Capturing the Academic Experiences and Achievements of College Students in a Hybrid Flexible (HyFlex Course)

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ABSTRACT

With changes in technology and the impact of the global pandemic, universities worldwide are seeking strategies that will positively affect student enrollment and retention. One such strategy is implementing a hybrid flexible, or HyFlex learning model. The HyFlex model was piloted within three undergraduate education courses at a private university in Ohio. Findings showed that students' willingness to attend in-person classes was a statistically significant predictor of flexibility in attendance, F (1, 63) = 4.25, p = 0.04. Statistical analysis using SPSS also showed that students' self-reported sense of responsibility was a statistically significant predictor of their preference for flexible attendance (HyFlex Model), F (1, 61) = 5.98, p = .017. When examining student achievement, as measured by course grades, a stepwise regression showed that in-person attendance was a statistically significant predictor of course grades, F (1, 62) = 4.79, p = .032. Finally, prior online experience was a statistically significant predictor of motivation, F (1, 62) = 9.56, p =.003. Recommendations for universities that may choose this model of instruction are provided as well as suggestions for future research in this area.

Keywords: attendance; enrollment; HyFlex Model; in-person instruction; online instruction; retention.

INTRODUCTION

With declining numbers of teenagers in the population, and thus, fewer high school graduates, and the impact of the pandemic and changes to the economy and job markets, many colleges and universities around the globe are working to meet the needs and desires of students to increase student enrollment and retention. These challenges, specifically, the impact of Covid-19, have magnified the need for diverse instructional strategies and propelled universities to shift their current practices. One such strategy is to offer alternatives to traditional instruction and the

college classroom experience such as implementing a Hybrid-Flexible, or HyFlex learning model for students. This research included college students from multiple academic programs on campus who enrolled in a HyFlex course and volunteered to participate in a semester-long study. For the purposes of this study, a Hybrid-Flexible course is defined as a:

> design [which] enables a flexible participation policy for students, whereby students may choose to attend face-to-face synchronous class sessions in-person (typically in a traditional classroom) or complete course learning activities online without physically attending class. Some HyFlex courses allow for further choice in the online delivery mode, allowing both synchronous and asynchronous participation (Beatty, 2019, as cited in Polyakova-Norwood & Frass, n.d., p. 1).

The purpose of this study was to understand students' perceptions of participation in a HyFlex model, particularly focusing on their attendance choices, self-reported responsibility, motivation, and academic achievement. This study also aimed to examine how these factors predict students' preferences and performance in a HyFlex learning environment, to inform decision-making about the future implementation of HyFlex courses.

This study sought to address the following research questions:

RESEARCH QUESTIONS:

1) How do students perceive the HyFlex instructional method, and what are their reported engagement patterns within this learning environment?
2) To what extent do students' self-reported prior experiences in online learning and their personal responsibilities predict their preference for different attendance methods (in-person, Zoom, asynchronous) within a HyFlex learning model?
3) To what extent do students' academic achievement (measured by course grades) and self-reported self-efficacy predict their motivation and flexibility in attending a HyFlex classroom?

BACKGROUND OF HYFLEX CLASSROOM

Blended learning models may also be referred to as flexible learning models, where students have a choice in determining how they attend class. One such model is the HyFlex, or Hybrid-Flexible learning model, which has become possible in classrooms due to the increase and development of technology (Rosen, 2021). This model was first created by Associate Professor of Instructional Technologies, Brian Beatty at San Francisco State University in the mid-2000s (Rosen, 2021). This instructional format combines face-to-face (F2F) and online learning by offering each class learning activity either in-person, synchronously online (i.e. Zoom, etc.), or asynchronously online (Educause, 2020).

According to Beatty (2019), the HyFlex learning model serves as a student-centered approach to teaching and learning where students are provided more freedom when it comes to choosing how they would like to attend their classes each day depending upon their circumstances. From Beatty's (2019) perspective, there are four fundamental values or principles of the HyFlex model:

1. Learner Choice: Provide meaningful alternative participation modes and enable students to choose between participation modes daily, weekly, or by topic.
2. Equivalency: Provide learning activities in all participation modes which lead to equivalent learning outcomes.
3. Reusability: Utilize artifacts from learning activities in each participation mode as

"learning objects' for all students.

4. Accessibility: Equip students with technology skills and equitable access to all participation modes. (Beatty, 2019, p. 52).

The development of the HyFlex learning model (Beatty, 2019) and the increases in digital access and portable devices have allowed institutions worldwide to incorporate this instructional strategy within their curriculum (Rosen, 2021). The utilization of HyFlex courses significantly increased in 2019 to aid in handling the disruption in learning that the COVID-19 pandemic caused (Bărbuceanu, 2022). The pandemic has forced teaching and learning to transition and transform the 'traditional classroom' to a classroom that incorporates more technology, flexibility, and online learning (Zascerinska et al., 2021). Although many students initially protested the transition to hybrid learning during the pandemic, they also became accustomed to the flexibility that such a model offered, and a majority have found themselves preferring that at least some portion of their learning continue online. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) partnered with an educational technology organization, Anthology, to conduct research on student learning experiences. Results from their research indicated that out of 2,725 students surveyed across ten countries, 41% prefer completely online courses (with 16% specifying a preference for synchronous online courses and 25% denoting a preference for asynchronous online courses) and 80% prefer at least some of their courses or course sessions be online. Less than one-fifth reported a preference for in-person-only courses (Widenhorn et al., 2022). Blended learning is becoming higher education's new 'normal' post-pandemic to meet student demands on campus and increase enrollment and retention (Kohnke, 2022). As universities consider what education could look like in a post-pandemic world, the HyFlex model is a promising, flexible way for students to learn.

Why Implement Hyflex Learning?

Flexibility is part of the definition of a HyFlex classroom, making this model student-centered and student-driven (Kohnke, 2022). This approach provides students autonomy as they choose to access instruction and participate through a variety of pathways (Beatty, 2019). For many students who fall within the iGeneration or Generation X, accessing a course digitally is of their nature, so placing classes online can be considered part of their DNA (Stoian, 2019). This flexibility allows instructors to support a diverse student community, such as adult learners who have very demanding lives, health issues, children, etc. (Educause, 2020; Rosen, 2021). It also offers adult learners more control over how they want to be engaged with their teachers and courses. For example, students who have external responsibilities such as work or family are still provided equal opportunities to be successful and attain career goals while being able to attend class virtually, or in person depending on what the week ahead entails. This flexibility has led to increased student satisfaction, engagement, and retention (Kohnke, 2022).

According to Wong (2022), extra flexibility enabled students to feel less anxious in a more inclusive atmosphere through personal coaching by the instructor. In addition, Shek and colleagues (2022) found students showed positive views toward the HyFlex model and perceived that it improved their well-being and mental health. In the previously discussed research by UNESCO and Anthology, students were asked about challenges they faced outside of the classroom. Challenges related to mental health and emotional well-being topped the list as the most frequently noted challenges. Considering that 43% of college students indicated that they had mental health and emotional well-being challenges in the past year (Widenhorn et al., 2022), the positive impact of HyFlex learning on student mental health must not be ignored.

The benefits of a HyFlex model are not limited to students. Teachers who used the HyFlex

model were able to reflect upon their teaching more, which led to feelings of empowerment and positive mindsets toward their careers and lives (Shek et al., 2022). Due to the course design and site flexibility, universities are able to increase class capacity and attract students from a wider pool (i.e. students who live further away or only want to attend courses remotely or online) with the incorporation of HyFlex courses.

University leaders were also surveyed in the study by UNESCO and Anthology. Of the 2,572 university leaders who responded, 38% indicated that they believed that a mix of online and in-person courses would be the model at their university by 2025 (Widenhorn et al., 2022). By offering HyFlex courses, universities may provide a learning experience that more fully meets the needs of today's learners, which should help to attract a wider variety of students in a time when the number of traditional-aged college seekers is declining, and competition for enrollment is steep. Lastly, it may be helpful for institutions of higher education to have a backup plan ready for unpredictable and challenging problems that may take place in the future. Therefore, understanding how to offer and manage a HyFlex learning environment can be a solution should another pandemic or similar event occur again (Shek et al., 2022).

How to set up a HyFlex Classroom

Technology

According to Maloney and Kim (2020), HyFlex classrooms need a camera and video conferencing capabilities to engage with at-distance students as a minimum resource. For students who are attending live but virtually (i.e. Zoom), the classroom needs to provide the capability to allow students to stream in and also record the lecture for those students who plan to watch the lesson at a later date. Platforms can be used such as Zoom to allow students to attend live, and this Zoom session can also be recorded for students to watch later. These recordings can be posted in the course for students to watch, engage in discussion, or complete assignments within the campus learning management system (Maloney & Kim, 2020). According to Bărbuceanu (2022), effective use of technology is extremely vital to ensure all participants can hear all verbal interactions**.**

Classroom/Lesson Structure

In either format (in-person, asynchronous, or live virtual) students must be participating in the course, which requires the instructor to track these engagements. How this is achieved is constructed by the instructor. The HyFlex model may require faculty to think outside the box and determine how they can engage all students in the course in a variety of ways (Educause, 2020). The class syllabus, usually created prior to the start of a semester can outline the blended course in detail including weekly activities, policies and procedures, content, tools, and approaches with a goal to create learning experiences that are equal in access no matter how the student engages with the material (Bărbuceanu, 2022; Khan et al., 2017). Teachers might ask themselves the following questions:

- How can I ensure all students are meeting the same learning outcomes?
- How might I promote high levels of engagement in discussions and assignments?
- What materials should be used to effectively assess students?
- How can I provide meaningful and relevant feedback?
- How can I build a learning community across all modalities of students engaged in the course?

Khan and colleagues (2017) recommend presenting information in a variety of ways and breaking the learning down into smaller segments when designing weekly lessons around the learning goals.

In addition, considering the types of interactions that can take place across and between students and faculty can help when planning lessons to ensure communication and collaboration is occurring across all types of engaged learners both online and in-person (Bărbuceanu, 2022). Before a university implements the HyFlex learning model, it might be helpful to begin with a pilot of one or two classes in order to help determine if this type of learning strategy would work well for the student population, and if so, what courses would be best to utilize this strategy for students (Rosen, 2021). For example, labs, clinicals, or classes that utilize hands-on learning may not be the best courses to choose a HyFlex option for learning (Rosen, 2021).

Challenges of Utilizing a HyFlex Model

Teachers

As a teacher using a HyFlex learning model, it can be challenging to make sure that rich, interactive, engaging learning experiences are provided for all students- both those that attend in-person or online. As this planning process may be overwhelming for a faculty member, some researchers suggest utilizing an assistant that helps organize and guide those in the online modality while the faculty member can focus on teaching in person (Maloney & Kim, 2020). However, this is not always feasible in terms of staff and financial resources.

Increasing a faculty member's knowledge of technology and ways to use digital pedagogies can increase the learning environments' effectiveness (Kohnke, 2022). Conversely, research shows that faculty who felt they did not have the technology resources, personnel, or training/support from their administrators felt frustrated when trying to utilize the HyFlex learning model (Khan et al., 2022). According to Kohnke (2022), teachers using the HyFlex model expressed feelings of uncertainty and stress when planning lessons, trying to build rapport with students, managing concurrent classrooms, feeling like they did not give all groups the same attention or priority, communicating/engaging with students, adapting existing teaching practices, and overall feelings of inferiority as a teacher. Teachers also felt frustrated when students would not use their cameras in real-time, talk through the chat box instead of video, or were passive in their learning. Some felt they did not receive enough professional development and students would have benefited from a consistent method of attending class (Kohnke, 2022).

Students

For students, the structure of using a HyFlex model may take some getting used to. For example, students may be familiar with a fully online course or a hybrid course, but not be equipped for a HyFlex course that allows them to have more control over their learning, especially for those who lack confidence, motivation, or self-guidance (Rosen, 2021). It is easy for the online population to be at a disadvantage within this delivery model, especially for those who lack the self-motivation and self-efficacy skills to be successful in this environment (Educause, 2020; Maloney & Kim, 2020). Students engaging from home or trying to work remotely may struggle with technical issues, increased distractions, decreased feelings of engagement, or time management (Shek et al., 2022). If the learning quality in the HyFlex environment is poor, it can lead to increased stress for students and also negative perceptions of the learning model (Shek et al., 2022). Furthermore, students who do not have access to quality technological resources, may not be able to reap the benefits of a HyFlex option. In other words, students might be enrolled in a HyFlex course, but realistically are only able to attend in person if they cannot access the course material in ways that require more advanced technology.

Campus

For the university, the costs of upholding a proper physical classroom that can be used to reach both in-person, asynchronous, and online students may require some immediate costs and future maintenance. In addition to the costs for technology, universities would also need to provide training for their faculty, students, and teaching assistants on how to properly use such technology within the classroom (Bărbuceau, 2022; Educause, 2020).

METHODOLOGY

Research Design

The study employed a quantitative research design, utilizing surveys and statistical analysis to explore student experiences and insights regarding a HyFlex course model. Two professors volunteered to teach their 15-week-long courses using the HyFlex learning model, which allowed students to choose their mode of attendance (in-person, Zoom, or asynchronous) on a daily basis. The courses included one junior-level counseling course and two sections of a junior-level qualitative research course. Three surveys were administered to gather data on students' perceptions and experiences and instructors tracked students' weekly engagement metrics. Data was analyzed using descriptive statistics, ANOVA, and Stepwise regression analyses in order to determine predictive relationships between various factors: attendance flexibility, motivation, academic achievement, and self-efficacy.

Participants

Undergraduate students enrolled in general education and counseling courses during the fall 2022 semester at a private, four-year institution in Ohio were asked to participate in this study. As a pilot study for the university, two professors (the first and second authors of this study) volunteered to teach their 15-week-long fall classes using the HyFlex learning model. The HyFlex classes included 53 total students which are described further in Table 1.

Table 1

Student Demographics

Category	Number of Students	Percentage of Students
Courses		
Junior-level counseling course	13	19.7%
Junior-level qualitative research course	53	80.3%
Academic Standing		
Seniors	10	15.2%
Juniors	50	75.8%
Sophomores	6	9.1%
Gender		
Male	30	45.5%

Female	35	53.0%
Non-conforming	1	1.5%
GPA Distribution		
3.5 or higher	46	69.7%
Between 3.1 and 3.5	12	18.2%
Below 3.0	8	12.1%
Perception of Online Classes		
Prefer online for particular subjects	29	44%
Indifferent about online vs. on-campus	23	34%
Did not enjoy online courses	14	22%

Structure

The instructors of the courses (1st and 2nd researcher of the study) made initial contact with the students in-person during the first week of class, asked them to participate in this study and provided a consent form to sign electronically. There were no known risks to the students other than normal stressors that may exist within an online or asynchronous classroom setting. Student information was kept private and student names were not disclosed in the study. No compensation or rewards were offered to participants.

Each class was recorded using lecture capture software (which is utilized university-wide) or Zoom. These recordings permitted students to choose asynchronous participation to watch the lesson at a time that fit into their personal schedules. All course materials (lecture slides, links to videos, handouts, announcements, exams, and assignments) were housed in Moodle, a learning management system, and could be accessed by all students regardless of the modality in which they chose to attend class. After the initial class session, students were able to determine how they would attend class each day and their attendance choice did not need to remain consistent. Students were not required to notify the instructor of their daily attendance choice. Attendance was not collected for points toward the student's final grade in the course but was tracked for institutional and research purposes.

Data Collection

During the first week of classes, both instructors explained the structure of a HyFlex course and asked students to complete a Google Form survey (Appendix A) to learn about the demographics and initial perceptions of the HyFlex model. Halfway through the course (Week 7), students completed a midpoint Google Form survey (Appendix B) to follow up on their initial thoughts and perceptions and understand how they were feeling about the structure of the course thus far. Additionally, at the conclusion of the course (Week 14), students completed the final Google Form survey (Appendix C) to summarize their thoughts and perspectives on the HyFlex model.

In addition to the survey data, both instructors collected the following data for each individual student every week (See Figure 1): total time spent in the course, items students viewed in the learning management system, percentage of the class lecture videos watched, assignment submissions, grades, number of visits in the course Moodle shell, and how students attended each class (zoom, in-person, or asynchronously).

Figure 1

Sample Google Spreadsheet of Data Collected by Instructors

	Week 1						
	Monday 8/22						Assignments
In-Person	Zoom	Video	%	PPT	# of Visits	Time in Course	Complete
☑	☐	☐		N/A	93	1 : 31 : 50	☑
☑	☐	☐		N/A	40	1 : 03 : 07	☑
☑	☐	☐		N/A	83	49 : 48	☑
☐	☐	☑	92.15	N/A	45	47 : 21	☑
☑	☐	☐		N/A	2	1 : 30	☐
☑	☐	☐		N/A	73	1 : 58 : 03	☑
☑	☐	☐		N/A	159	1 : 43 : 14	☑
☑	☐	☐		N/A	66	1 : 23	☑
☑	☐	☐		N/A	54	36 : 06	☑
☑	☐	☐		N/A	24	29 : 42	☑
☑	☐	☐		N/A	94	1 : 54 : 58	☑
☑	☐	☐		N/A	8	4 : 40	☐
☑	☐	☑	1.2	N/A	118	1 : 12 : 02	☑

The following section will describe the findings in order to address each of the three identified research questions.

ANALYSIS AND FINDINGS

Student Perspectives and Engagement in Hyflex Learning

To address the first research question, students described their thoughts on the HyFlex model after it was introduced during the first class session. Students overwhelmingly showed a positive reaction toward the model. Some key words that emerged included: like, love, flexible, choice, health, and stress. For example, some initial student comments included, “I think this class is a perfect fit for me. It will help me with my anxiety”; “I truly wish this option was available for all courses offered on campus. As a full-time college student, full-time mom, and also being human, I appreciate this flexible option of education.” These initial reactions aligned Wong’s research (2022), which stated extra flexibility enabled students to feel less anxious in a more inclusive atmosphere. This data also aligned with the findings of Shek and colleagues (2022) who found students showed positive views toward the HyFlex model and perceived that it improved their well-being and mental health. Over half of the students in this study were student-athletes (52%) and/or employed part-time (55%). Regarding jobs and athletics, students mentioned these additional perceptions when asked to describe their thoughts on the HyFlex model:

- "I think it is a good idea. I have a job where the hours are 24/7. I do inventory so every store we go to is different and changes how long it will take to finish and what time it starts. If a job runs over it would help to get them done when I can or just stay in and watch the Zoom."
- "I love the idea due to the flexibility and freedom of choice. It allows me to manage my time properly as I have other duties to fulfill other than just college- whether it is a job or internship. It also gives me a sense of responsibility which is nice compared to other classes."
- "As an athlete, it gives me options, and I believe that I'm a student that can handle the "freedom" of choosing myself. I think it is very nice for athletes who travel during the school year."

Students also expressed some initial concerns. Some students explained that they knew they would take advantage of the course structure or that others might be tempted to not be actively engaged as well. For example, one student stated, "It does give some people the opportunity to slack off, however, a bad apple or two shouldn't ruin upgrading to the technological time," and, "I do see instances of the flexibility of this course being abused. I do not see myself abusing the flexibility of this course, but some may plan on not doing the work or not ever looking at Moodle." Data illustrating student engagement can be found in Table 2.

Table 2
Student Engagement Methods

Method of Engagement	Week 1	Week 7	Week 14
In-Person	57%	17%	13%
Zoom	0%	6%	13%
Asynchronously	11%	35%	49%
In-Person & Zoom	6%	13%	5%
In-Person & Asynchronous	16%	13%	9%
Zoom & Asynchronous	0%	7%	9%
All 3 Methods	10%	9%	2%

Note: Week 1 represents students' anticipated methods of engagement, while weeks 7 and 14 represent student reflections about how they attended class.

Within the week 1 survey (Appendix A), 81% of students expressed that they planned to attend in person, 15% on Zoom, and 34% asynchronously. This totals over 100% because students were able to select more than one modality in how they planned to engage with and attend classes for the semester. This survey was taken on the first day/week of class so student motivation and energy may have been high, leading a majority to select that they would plan to attend in-person. Students were not aware that the course was being offered as a HyFlex course when they enrolled, so students expected to attend in person until other options were presented on day 1. In week 7, students articulated a variety of reasons to explain their attendance choices (in person, on Zoom,

or asynchronously). Many students planned to attend in person, but multiple reasons kept them from coming to class. Childcare, comfort, and work were frequently mentioned. For example, one student wrote, “I previously planned on attending class in person. However, with my busy schedule, I was struggling by the time I got home and found it much more comfortable to attend class on Zoom. The Zoom classes for this course were really good because it felt as if I was sitting in class. We were kept engaged in the material, and I was able to comfortably work from home."

Next, an ANOVA was used to compare student willingness to attend in-person classes during the HyFlex model (Table 3).

Table 3.
ANOVA: Student willingness in attendance flexibility

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.761	1	21.761	4.250	.043[b]
	Residual	317.474	62	5.121		
	Total	339.234	63			

a. Dependent Variable: Flexibility with Attendance Score range: 3 -9

b. Predictors: (Constant), In Person after day 1

Table 3 indicates that the regression model is statistically significant, F (1, 63) = 4.25, P = 0.04, meaning that when predicting student attendance, the student’s willingness to attend in-person classes was a statistically strong predictor of flexibility in attendance. The regression model in Table 3 explains a part of the variability in the flexibility with attendance scores during the Hyflex model. The sum of squares for the regression is relatively small compared to the residual, showing that while the predictor is significant, there is still a large portion of variability that is not explained in this model. From conducting survey data, those students who were willing to attend class in person were more willing to be flexible in how they attended class in general. In other words, if they were willing to come to class in person, they were also willing to attend on Zoom or asynchronously.

This indicates that those who were willing to attend in person in week 1 were more likely to be open to attending in any format. We could surmise that attending in person takes the most effort (getting up, getting ready, and leaving home) and if a person is willing to attend that way, they would be more likely to be willing to attend in other ways. In other words, students are already attending using the method that demands the most of their time, so the other methods would not be an increased burden or effort.

Regarding recommending this type of course to others, on a Likert scale from 1-5 in the final course survey (Appendix C), 83% of the students who responded (n=41) would recommend or highly recommend the HyFlex learning model for other classes on campus. Those who expressed that they were dissatisfied, stated reasons for their low score (1-3). For example, some students stated, “Working a lot makes this class hard,” and “I have mixed emotions, the Zoom was right there, but learning in person makes it easier on everyone including the professor.” In addition, another student mentioned, “I am a procrastinator, and it is already hard for me to get motivated,

but I was able to get the work done, and it's not really the HyFlex models fault." When recommending the HyFlex model for other courses, students expressed they could see the HyFlex being used for more general courses, writing courses, and courses that require active work on projects, but not for ones that require more in-person connection or are major-specific with many readings and lectures. An interesting finding in the final survey showed 78% of students felt they got the same out of the HyFlex class as a traditional course. Those that did not feel this way expressed, "With a traditionally seated course you are forced to interact with the teacher all the time which also helps me out if I need help with questions about the stuff we are going over" and "I was not able to be in-person and build relationships." Interestingly, the students had the choice to come to class and build relationships, but they may have chosen not to due to a variety of reasons.

Prior Online Learning and Personal Circumstances and the HyFlex Model

A stepwise regression analysis was used to find out whether the method of instruction (Zoom, in-person, asynchronous), GPA, current grade, self-reported responsibilities outside of class, prior online experience, and self-reported self-efficacy would predict student motivation in the middle of the semester (See Table 4).

Table 4
ANOVA: Motivation and prior online learning

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	97.237	1	97.237	9.560	.003[b]
	Residual	620.477	61	10.172		
	Total	717.714	62			

a. Dependent Variable: Week 7 Motivation (1-10 self-assessment)
b. Predictors: (Constant), Prior Online Experience

The results in Table 4 show that prior online experience was a statistically significant predictor of motivation in the HyFlex course model. The regression analysis indicates that prior online experience accounts for a significant portion of the variance in motivation scores, as evidenced by $F(1, 62) = 9.56$, $p = .003$. This statistically significant result suggests that student who had previous experience with online learning reported higher motivation levels in the HyFlex course.

The prior online experience allowed students to better understand what to expect with a HyFlex model and allowed students to be more motivated. Those who previously participated in an online course reported greater levels of motivation to complete the work in the course outside of the classroom.

When reviewing the feedback on students' self-evaluated level of motivation (scale of 1-10) from the week 7 survey (Appendix B), 73% expressed higher range values on a scale of 1-10, and the following themes emerged for their high level of self-motivation: treating this class similar to other work, always giving forth effort, constantly thinking about the work, and enjoying the class and its' flexibility. Twenty-seven percent expressed lower value numbers below a score of 7. The themes for why students did not give as high of a score included: not setting priorities for

the course above working, family, or other personal issues, not liking to do work outside of class time, struggling with time-management challenges, and recognizing a need for self-improvement. It is interesting that many students expressed that they enjoyed the HyFlex option because of the priorities that they have and the extra work they have in their lives, but this extra work also causes them to procrastinate.

Academic Achievement and Self-Efficacy and The HyFlex Classroom

Students in general were consistent with the same format of attendance each week. When asked about the choice of attendance on the final survey, 66% stated that they preferred to be in the same modality each week. When assessing whether attending class (via Zoom, in person, or asynchronous), prior online experience, and self-efficacy were predictors of the student's attendance flexibility. A stepwise regression analysis showed that the students' self-reported number of responsibilities outside of class was a statistically significant predictor of their aptitude for flexible attendance (Hybrid flexibility model), F (1, 61) = 5.98, p = .017. Additionally, the student's willingness to attend in-person classes was also a statistically significant predictor of flexible attendance, F (1, 60) = 5.63, P = .02 (See Table 5).

Table 5
ANOVA: Flexibility in attendance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	30.086	1	30.086	5.987	.017[b]
	Residual	306.517	61	5.025		
	Total	336.603	62			
2	Regression	56.378	2	28.189	6.036	.004[c]
	Residual	280.225	60	4.670		
	Total	336.603	62			

a. Dependent Variable: Flexibility with Attendance Score range: 3 -9
b. Predictors: (Constant), Responsibilities
c. Predictors: (Constant), Responsibilities, In Person after day 1

Two predictors of being flexible included those who were able to attend in person or those who had many responsibilities. They were more likely to attend in various ways. In this case, the number of responsibilities included outside items such as: work, family, athletics, work-study, internships, etc. Students who were willing to attend in person and students who had more additional responsibilities outside of class were more likely to be flexible in their method of attending class.

There was a moderate positive correlation between self-efficacy and prior online learning, R (64) = .301 (See Table 6). This may be the case where familiarity breeds self-efficacy.

Table 6
Correlation between self-efficacy and prior online experience

			Statistic				
Variable	Variable2		Correlation	Count	Lower C.I.	Upper C.I.	Notes
Self-efficacy	Prior Experience	Online	.301	64	.060	.509	

Missing value handling: PAIRWISE, EXCLUDE. C.I. Level: 95.0

This data aligned with research by Maloney & Kim (2020), which stated that it is easy for the online population to be at a disadvantage within this delivery model, especially for those who lack the self-motivation and self-efficacy skills to be successful in this environment.

In addition, a stepwise regression was also conducted to assess whether attending classes in person, through a video conferencing call (i.e., Zoom), or asynchronously predicting the students' current grades in the course. Results show that in-person attendance was a statistically significant predictor of the current grade, F (1, 62) = 4.79, p = .032 (See Table 7).

Table 7
ANOVA: Attendance and grades

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.565	1	4.565	4.793	.032[b]
	Residual	59.045	62	.952		
	Total	63.609	63			

a. Dependent Variable: Grade in the Course A-4, B-3, C-2, D-1, F-0

b. Predictors: (Constant), In Person after day 1

The students who attended in person had a higher grade at the end of the course. The researchers found that in-person students had higher grades than the other students in the course. In-person attendance was a predictor of getting higher grades in the course. Those who attended primarily in person seemed to be the stronger, more self-motivated students. The students who attended in-person also completed the online discussions, got higher grades, and spent more time in the course Moodle, the learning management system. In addition, there was no correlation found between the amount of time spent in the course and the grade a student currently had in the course. Students expressed that they logged into the course to check upcoming assignments on the days they had class, reviewed the class PowerPoint presentations for help on the assignments, and if they were still confused, they would ask peers or watch class videos and email the instructor for additional help.

CONCLUSIONS AND RECOMMENDATIONS

Instructor Reflection

Class Size

When there were only a couple of students in person and/or on Zoom, the instructors felt like this made it difficult to implement small group work or utilize other instructional strategies that they would typically use with a larger group of students. Similarly, the instructors felt they were relegated to lecturing. Because many students were attending asynchronously, instructors felt that hearing a lecture might be most beneficial and would also be the most effective method for students who chose to watch the recorded class sessions. Because a high percentage of students attended class asynchronously, the instructors felt that they were not able to get to know the students or establish relationships. One professor in this study shared, "Some students I haven't seen since day one and if I saw them walking around campus, I wouldn't know who they were. This is not what I am used to considering we pride ourselves on small class sizes and really knowing our students."

Flexibility

Because so many students chose to participate asynchronously, the course instructors felt that it impacted the in-person/Zoom class experience. One professor in this study stated, "On one hand, students REALLY seemed to appreciate the flexibility so I would hate to take away this option. On the other hand, maybe making it an "as needed, but not permitted all of the time" option would be a more effective option." Because many students reported that they appreciated the flexibility, it is difficult to ignore the benefits for students.

An additional benefit of offering HyFlex courses is that it could have the potential to attract higher university enrollment. For example, the courses in this study are usually only offered in a face-to-face, seated environment. The counseling course specifically, is typically a highly desired course because it meets the requirements for training to apply for the Chemical Dependency Counselor Assistant credential in Ohio. There has been high interest in taking this course from prospective students; however, many did not live close enough or did not want to travel to campus regularly. Offering courses in a HyFlex format could potentially open up enrollment to distance learning students.

Resources

Most publications on HyFlex courses discuss the need for a graduate or teaching assistant to manage the virtual chat, respond to online students, handle technical issues, etc. The instructors in the study did not have any assistance and were responsible for managing all the participation methods on their own. The instructors reported that it was feasible but having assistance could enhance the learning experience. One instructor reported, "I arrived at least 30 minutes early to class every time so I could set up the OWL camera, log into Zoom, and open all needed videos, tabs, etc. in Chrome so they would be readily available for screen sharing in Zoom. I had to remember to do everything through screen sharing so those on Zoom could see it on the recording."

A teaching assistant could assist in building the course, setting up and running the live classroom technology (zoom, OWL, microphones, etc.), responding to students in the chat, and tracking student engagement. In a Hyflex model, the instructor essentially has to build an online course so those attending asynchronously can also meet the course objectives. Once the online version is created it can be reused in subsequent semesters, but it does take a lot of time upfront.

It is ideal to include more than recorded lectures, lecture slides, and discussions for students. Therefore, the instructors felt that they needed to take more time to consider the asynchronous student experience as well as the structure of the course. With the use of technology, even with the use of a high-tech OWL camera, some students on Zoom or those watching recordings stated they could not hear their classmates well when speaking. The instructors would often have to repeat what students said in the classroom so those on Zoom could hear. A high-quality microphone worn by the instructor and one to move around the room might enhance the experience for all students.

In addition, the researchers reported that it took a lot of time to track student engagement when using a HyFlex model. It was difficult to ensure that all students were engaged in the course each week; therefore, a more efficient way to collect student engagement data is needed. The instructors also recommend that students have the opportunity to view their weekly progress or grade because it seems to be an incentive for many students, even at the junior and senior levels.

In conclusion, the authors question, does familiarity with online learning bolster motivation because they know what to expect? This question came up multiple times when analyzing the survey data as prior online learning experience was a predictor of student self-reported motivation and self-efficacy scores. In addition, the authors also question if students should be required to attend a seminar on time management skills and strategies for success if they have no prior online learning experiences. These are some items for consideration for future research.

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