Four in five undergraduates live on campus.

In response to the spread of COVID-19 in the USA, in March 2020, the university determined it was safer for students to not return to campus from spring break, and instead shifted 2,700 unique courses to emergency remote learning from their home with a pass/fail option for the remainder of the Spring 2020 semester. The remaining semester was completed totally online utilizing Zoom and other technologies. In August 2020, students returned to in-person, face-to-face classes on campus for the fall semester, and were offered with HyFlex learning, as needed, to accommodate any health circumstance. For accomplishing that, a few classes were upgraded with the necessary equipment to hold such lessons, i.e., webcams, microphones, and lecture recordings). The university has continued to have in-person, face-to-face classes on campus through the current time (Spring 2022 semester).

Fall 2020 semester offered various course delivery methods to accommodate learning. The HyFlex method was most commonly administered via in-person, face-to-face classes which allowed students to participate remotely, and allowed to capture the lesson for student to watch the video recording afterwards. There was also a fully online option with asynchronous Zoom sessions, and an option for combining these two approaches where some in-person meetings were replaced with asynchronous and synchronous online learning.

In October 2020, we surveyed instructors and students who held in-person, face-to-face classes in 6 classrooms across campus. All colleges and schools were represented in this survey sample. Of the 82 faculty surveyed, we got 29 respondents (35% response rate), and of the 3,590 students surveyed, we got 1,215 respondents (34%). We also conducted pre/post classroom observations using an adapted version of the Learning Space Rating System (Brown et al., 2017), which was originally developed to capture active learning.

1.2. Findings

Instructors' Perceptions. Almost all of the participating instructors (97%) held their classes on-campus, with about a quarter choosing to hold some lessons over Zoom, even though it wasn't necessary. Seventy percent of the instructors appreciated having the ability to teach in person, live remote (over Zoom) and through asynchronous recordings, and about the same rate of instructors stated that the technological upgrade would be useful post-COVID-19.

Students' Perceptions. Almost all participating students (97%) attended most classes in-person. Forty-two of the students chose to attend a class over Zoom, even though it wasn't necessary. About two-thirds of the students appreciated having the ability to attend in person, live remote (over Zoom) and through asynchronous recordings, and about the same rate of students thought that the technological upgrade would be useful post-COVID-19.

Classrooms' Scores for Active Learning. Based on the observations, we found that all of our classrooms scored higher for active learning during COVID-19 than before COVID-19. Additionally, no part of the learning experience was rated at a D or F.

1.3. Key Takeaways

- Students preferred in-person, face-to-face classes, and found recordings beneficial.
- Instructors needed the freedom to decide which mode works best for them.
- Appropriate technology would support active learning, hence would be useful post-COVID-19.

2. Israeli Instructors' and Students' Perceptions of HyFlex Lessons

The aim of this study was to examine the attitudes of instructors and students to HyFlex model in teaching and learning, and to understand the pedagogical and technological challenges, benefits, and future needs for learning in such model. The research questions were: 1) What is the degree of



satisfaction of instructors and students from teaching and learning in HyFlex model, compared to other pedagogical models?; 2) What are the pedagogical challenges experienced by the instructors (e.g., student engagement, conducting the lesson, communicating simultaneously with students from home and class)?; 3) What are the technological difficulties experienced by the instructors?

2.1. Context and Methodology

This study took place at a large research university in Israel. Academic school year in Israeli higher education institutes usually begins in mid-October and ends in mid-June. It consists of two semesters (fall and spring), with some programs also have a summer semester. As a result of the COVID-19 pandemic outbreak during academic year 2019/20, in mid-March 2020—at the midst of spring semester—all Israeli schools and higher education institutes closed due to national lockdown, and teaching and learning were held remotely. Remote teaching kept place during fall semester of the next academic year (2020/21), during which a few further lockdowns were held; a few weeks into spring semester of that academic year, in an attempt to bring back some routine alongside the pandemic, instructors were required to get back to teaching from within the campuses while students were given the choice to learn either on-campus or remotely. With that, lessons in which the instructor and some of the students are in the classrooms while other students joined synchronously via Zoom have become the most common HyFlex setting. Data collection was conducted during summer 2021.

Questionnaires were formulated and distributed online to all students and instructors at the university. The questions were formulated on a 5-point Likert scale (1 – do not agree at all, 5 – totally agree). Respondents included 695 instructors (49% females and 51% males) and 4,109 students (41% males and 59% female, with 69% of them being undergraduate students) from all faculties at the university.

2.2. Findings

Instructors' Satisfaction from HyFlex Teaching. Instructors' satisfaction was rather low ($M=2.2$, $SD=1.2$), compared with their high satisfaction from the face-to-face model ($M=4.5$, $SD=0.9$) and medium satisfaction from either fully synchronous or asynchronous teaching ($M=3.4$, $SD=1.2$; $M=3.3$, $SD=1.3$, respectively). This low score was evident across all aspects of teaching in HyFlex model—conducting the lesson, maintaining students' attention, student involvement during the lesson, ability to assess students' level of understanding, ability to involve both in-class and remote learners, and achieving lesson objectives—the satisfaction from which scored between 1.9 (ability to involve both in-class and remote learners) and 2.9 (achieving lesson objectives).

Pedagogical and Technological Challenges. Most of the instructors (74%) indicated that they had to adjust their teaching lessons to the HyFlex model. On average, they spent between 1-3 hours for each lesson. The main adjustments were in editing presentations (38%), adjusting the way discussions are managed (37%), replanning points for discussion (35%), changing the lesson content (25%), and asking an in-classroom student to follow up on questions that come up in the chat (24%). Most instructors indicated low to moderate technological difficulties with operating the technological equipment in class ($M=2.9$, $SD=1.2$).

Students' Satisfaction from HyFlex Learning. Students overall rated HyFlex lessons moderately ($M=3.3$, $SD=1.5$), similar to face-to-face, with highest scores for the fully synchronous model ($M=3.7$, $SD=1.3$). The students expressed moderate satisfaction with watching the lesson recordings ($M= 3.2$, $SD=1.9$) and participating in the Zoom class ($M= 3.0$, $SD=1.7$). Attending the class lesson received the lowest grade ($M= 2.48$, $SD=2.03$). When asked about their satisfaction from various aspects of the learning in HyFlex model, the highest rate ($M= 4.1$, $SD=1.5$) was to flexibility - the ability to choose between learning in class or online, while the lowest ($M=3.1$, $SD=1.7$) rate was given to the level of engagement during the class. The students expressed moderate satisfaction with watching the lesson recordings ($M= 3.2$, $SD=1.9$) and participating remotely via Zoom ($M= 3.0$, $SD=1.7$). Attending the class lesson received the lowest grade ($M= 2.5$, $SD=2.0$).

2.3. Key Takeaways

- Students expressed higher satisfaction rates than instructors regarding HyFlex lessons.
- Instructors preferred traditional face-to-face model, while students preferred fully online classes.
- Students appreciate flexibility, i.e., the ability to choose from where to learn.
- Instructors struggle with pedagogy, not with technology.



3. Israeli Instructors' and Students' Metaphors of Roles in HyFlex Lessons

The main goal of this study was to determine the metaphorical perceptions of higher education instructors and students towards their roles in face-to-face (F2F) vs. HyFlex teaching and learning.

3.1. Context and Methodology

In this study, we collected data from 130 instructors and 80 students across Israel (see section 2.1 above for context about the Israeli higher education sector during COVID-19). Data was collected during summer 2021 using online questionnaires. We used metaphor analysis, a powerful tool for gaining deeper insights into people's beliefs, behaviors, and actions.

Participants were first presented with eight known metaphors about being an instructor or a student in higher education: parent/child, doctor/patient, coach/team player, chef/customer, gardener/flower, guide/tourist, commander/soldier, entertainer/audience; they were asked to rate to what extent they agreed with each of these metaphor regarding traditional face-to-face classrooms (5-point Likert scale). Then, they were asked to write down a metaphor of their own to their role in HyFlex classes.

3.2. Findings

Metaphors of Roles in Traditional Face-to-Face Classroom. Instructors rated highest the metaphors of a guide ($M=4.0$, $SD=1.0$) and a coach ($M=3.0$, $SD=1.2$); lowest ranked metaphors were a doctor ($M=1.6$, $SD=0.9$) and a chef ($M=1.8$, $SD=1.0$). Students rated highest the metaphors of an audience ($M=3.8$, $SD=1.0$) and a customer ($M=2.9$, $SD=1.3$); lowest ranked metaphors were a soldier ($M=1.6$, $SD=0.8$) and a child ($M=1.6$, $SD=0.9$).

Metaphors of Teaching in HyFlex Classrooms. The most prominent metaphor for the instructor role, as perceived by instructors, was that of a juggler (42%), followed by the metaphor of a counselor (20%). Both metaphors were not included in the closed-ended part of the questionnaire, which may imply that the instructors perceive their role in HyFlex teaching differently from their role in traditional teaching. Students' perceptions of the instructor role were a bit different, with the most common being guide (30%), juggler (25%) and counselor (16%).

Metaphors of Learning in HyFlex Classrooms. While referring to the role of the on-campus student in HyFlex lessons, the majority of the students used the metaphor of audience (49%), followed by the metaphors of observer (14%) and team player (14%). Interestingly, most common metaphors of on-campus students' role, as perceived by instructors, were similar: audience (52%) and team player (20%).

While referring to the role of the remote student in HyFlex lessons, most of the students articulated the metaphor of an outsider (40%), followed by the metaphor of an observer (32%). Both metaphors were not included in the closed-ended part of the questionnaire, which may imply that students perceive the role of the remote students in HyFlex lessons differently from their role in traditional learning. Interestingly, these two were also the most common metaphors used by instructors to describe the role of remote students: observer (42%), outsider (20%).

3.3. Key Takeaways

- Instructors and students perceived their roles differently in HyFlex vs. traditional lessons.
- Instructors' and students' roles in HyFlex classroom are perceived similarly by both parties.
- Remote students are perceived as passive and estranged by both students and instructors.

4. Conclusions

Taken together, findings from the three studies presented here helps us tell a rich story about the implementation of HyFlex models for teaching and learning in higher education. Two important insights emerge when comparing findings from both countries.

As it seems, in the USA case, in-person learning was preferred by students over remote learning, while in the Israeli case it was the opposite. Besides sociocultural differences between the countries, it may be that the **distance between the place of residence of the students and the campus** played a key role; while in the US university, most of the students were living on-campus and were easily accessible to the classrooms, it was not the case in Israel, as many students live in a commuting-distance from the campus commuting required getting out of their "pandemic comfort zone". Considering this, and comparing instructors' perceptions in both countries, it seems that students' foot-voting for staying remotely (as was the case in many cases in Israel) while instructors were required to teach on campus caused an asymmetry between the number of on-campus and remote students,



hence negatively affected instructors' satisfaction. Therefore, any implementation of a HyFlex model should carefully consider a host of contextual factors that may hinder it, and should consider that flexibility is an asset when it is wished for by both instructors and students (Chen et al., 2022; Serhan, 2020).

Another insight that is raised from bringing together all the evidence presented here, is that **pedagogy is key to a successful implementation of HyFlex classrooms** (Miller, Sellnow, & Strawser, 2021). On the one hand, it takes a lot of time to adapt lessons from their traditional settings to HyFlex mode, and on the other hand – if it is not done, remote students are simply left out. Therefore, instructors should get ongoing training in order to improve their competencies of effectively using technology in teaching for achieving their educational goals in an ongoing manner (Vlachopoulos & Makri, 2021).

Considering these issues, we look forward and appreciate the HyFlex model as an acceptable way of teaching and learning in routine times. Doing so, instructors and students would be offered with an education model that offers flexibility in course design, delivery modalities, and assessment. This flexibility will allow us to be ready for any crisis, and more importantly – it will improve teaching and learning at large.

Acknowledgements

This work was supported by the Schlindwein Family Tel Aviv University - Notre Dame Research Collaboration Grant.

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