

Expanding and Maximizing Flexibility, Choice and Accessibility with HyFlex Courses

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November 13, 2020

Abstract

Options, choice, and flexibility in education access and course scheduling is a top priority for Higher Education Institutions around the country. While distance learning options have increased, the complexity and competing priorities in students' schedules have only increased the demand for even more creativity and innovation in choice. This article focuses on the experience of two Maryland colleges and the process of developing HyFlex courses as a three-modal option. HyFlex courses allow students to change how they access the course: face-to-face, virtual synchronous and or online asynchronous- and they can change this preference throughout the semester. Technology and pedagogical considerations, cost, lessons learned and recommendations for those interested in developing their own HyFlex courses are discussed.

Expanding and Maximizing Flexibility, Choice and Accessibility with HyFlex Courses

The need for access and flexibility in higher education has become more important and a priority that higher education institutions (HEIs) have been exploring with increased urgency. With the increased diversity in the student population and the current COVID pandemic, HEIs are scrambling to become more accommodating and responsive as more and more students face a variety of challenges attempting to juggle school, work, and home life. While HEIs often market flexibility in their schedules, traditionally, flexibility within a course or term has not been significantly impactful in terms of student choice.

The conventional practice with most HEIs includes the instructor or HEIs choosing the mode in which they will deliver the course and although this has added to course delivery options, it still poses challenges for students' schedules and preferences, especially if these preferences change during the course term/semester. For example, HEIs have increased distance learning options and while that may help some students, it leaves out those who prefer to learn in a face-to-face (FtF) class or those who need real time engagement. Consequently, while students can make an initial choice- often between FtF and online courses, these options do not allow for maximum choice or transfer of choice if students' circumstances change and they need to change course access modality during the semester.

Until more recently, the methods of course delivery were clearly fixed and defined such as the traditional FtF model and distance learning courses, both with strict parameters of how they can be accessed by students. In the last two decades, we have seen increased options with "Hybrid" courses, where part of the course is offered online and part FtF (Brinthaup, Clayton, Calahan, and Draude, 2014). But even with Hybrid models, there are scheduling restrictions on specific meeting and online sessions. For example, HEIs will designate required FtF meetings for

these courses and identify them in their course catalog so students can determine and plan for the FtF meetings. Again, Hybrid models have been popular and have certainly increased options and choice for students but we argue that there are opportunities to maximize choice even more. With online and virtual options expanding and with the COVID-19 crisis no longer making it an option for HEIs to deliver courses in distance learning modes, the HyFlex model presents opportunities for more robust offerings to meet students where they are but to continue to provide choice and options during the semester for their changing needs.

HyFlex Course Model

HyFlex courses are unique in that students have the choice of accessing the course however best suits their needs (Abdelmalak, Matta, and Parra, 2016). More specifically, the Hyflex model includes simultaneously offering the course in three formats: FtF, synchronously online by joining the class virtually in real time via a teleconferencing platform, or third, joining asynchronously as they watch the recorded video and complete online assignments in a learning management system (LMS). More distinctive, however, is that the design allows students to choose their preferred mode of accessing the class even if those preferences change throughout the semester. For example, a student may prefer to attend FtF classes but if they face an unexpected situation during the semester such as illness, transportation difficulties or child care responsibilities, they could access the online stream for one class, and follow along, being engaged and able to access the course content and material. The same student may need to do this for two or three class sessions, depending on their circumstances. For another student, their preference may be to login to the LMS and view the recorded course video with the corresponding online materials and assignments. For another student, their preference and choice

of how to attend may change weekly. This flexibility to join in three different ways at any time during the semester automatically increases access, flexibility, and retention.

The HyFlex model is not the same as the hybrid model, where it includes a fixed combination of FtF and online instruction. What makes it a HyFlex course is the simultaneous three-modality delivery and the freedom, flexibility, and agency for students to change how they access the course throughout the term, regardless of how many times those choices and preferences change. For the purposes of consistency, we will use the term HyFlex in this article.

Benefits of HyFlex Courses

There are many benefits to offering HyFlex courses. First, this course style is one way to meet students' needs and accommodate different preferences and styles of adult learners (Racca and Robinson, 2016) and other researchers have outlined the connection between increased course options and improved access to higher education (Davidson, 2016) (Koskinen 2018) posits that adding technology and flexibility to course offerings also benefits students and can increase enrollment rates. As more students and faculty have exposure and positive experiences with online and virtual delivery models, the demand for this style of delivery has and will continue to increase (Brooks, 2020). And now that nearly all current college students have experienced some form of exposure to virtual learning, the demand for more virtual options is only expected to increase.

Traditional and restricted attendance options and expectations have also posed a barrier for some students, especially those from more disadvantaged backgrounds and with fewer economic resources. These policies and expectations can prevent students from succeeding or

even completing courses if there are factors that impede ongoing attendance for students. Missing a week or two of course work has often meant facing serious academic consequences for students. And in some cases, it has forced students to drop courses and delay program completions or the opportunity to transfer or graduate. HyFlex courses shatter this barrier and opens opportunities to increased attendance in a variety of ways, resulting in higher retention and completion rates.

In addition to the student benefits, there are also benefits for HEIs. Brick and mortar buildings and ongoing associated maintenance, have proven to be costly (Carlson, 2014). The HyFlex model can reduce the physical space needed for these classes as many students often choose the virtual or distance learning option when taking this course style. It is also expected that the demand for more virtual and online options will only continue to increase, even in post-pandemic times.

Another HEI benefit is the possibility of expanding class sizes, especially for courses where the majority of students would prefer to access the courses virtually or online, such as computer science and technology education. For example, in a modified HyFlex version, Harvard Extension School offers classes to students where the course instructor teaches in a FtF class, the lecture gets recorded and then there are multiple additional sections that are offered using the instructor recordings and supporting Teacher Assistants (TAs) or Fellow Instructors. Using a conferencing platform, students in the non-FtF sections meet weekly and synchronously with the TA to review and discuss the lead instructor lectures and other content. If a student is not able to join synchronously, there is also the option of independently accessing the recorded professor lectures and TA support meetings and writing weekly reflections on the content covered that week (Harvard Extension School, 2020).

HyFlex Course Development

In this section, we will explain the process and development of HyFlex courses in Allegany College of Maryland and Montgomery College. As previously stated, the Hyflex course model is one course that can be delivered in three different ways: online, FtF, and virtually. Additionally, students must be given the option to choose how they will access the course at any time in the semester. For these reasons, it is important to acknowledge that HyFlex course development takes thought, time and planning for instructors to really consider all the logistics required to ensure success. Further, there is a need to plan, have shared goals and collaborate with administration and other departments such as procurement, technology support, etc. Course design and considerations are important because as the student is more engaged in the learning, they are more likely to be successful in coursework and ultimately, they receive a higher final grade in the course (Friedman, Rodriguez, and McComb, 2001).

While our approaches to the development of HyFlex courses have included different considerations, primarily due to institutional differences and needs, faculty experiences and student goals and outcomes have fundamental similarities for both colleges.

Allegany College of Maryland

Allegany College of Maryland (ACM) is located in Cumberland, Maryland with dominant rural areas in the western part of the state. ACM has one main campus in the state, a campus in Pennsylvania, and other instructional sites throughout the region, serving approximately 3,000 credit students. In response to inquiries of lowering budgets and increasing

accessibility to more students with demanding and complex schedules, a proposal was presented to administration to examine HyFlex course delivery.

In the spring of 2017, the HyFlex course option was being explored. With help from instructional designers, the first HyFlex course began to be designed. Since a student could be enrolled in a course and never attend a FtF section, the course had to be designed for 100% online delivery, with considerations for FtF participation. A complete redesign of the current FtF section was necessary.

During the redesign efforts, some activities for the course were selected by the division chair of the Computer Technology department, standardizing assignments among the Computer Literacy sections. Little autonomy was evident in these assignments, however, about 33% of the assignments were specifically designed by the instructor of the HyFlex course. Activities were selected that would produce the highest level of engagement. While exploring activities, weighing the possible benefits compared to how the meaningful students would find the activity (Miller, 2019). For example, when discussing computer icons, students designed their own icons that would represent applications. Students would then create their own unique icons. The activity was popular among students, and was more active than writing a discussion board or a writing assignment about icons.

Specific consideration was given to activities that could be completed in the classroom and online. The majority of the course is showing how to complete projects within computer applications as the instructor will complete something and the students repeat the same steps. There is limited interaction for 11 of the 16 modules in the course.

Upon design completion, when most of the major components of the course were created, an in-house review from the instructional designers was completed. The course met all of the required standards and was approved to be offered in fall 2017.

Montgomery College

Montgomery College (MC) is a three-campus institution with approximately 60,000 students. The decision to develop HyFlex courses came after watching a conference presentation of the work ACM had been piloting in spring 2017. In consultation with MC leadership, faculty from the teacher education department we proposed the purchase of technology funds to develop a HyFlex course. The planning, training and development began in the summer of 2018.

One of the more time-consuming parts of the HyFlex development period is researching and deciding on technology options as this can vary based on the course outcomes. Unlike ACM, where the course offerings were in computer literacy, the courses at MC were in the teacher education department. The outcomes for education courses include more extensive collaboration, group activities and lesson demonstrations and the technology selection and course design, had to align with those outcomes.

In addition, to technology decisions, much consideration was given to student discussions and small group work. For these reasons, additional technology than what ACM used was added to the classroom, including a 65-inch monitor on the side wall of the classroom so that students attending FtF could also “see” all the students joining virtually. A more important benefit to the side screen was to provide students with opportunities to interact and engage during class. This was also made possible with the ceiling microphones and speakers.

This process included adding more clarification and instruction on the syllabi so that students were aware of expectations but so that the rigor and consistency of the course expectations remained equitable, regardless of how students pursued the course.

Similarly to ACM, there was considerable thought to ensuring faculty were properly trained and prepared to teach in the highly technical classroom. Training for this included mock teaching sessions where faculty joined virtually as students so that issues could be discussed and resolved. These mock sessions included faculty, the ACM consultant, staff from IT and the learning technologies department.

Financial Considerations with HyFlex Courses

Funds are limited at many colleges and with the current economic climate, this could likely become worse for many HEIs. This was certainly a challenge for ACM and was further complicated as Allegany County is one of the most economically disadvantaged counties in the State of Maryland (Stebbins, 2019). Because funds are limited, ACM had to consider a cost-effective solution to offer HyFlex courses. After several video conferencing solutions were researched, ACM chose GoToMeeting for the pilot HyFlex offering.

Montgomery College is listed as one of the top 5 most wealthy counties in the country based on household income averages since 2017 (Pelt, 2020). The financial support for purchasing the required classroom technology needed came from an internal grant. The funds were enough to purchase a remote-controlled Pan/Tilt/Zoom camera, ceiling-mounted in the classroom. Ceiling speakers and microphones, along with a wireless microphone for the instructor, were used to capture sound. A second large-screen television was mounted on the wall

so the instructor could monitor and interact with the students participating in the sessions remotely. This TV also allowed for all students, both FtF and joining virtually, to have a greater sense of community within the classroom.

During the preparation process, MC changed their technology approach. For example, initially a conferencing tool in the LMS and an external application was used, but it was realized that the setup would not meet the needs of the course. That solution had limiting features that did not allow for all students to join virtually and at that time, it was a one-way correspondence tool, meaning students could hear the instructor but the students could not be heard in the classroom. We also wanted to be able to see all students who were joining virtually and again, at any given time.

Technology Considerations

Technology is a key feature of HyFlex courses. The design and definition of the course requires that the technology aspect is seriously considered. While the two college models shared many similarities, the technology purchased and used vary significantly in both function and price. In the end, however, both ACM and MC were delivering HyFlex courses, albeit drastically different technology tools.

Allegany College of Maryland

Considerations for design included technology for the all involved, the institution, the instructor, and student. The institution had the basic technology in place for online, including a

video conferencing solution license for the instructor. Since the instructor was technologically knowledgeable, there was limited training needed in the use of the technology. To ensure that students were prepared for this method of delivery, in the introduction of the course, both written and in a screen-cast recording, students were given specific instructions on the technology used and the technical requirement of participating in the course. These specifications were provided by the applications or services used. Additionally, students would need a webcam and microphone to participate synchronously.

In the design of the course, consideration was given to the activities for the learning process. The instructor used hands-on activities, including student collaboration experiences for learning in the classroom. In the design phase, specific attention was given to incorporate engaging activities in the course. For example, for group activities, the students joining the synchronous sessions could be one group and the microphones and speakers in the classroom would be muted and online students could collaborate. Additionally, with online meeting applications several groups could be created in the collaborative app. During this time, the recording for asynchronous students would be paused and resumed when classroom activities resumed. Students who completed the course, or that session asynchronously, would participate in a similar activity, designed by the instructor to ensure consistency in learning outcomes. The active design process of the course continued for several months.

Additionally, the classroom had to be ready for this instructional delivery method. Students had to see and hear the instructor and the students had to be able to communicate with the instructor. Since only a small amount of funds were granted to this project, the technology was very selective. Because the course is technical, the students were mainly looking in the front of the classroom, to the screen to watch and mimic what the instructor did, a simple webcam on

the computer was appropriate. Later, the webcam was updated to a Pan/Tilt/Zoom camera to allow the camera to be moved. Additionally, a wireless lavalier microphone was used, along with 2 ceiling microphones to capture and share student interactions in the classroom. These 3 microphone inputs were mixed using a simple audio mixer and connected to the computer as one input. The standard classroom has a computer, speakers, and projector. Using an online meeting application, the instructor would share the screen and activate the webcam and begin the lesson.

Each session was recorded using the online meeting application. The recordings began by recording to the local machine, then were uploaded to YouTube as an “Unlisted” video, and finally embedded in the LMS. When cloud recordings became available, links were shared in the LMS. Students who needed a review of the topic, or those who did not attend the class, in-person or online synchronously, were encouraged to watch the recording.

Montgomery College

Similar to ACM, Montgomery College also used a variety of technology tools throughout the development and piloting of the HyFlex courses. Because the teacher education courses require significantly more student engagement and discourse, we used a 360 degree remote control ceiling cameras with ceiling speakers and student and instructor microphones.

The teacher education courses required that students maintain cameras “on” during instruction and that they engage in all whole and small group activities. For these reasons, an additional 65-inch monitor was added to the side of the classroom to promote a more collective classroom environment, regardless of how students were choosing to attend the classroom.

Piloting and Implementation

Once the design process had been finalized, ACM distributed marketing materials and online announcements via the college website. Additionally, a short video commercial was developed and used on social media.

Conversely, at MC the pilot course was not advertised in the schedule for the first course but students were told of their options on the first day of class. Since students could still choose to take the class entirely FtF, as advertised on the course schedule, the only change was the option of shifting to an online synchronous or distance learning environment if they chose to do so.

The first offering of a HyFlex course at ACM was fall 2017 with a nearly full section of 19 students. The first pilot at MC was during the fall 2018 semester with 16 students. Additional courses were offered at both colleges during the 2019 academic year.

Other important implementation procedures were to post signs around the classroom letting students know that lectures would be recorded, as this is a regulatory requirement in Maryland. There was also added time to review the syllabus and explain the technology, options, grading processes, etc.

Data Collection and Results

Although the implementation of HyFlex courses at both ACM and MC are still in its early stages, preliminary data indicates there are clear benefits to this model. Over the four semesters that Computer Literacy has been offered in HyFlex modality at ACM, survey data

were collected at the conclusion of each semester. The surveys were made available to students from the start of the semester but were not due until the last week of the course. The overall class response was 68%. The survey questions included students' perspectives on the Hyflex model, strengths and benefits to the model and any suggestions they would make to improve the model of the course. The specific questions used at ACM were:

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1. Which mode of delivery did you participate in the most?
 2. Would you be interested in taking a HyFlex course again? Explain your answer.
 3. What, if anything, did you find most challenging about the HyFlex course?
 4. What suggestions do you have to improve the delivery?
 5. Other comments/Suggestions
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At MC, survey data were collected at the conclusion of each of the classes with a response rate of 95%. The reason for the high response rate was due to the instructor providing class time for the students to complete the anonymous online survey. The MC survey questions were similar to the ACM survey but also included additional questions on the use and ease of technology tools and how effective they were in accessing the course content during the synchronous virtual feed.

The collective responses from both colleges emphasized and reiterated the benefits and importance of accessibility and flexibility as related to student success. A sample of the student comments from both the campuses are outlined in Table 1.

Table 1: Student Qualitative Survey Results (combined results for ACM and MC)

- “I didn't have to stress if I missed a class. If I forget what we did in class, I can just go back and watch the class over.”

- “I believe HyFlex is very convenient. I commute VIA [sic]public transportation and it takes about an hour and a half and sometimes I go to MC only for one class. It is very beneficial because it saves a lot of time and it allows the students to stay connected even though they are not physically there. ”
 - “It made the class much more convenient.”
 - "The fact that it gave students the chance to participate and attend class without actually being in class."
 - “The only suggestion I have is to make more classes available as HyFlex courses!”
 - "I liked that I was able to attend class even when I wasn't able to be physically there. It helped me stay on track with me [sic] class even when I didn't have a ride to class."
 - "I liked the fact that it created an option for people who couldn't physically be at school, to be in class and still receive instruction as if they were there."
 - "I am a stay-at-home mom who also works part time. This format gives me the freedom to participate in the class and complete assignments at my convenience."
 - "The fact that it gave students the chance to participate and attend class without actually being in class."
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The survey, attendance and grading data shows that students achieve higher final grades, an average of 3% points higher, compared to all other sections of Computer Literacy offered by other faculty during the same time period. At MC, there were higher course completion rates in the courses offered in fall 2018 and spring/fall 2019. Retention and completion rates for these

courses increased between 10-20% compared to the more traditional offerings (FtF and Hybrid) of the same course.

One of the most notable differences with HyFlex courses was that students maximized the options available to them. Even for students who expressed strong preference for FtF sessions and who demonstrated consistent FtF attendance, the option and ability to join the course synchronously and engage with the instructor and students made a significant difference. At MC and ACM, over 50% of students accessed another mode aside from the FtF option. This was more frequently seen with an accelerated eight-week HyFlex course, where there is a significant amount of content covered per week. If students miss a class, it can derail their success path because it is harder to make up the work than a traditional 16-week class. The expanded options, however, made it possible for students to still attend class and consequently, increase their success in the course.

Pedagogical Considerations

When online courses first emerged, it was apparent that pedagogy and instructional approaches for effective teaching online differed considerably than those for FtF courses (Bruce and Lavin, 1997). With online courses, there is a stronger emphasis on clarifying, information access and formatting and being creative with how instructors will engage and interact with their students. Similarly, with HyFlex courses, the pedagogy also differs and several factors need to be taken into consideration. First, instructors must consider the course outcomes and how students will be able to meet those course outcomes regardless of the chosen course modality. This means that you must consider how students are accessing the materials and content in all three ways:

FtF, virtually synchronously or online. Moreover, instructors have to think about student expectations such as interactions, student discourse, group projects, etc. and how each those expectations will look in the different HyFlex formats. Additional areas to weigh and ponder during the development phase are grading, attendance and course assessments.

Future Recommendations

While both ACM and MC saw many benefits in offering HyFlex courses, there were several lessons learned along the way. For instructors, instructional designers and other education professionals considering developing HyFlex courses, we want to make some key recommendations on our collective lessons learned.

Cost

HyFlex design and development costs can vary widely. Regardless of your budget, we believe there are opportunities to develop HyFlex courses. While it is definitely more ideal to have the funding to purchase technology tools and provide planning time for faculty, instructors have made this work with low-tech tools, as explained in the ACM example.

Another cost consideration is the time it takes to deliver a HyFlex course. The reality is that it will take more time to deliver a three-modal course than a one-modal course so this must be included in planning and budgeting. We also recommend that this be discussed and included early. At ACM, the instructor lobbied administration for this adjustment. The extra work was recognized and faculty teaching a HyFlex course now receive 1.33 credits per credit hour. For

example, a three-credit course counts as 4 credits in the faculty load. At MC, however, there has not been a distinction in compensation with HyFlex courses.

Pedagogical Considerations

Regardless of discipline and content, Hybrid courses can be designed to meet instructor preferences and course outcomes. This, however, takes design and planning time. Instructors must consider the rigor and parallel expectations and assignments to the corresponding delivery modality. In our case, we teach very different courses- computer technology/literacy and teacher education. Our design and technology approaches differed considerably because of the distinct outcomes of our courses. In education, collaboration, presentations and student discourse are key and the course design and technology tools had to be responsive to those course outcome priorities.

In other words, HyFlex courses are not restricted to certain content areas. While there are certainly courses that better lend themselves to a virtual or distance learning platform, such as computer science, with creativity and emerging technologies, we argue that Hyflex course models can be adopted by most if not all content areas.

Technology

As explained earlier, the technology used at ACM and MC varied significantly. Before designing your HyFlex course, we recommend that you research technology tools and how they can be used to best align with your course outcomes. Additionally, we want to emphasize that

this in one of the areas in HyFlex course planning and design that can demand time, patience and flexibility from instructors and college staff. Making rushed decisions can be costly and impact the quality of the course experience for both faculty and student.

Faculty Considerations

As many of us have learned during the covid pandemic, adjusting to new technology. It takes time, patience, persistence and grit to get through temperamental technology and HyFlex course development and delivery are no different. In both the examples provided, faculty had to remain highly flexible and adaptable- making frequent, sometimes frustrating and time-consuming adjustments and changes even during the pilot time. Faculty openness and nimbleness to what may feel like a herculean lift can be an asset when selecting who will support the development of HyFlex courses.

Collaboration

Like in many other areas in education, collaboration and resource-sharing is key when developing HyFlex courses. While there are some parts of HyFlex that have been around for a while, such as FtF strategies, distance learning, etc. there will always be a wave of emerging new technology tools. And although newer technology can be helpful, this can feel overwhelming for faculty, instructional designers and students. Collaborating and resource-sharing with others in the profession who are already engaged in HyFlex course delivery, can save time and energy for HEIs and instructors. In our case, the second author was an integral part of supporting the pilot for the MC Hyflex courses. This made the development process more manageable at MC as we

could rely on the experiences and expertise of someone who had already done it. We highly recommend collaboration and resource-sharing for those considering the HyFlex endeavor.

Summary

Student success should remain to be an uppermost priority at an institution (Keeya, 2020) and Hyflex courses are proving to provide countless benefits for students. They increase access, retention and completion rates. Further, they provide a different level of flexibility and choice, truly allowing students to select the options that best work for them, even if these choices and preferences change throughout the course term. While these courses will require more time to plan and design, particularly in the development stages, they are well worth all the many benefits they bring to students.

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