

DOI: https://doi.org/10.48009/1_iis_2022_119

HyFlip learning: A case for better online instruction post-COVID

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Abstract

This research offers a case study of the technology courses at a regional campus of an R1 institution. Student preferences of various learning modalities were measured via both quantitative and qualitative methods. The quantitative data was supplemented with the qualitative data in order to suggest a new mode of teaching that is highly preferred by students. This new mode of teaching, HyFlip, combines the best aspects of traditional in-person learning and online learning to create a method of offering courses that gives students the flexibility they desire without losing the in-person interactions that some students prefer. With this new method all students can learn in whatever way works for them and faculty have more time to help those students who need it most.

Keywords: HyFlip, hybrid, online, COVID, learning

Introduction

In the time following the most severe [hopefully] waves of the COVID-19 pandemic, many institutions of higher education have abandoned their requirements for fully online courses and returned to their pre-pandemic modalities. Some faculty, however, have noticed the benefits of various facets of online teaching and received positive feedback from students. This led some faculty to continue the adaptation of their courses to the online environment (as much as allowed by their administration) in an effort to do what is best not only for the health of everyone involved (because the pandemic will not last forever, fingers crossed) but more importantly for the education of the students, as it has always been known that not all students learn the same. This research presents a case study analyzing student preferences of various course modalities to answer two primary research questions:

RQ1. What method of teaching is preferred by our students?

RQ2. What roadblocks exist that prevent students from supporting courses being delivered in an online format?

Review of the literature

Traditional/Face-to-face learning

Considered the traditional way of learning, face-to-face learning is a method whereby course material is taught to a group of students in person via live interaction. Classes meet during specified time periods throughout the week at which students' course progress is measured (Top Hat, n.d.). Outside of standard homework, all learning takes place within the classroom. Additionally, evaluation of students is done "exclusively by teachers, who represent their main source of information, and the quality of learning is strongly dependent on them" (Gherhes, Stoian, Farcasiu, & Stanici, 2021, p. 2).

Online courses

Generally speaking, the online learning environment is considered computer-mediated communication (CMC), using computing platforms to produce written or verbal language. The first type, synchronous, offers a closer resemblance to normal face-to-face communication, using such tools as Skype or Zoom, and can assist students in practicing real-life communications (Li, 2017; Jenks, 2014). Synchronous classes attempt to mimic the in-person classroom by providing live lectures by the professor and using the interactive features of video conferencing tools, such as breakout rooms, chat rooms, gesture buttons, etc. (Khonke & Moorhouse, 2020). Although many have been optimistic about the efficacy of online synchronous learning, some studies found that interactions between teachers and students were “severely contrived” (Cheung, 2021a, p. 2; Cheung, 2021a).

Asynchronous learning, as explained by Suliman, M., Ta'an, W., Abdalrhim, A., Tawalbeh, L., & Aljezawi, M. (2022), can occur in various places at various times depending on the student. It is the professor’s job to create a “learning path” (p. 2) that the students can take on their own time. This creates a “learner-centered environment that fosters rich communication between instructor and students and among students” (Comer, D. R. & Lenaghan, J. A., 2012, p. 262; Bates, 1997). Strategies found in many asynchronous courses include, but are not limited to, recorded lecture videos, links to external videos/content, discussion forums, quizzes, writing prompts, exams, and robust and frequent feedback (Brown, 2020; Pieratt, J., 2020). Multiple studies have found that despite the initial perception of a degraded learning experience, there were no significant differences in academic performance between asynchronous learners and synchronous learners (Schoenfeld-Tacher & Forman, 2021; Belliston, 2020).

Hybrid courses

Hybrid courses can be thought of as a combination of the tenants of traditional face-to-face learning and online learning. Ross & Gage (2006) give three examples of blended learning: technology enhanced courses, hybrid/reduced face-time courses, and blended programs. While technology enhanced courses still meet during all traditional class periods they offer items online to enhance learning, such as extra videos or the course syllabus. Hybrid, or reduced face-time courses, do not meet for all traditional class periods, instead replacing one or more with outside learning. This could be online discussion forums or assignments or even go as far as experiential learning taking place in the greater community. Lastly, blended programs offer choices of learning environments to the students depending on their preference. The goal is not to focus on percentages of in-class versus out-of-class time, but to create a hybrid course that is a “joint and provocative exploration of the discipline by teacher and learner in which the roles of teacher and learner are fluid—sometimes the teacher takes the role of learner and sometimes the learner takes the role of teacher” (Caulfield, 2011, p. 4).

Flipped classroom

Flipping the classroom is quite a departure from traditional teaching. As Bergmann & Sams (2012) explained, the basic idea is that everything that was “traditionally done in class is now done at home, and that which is traditionally done as homework is now completed in class” (p. 13). Instead of coming to each class session to “perform” (p. 14) professors record their lectures so that all knowledge delivery is happening outside of the classroom. Students may watch the lectures to learn the information on their own time at their own pace, pausing, rewinding, and continuing the video as needed, as long as they complete the lecture before the next class period. When the students arrive at class, they can present their questions to the professor and the class time can be used to answer those questions, work on activities that further

their understanding, and ensure that “those who struggle get the most help” (p. 14). The role of the professor in the classroom has evolved from delivering information to helping students.

HyFlex learning

The HyFlex model, a combination of the terms hybrid and flexible, has been used for more than a decade. Unlike all previously described methods, the HyFlex model involves both in-person students and online students at the same time by broadcasting the classroom session over the university’s chosen virtual meeting platform. This allows the students to choose whether to attend the class session in-person or virtually, knowing they’ll be able to participate in either instance. The key with this model is that everything is done live (synchronously) as if all students were present on campus. Certain activities or assessments may need to be modified slightly in order to work in an online environment, but all learning objectives and course outcomes are the same for both in-person and online students. University administration appreciate this approach strictly from a resources perspective. Instead of needing to run two sections of a course (one in-person and one online), which would either require two faculty members or take up two sections from one faculty member's course load, a single faculty member can run a single course section, operating in both environments, that only counts as a single preparation and single course section (Beatty, 2019).

Methods

This research offers a window into a branch campus of Pennsylvania R1 research institution. Quantitative and qualitative data were gathered from students in the Spring of 2022. At this time, the campus had gone back to “normal” face-to-face course instruction after a period of two years during the COVID-19 pandemic where courses were either forced into a fully online format (synchronous or asynchronous) or allowed to be scheduled in whatever format was most comfortable for the professor (with face-to-face sessions required to use the HyFlex model to ensure that students had the option to attend virtually). Students in all course sections taught by the four IT & MIS faculty were recruited via the offering of bonus points for completing the anonymous, online survey. The survey consisted of various demographic questions, simple rankings of preferred learning methods, and open-ended questions requesting the students give detailed, honest feedback (positive and negative) about their preferred learning methods. The qualitative data went through three rounds of coding to arrive at a concise list of themes. Within each theme, the data was re-coded via three rounds to arrive at a list of factors for being coded into the major theme.

This data from this case study will help to answer the two primary research questions:

RQ1. What method of teaching is preferred by our students?

RQ2. What roadblocks exist that prevent students from supporting courses being delivered in an online format?

Results and discussion

While the initial goal of this study was to capture the perceptions of learning methods from IT majors, various other majors appear in the data due to some courses being taken as electives by students from other departments. After cleaning the data we were left with 117 valid responses, 70 of which were IT majors (representing above 90% of the IT majors on the campus).

When analyzing the various demographics against the preference for in-person or online courses we must first define the terms. For the purposes of this survey, in-person classes were defined as classes that meet solely in-person each and every class period, with no online course components (other than the allowance

for using the LMS to turn in assignments). Online courses were defined as a course that contained any major online component, with the four models used on campus since the pandemic being listed on the survey:

- Fully online (asynchronous; no class meetings, recorded lectures, work on your own)
- Fully online (synchronous; virtual class meetings during scheduled meeting times)
- Hybrid/asynchronous (recorded lectures, optional in-person class meetings, possible to complete the course fully remotely)
- Hybrid/synchronous (virtual class meetings half of the week, in-person the other half)

Answering RQ1 - What method of teaching is preferred by our students?

Reviewing the simple preference of format by major shows relative consistency. As a whole, the participant pool was 69.2% in favor of online learning. This coincided with the 68.6% favoritism among IT majors, specifically. With 12 majors being represented in the results, only two showed a preference for in-person classes: Chemistry and Engineering. This result, however, cannot be considered significant due to each major being represented by only a single student.

The survey also considered other factors affecting students' perception of learning methods. When asked if they had any outside obligations that make attending regularly scheduled classes difficult, such as sports, a job, family, etc., 60% of students said "yes". Interestingly, despite the answer to this question support for online over in-person was evident. 74.6% of those with outside obligations opted for online learning and 60.9% of those without outside obligations opted for the same. Similar preference was found with full-time versus part-time students. 94% of the participants were full-time students and 67.3% of them preferred online learning. 100% of the part-time students preferred online learning.

Commuter status was also taken into consideration. The majority of participants (75%) were commuters and 69.3% of them preferred online learning. Of the campus residents, a preference for online learning was also evident with 69% in support. The same support for the online environment was present when dividing the participants by rank (i.e., freshman through senior) with a range of 57.1% to 77.8%.

While these numbers suffice, the richness of information collected in the qualitative portion provides much more insight and context for RQ1.

Three major themes emerged from the qualitative data and corroborate (within 4%) the results of the quantitative data: Online/hybrid asynchronous courses are the best option (65.1%), in-person courses are the best option (30.2%), being able to choose online or in-person is the best option (4.7%). Before exploring any of the factors (sub-themes) for each there is one point of interest that needs explored. The majority theme was not simply that students prefer online courses; instead, the students who specified a model noted they preferred the hybrid/asynchronous model, thusly dubbed the HyFlip model.

The HyFlip Model

Taking notes from all previously explained teaching models, the HyFlip model attempts to create the best of all worlds such that every student can complete a course in whatever way works best for them. It is obvious from the quantitative data that not all students prefer a fully online experience, so the HyFlip model adds an in-person component. HyFlip can be described as having three major components: asynchronous learning, flipped classroom, optional hybrid meetings.

Using a standard Tuesday/Thursday course as an example, the course meeting schedule is considered hybrid: Tuesday the class does not meet and Thursday the class does meet. The Tuesday session is fully online and asynchronous. Weekly lectures are recorded (exactly how they would have been given in the classroom) and uploaded to the LMS. Students are instructed to use the class time on Tuesday to watch the lecture and learn the material for the week. While some students do this during the normally scheduled class time others will take advantage of the asynchronous nature and learn the material at a time that best fits their life.

This also integrates the flipped classroom model, whereby the learning happens outside of the classroom such that the in-person class sessions can be used to accomplish various other goals not usually attainable by traditional classes (Bachelor, 2018). Students have more time with the professor to ask questions, work through labs, dig deeper into more advanced material, etc. This component of the flipped classroom model helps the professor ensure that students are actually learning.

The last main component of HyFlip is the optional hybrid meetings. As previously explained, the Tuesday class session is an asynchronous/virtual learning day. The Thursday class session occurs in-person; however, attendance at this session is completely optional. This accomplishes two goals. First, those students who are self-starters, comfortable learning on their own may watch the lectures, complete the assignments/exams, and never have to show up in the classroom. For those students, the course can be completed as if it were a fully online course. Second, those students who might not have understood a concept from the lecture or who simply want the in-person setting to ask questions and dig deeper can do so every Thursday. This ensures that the classroom is not full of students who are there simply because “they have to be” (students who understand would be bored, students who don’t care would be disruptive, etc.). The classroom only contains the students who actually want to be there, allowing for a much better learning environment for everyone.

One final point with the HyFlip model is the amount of preparation necessary for the model to function appropriately. All course material (lectures, assignments, exams, etc.) should be posted to the LMS on day one. If a student wants to dedicate a week and burn through the entire course, watching every lecture and completing every assignment, he should be allowed to do so. The course should operate as a fully online/asynchronous “work at your own pace” course. The only exception to the “work at your own pace” notation is that every assignment/exam will still have hard deadlines throughout the semester. This ensures that everything is submitted in a flow sympathetic to the professor’s time but does not prevent a student from working ahead.

Answering RQ1 Continued

The factors for preferring the HyFlip method were reduced to the list in Table 1. Some students did not give any reason beyond saying that they preferred the online format. Others mentioned the specific benefit of recorded lectures.

“I feel like I work better when I can start and stop a recorded lecture because I find that I miss less information.”

“[...] When the lectures are recorded, it helps that I can watch them again or rewind if I need more time to learn a certain section. It also helps with a work/school balance.”

Table 1: Factors for preferring HyFlip

Choice of attending or not	Professors need to be competent	Time efficient → other work
Disabilities	Recorded videos enhance learning	Work best late at night
In-person → tech classes	Saves money	Work an 8-5 job
In-person → asking questions	Sick	
No specific reason	Time efficient → commuters	

Multiple comments were geared toward inclusivity under certain circumstances, such as sickness or students with disabilities. They rightly imply that students should not be denied knowledge due to such issues.

“The hybrid method of giving a class is good because even when a student gets sick or can't make it to the classroom they still have the chance to attend online.”

“Online is the best to work with my disabilities.”

The majority of the comments were geared toward various economic issues, such as saving time and money on travel, allowing one to plan their work to fit their time schedule, and being able to hold down a job while attending school.

“As someone who commutes i think having a day or two of recorded online lectures and optional in-person classes work best. I can be at home and save time and money while learning, but also have the option to come in if needed to get further clarification. [...]”

“[...] There are also students with children, jobs, or other hobbies that would benefit from not having a strictly set in-person schedule.”

“[...] As it is now [with in-person classes], it will probably take me 6 years to complete a Bachelor's degree because most classes are in person during the 9-5 work day.”

A consideration presented by one student who prefers the online format is crucial to the success of HyFlip. The professor must be competent in the teaching method. If the HyFlip method is not executed properly it can lead to poor learning outcomes and an overall bad perception of online courses in general.

“[...] I believe that the lectures in my telecom class are thorough and paced in such a way that it is conducive to this format. However, there are some classes that have sub-par lectures and professors that are impossible to reach to help me clarify information. [...]”

Answering RQ2 - What roadblocks exist that prevent students from supporting courses being delivered in an online format?

In order to begin the process of answering the second research question the factors for preferring in-person instruction were reduced to the list in Table 2. Immediately noticeable is that some of the students who preferred in-person teaching made a point to say that hybrid courses are also fine due to the option of face-to-face interaction and especially helpful if life events happen. As with the data for RQ1, it is important to note that many students specifically mentioned the asynchronous (HyFlip) method when speaking of hybrid instruction. Two students also made comments that had nothing to do with the actual learning in an online

environment. One opined that it is a “waste of money [...] to live on campus only to be stuck inside for online classes [...]”. The other was adamant that only having the option for asynchronous classes when the professor is on campus is unacceptable.

Table 2: Factors for preferring in-person

Campus housing wastes money if classes are online	Hybrid is helpful if something comes up
Can't communicate with professors online	Hybrid is ok
Can't learn asynchronously	Hybrid is ok because of the in-person possibility
Forces you to come to class and focus	Professors must teach in-person if they're on campus

Setting the non-learning comments aside, only three factors remained that directly applied to the class environment:

- Can't communicate with professors online
- Can't learn asynchronously
- Forces you to come to class and focus

Beginning with the second comment, which was reported by only one student, a concession must be made. Not everyone can learn on their own. It would be foolish for the researcher to assume that everyone can learn equally via the HyFlip (or any online) method. Some people may simply learn better via face-to-face instruction. The unfortunate downside to this truth is that when the student enters industry, especially if that industry is IT, he will have a difficult time succeeding if he cannot learn on his own since that is a critical skill for all IT professionals.

The remaining two factors may seem, to the intelligent reader, to be easy to solve. Take, for example, the theme of students feeling as if they can't ask questions or communicate with their professors when taking online courses. The simple answer is that professors should just “be available”, but how does that look in a HyFlip environment? While professors should not be required to be available 24/7 there is a compromise that can work for every modality within the HyFlip environment. Professors should be available to their students via email, via virtual meeting (with technologies such as Zoom, Microsoft Teams, or Google Meet), and in-person (during the in-person class session and also during office hours). This should solve the problem; however, in the current case being studied all professors had offered all three means of contact to their students at multiple points throughout the semester. Despite this, very few students ever made contact with their professor and some even added the complaint into this survey. One may posit that “online is the problem”, something commonly echoed throughout academic departments, but remember pre-COVID when professors metaphorically begged their students for interaction during in-person class sessions only to be met with silence. This problem has existed much longer than online learning.

The last factor is equally as student-centric as the previous. Students admit that they need the motivation of having to physically leave their house, attend class, and be “forced” to focus/engage due to the professor within mere feet in order to learn. This factor has remnants of the first, where a student simply stated that he can't learn asynchronously, but it takes the notion a step further. Students are admitting that they have no motivation. They are admitting that they won't focus unless they are made to do so. From a HyFlip perspective, professors should make their recorded lectures as interactive as possible, encouraging students to *do* rather than simply *listen*. One example of this would be for a Java programming lecture to encourage students to write the code along with the professor rather than the professor simply teaching *about* the code using slideshows. While these issues may be superficially solved by changing course modalities to in-person the underlying problem lies solely with the student.

Although suggestions have been given to lessen the size of these roadblocks, the actual solutions lie beyond the scope of this research.

Limitations

Being a case study the results of this research are only valid for this particular scenario. The same research should be conducted at other universities of varying size and geographic location and include students from multiple majors in order to achieve any sort of generalizability. Additionally, the qualitative questions were not required and were worded in a very open-ended fashion. Future research should use multiple subjective questions that are focused on the specific data required to answer the research questions and ensure those questions are mandatory.

Conclusion

This research uncovered two main pearls. The first is the students' preference for courses with online components and, specifically, their overwhelming preference for the HyFlip model. Second is the good news/bad news situation of student effort, where suggestions for change can be implemented by professors but the ultimate solution is solely in the hands of the student. As academics, it is our duty to put our personal perceptions aside and always do what is best for our students. Despite our feelings about online teaching (especially after the poor implementation in response to COVID-19) we must listen to our students and give the HyFlip model a fair shot.

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