

One Size Does Not Fit All: Lessons from a Case Study during COVID-19

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Abstract—This research illustrates effective teaching approaches and modalities in higher education that were developed during the COVID-19 pandemic. Anonymous survey questionnaires, collected from 9 sections of college economics courses, reveal how students perceive their learning experiences. Survey responses from the students show that they enjoy different types of instructional strategies as well as the use of educational software like Flipped Classroom and HyFlex. Students also greatly appreciate a flexible and safe learning environment with clear organization, open communication, easy accessibility, and learning support. Finally, this paper discusses the students' own opinions on future improvements for higher education as well as suggestions on education policy.

Keywords: Effective Instructional Modalities, Student Survey, Learning Experience, Flipped Classroom, HyFlex

1. INTRODUCTION

In these unprecedented times of COVID-19, both instructors and students have experienced a challenge inside and outside of the classroom. Educators have had to come up with alternative instructional modalities to offer a safe learning environment per the Centers for Disease Control and Prevention (CDC) guidelines. Students have had to contend with unfamiliar learning experiences while dealing with their own particular challenges during the pandemic. With these unique challenges, however, have come unique opportunities. Instructors have been afforded the opportunity to design more creative, flexible, and diverse course structures (Alea et al., 2020). In order to teach effectively during the pandemic, the World Bank Group (Beteille et al., 2020) suggests new three approaches: resilience, instruction, and technology. These strategies may have a positive long-term impact on both instructors and students. It remains crucial, perhaps more than ever, to foster equal opportunities in higher education. George (2020) also emphasizes that electronic devices and remote learning environment, whose use have flourished during the pandemic, can be used effectively to comply with new COVID-19 restrictions.

There is little research on how students' higher education learning during the pandemic. In attempt to bridge that gap, this paper analyzes anonymous surveys collected from college economics courses showing how students perceive their learning experiences during the pandemic. This analysis reveals that a variety of effective instructional strategies utilizing Flipped classroom, HyFlex, and other educational software add value to student learning (Tharapos et al., 2022). The students also positively evaluated diverse and flexible teaching modalities.

The research paper is organized as follows. First, it presents a discussion on the transition from traditional in-person learning to remote settings as the pandemic progressed and the semesters changed. Next, the paper describes the characteristics of

9 sections of economics courses. Then, the challenges that the author and instructor faced during the pandemic are shared. The paper analyzes the student survey questionnaires. Finally, this research concludes with students' experiences and feedback for future improvements as well as suggestions on higher education policy.

1.1 The Historic Transition from In-person to Remote to Hybrid Learning

The university where the author taught 3 courses per semester moved classes online after Spring Break 2020. Here is the message from the university president: *"Following our scheduled Spring Break (March 15th to 22nd), students on all campuses will be taught remotely (not in person) for two weeks (March 23rd to April 5th). We are planning to resume face-to-face teaching on Monday, April 6th. However, that could change with the evolving situation."* As the pandemic situation became worse and new cases of COVID-19 rose dramatically in the United States, the university president immediately took action in the next few days and made the following statement, *"All Classes will be Delivered Via Alternate Delivery for the Remainder of the Spring Semester."*

The following semester in Fall 2020, all of the 3 courses offered were offered as remote classes only. Then, in Spring 2021, courses were offered with different instructional modalities than in the past years.

1.2 Nuts and Bolts of a Pandemic Course

The concept of *Flipped Classroom* is, that which is traditionally completed as homework is now done in the classroom (Schell & Mazur, 2015). For instance, with advanced technology and online resources, students have access to recordings of the material before they even show up to class. During class activities like assignments and quizzes, students are encouraged in discussions guided by the instructor and prompted to ask questions to complete in-class stakes. *Hyflex* is a portmanteau for hybrid and flexible. Each student can choose how they want to participate in class – face-to-face, remote, or alternative learning modes – and the student can make a different choice in each class (Lakhal & Khechine, 2016; Miller et al., 2013).

1.3 Instructional Challenges during the Pandemic

Due to the unexpected transition to online learning in Spring 2020, both students and instructors confronted many challenges. For instance, students showed a lack of participation after moving online, in such a learning environment, effective communication was necessary between students and instructors for student success in the rest of the semester. Instructors had to come up with appropriate delivery methods of lecturing, which often fell short of student expectations during COVID-19. From the students' viewpoint, those who were not familiar with technology and alternative learning tools requested extra time to complete online assessments. In fact, a handful of students shared their concerns about the difficulty level of online assignments due to the different learning formats. The university grappled with online test proctoring and other related issues such as privacy and protection of student personal information raised during the period.

2. METHODS

To begin with, the author and instructor considered the following questions to provide students with a better educational experience during the pandemic:

- How can I encourage students to regularly participate in online classes?
- What is the best way to develop relationships with students when teaching online?
- What are the most effective and engaging activities that can happen with the online format?
- What worked well with teaching strategies during the pandemic that I would like to see continued?
- How concerned am I about students' academic growth?
- How concerned am I about students' physical and emotional well-being due to COVID-19?

2.1 Research Design

Because of the unexpected transition to online learning in the middle of the semester, students expressed the following:

- panicking, confusing, misunderstanding, and uncertain decision-making
- time differences, emergency situations, deadlines, and academic misconduct
- modified, changed, altered, unfamiliar, and not accustomed
- internet issues, technical difficulties, unauthorized access, health issues, family issues, etc.

As the students' feelings and experiences were reported above, the new learning environment was very challenging and burdensome to the students. To provide a better learning environment for them, the author and instructor decided to conduct a survey including a variety of questionnaires in which students revealed their learning experiences and feelings during the pandemic.

Table 1. Participants in 9 Sections of Economics Courses Taught at a Public 4-Year College by Semester

Transition from in-person to online (Spring 2020)	Fully online (Fall 2020)	Flipped Learning and Hyflex (Spring 2021)
- A 100-level course: 53 students: 17 female and 36 male & 18 freshmen, 25 sophomore, 8 junior, and 2 senior students	- A 200-level course 36 students: 9 female and 27 male & 1 freshman, 25 sophomore, 7 junior, and 3 senior students	- A 200-level course 36 students, 11 female and 25 male & 5 sophomore, 13 junior, and 18 senior students
- A 300-level course: 29 students: 12 female and 17 male & 1 freshman, 23 sophomore, 3 junior and 2 senior students	- A 300-level course 31 students: 9 female and 22 male & 2 freshmen, 23 sophomore, 4 junior, and 2 senior students	- A 300-level course 23 students: 5 female and 18 male & 5 sophomore, 13 junior, and 5 senior students
- A 400-level course 22 students: 6 female and 16 male & 4 junior and 18 senior students	- A 400-level course 18 students: 7 female and 11 male & 3 junior and 15 senior students	- A 400-level course 25 students: 8 female and 17 male & 2 Junior and 23 senior students

2.2 Participants

In detail, the characteristics of the survey participants are different across the sections. As can be seen in Table 1 below, 53 students enrolled in the 100-level course

during Spring 2020. There were more male students registered than females among the 9 sections, which is commonly observed in the nature of the economics disciplines. Across the 200- and 300-level courses taught from Spring 2020 to Spring 2021, the maximum number of students registered was 36 and the smallest size of the course section was 23. The majority of the student population who took the 300-level courses were juniors as expected for a more advanced class. The same 400-level capstone course sections were taught repeatedly over the 3 semesters. Like other economics courses, more male students enrolled in the upper-level capstone course than female students did. Most students who took the courses were seniors.

It is important to note that, for the sake of analysis and consistency, only those 6 economics sections repeatedly taught over the 3 semesters (in bold in Table 1) will be the focus of the discussion in the rest of this paper. This will best achieve a fair comparison in those upper 300- and 400-level courses with the different types of instructional strategies over the pandemic period.

2.3 Research Instruments

The below questions were asked with on a five-point scale in which a lower number indicates a negative response such as 1: Extremely Disagree (or Difficult), 2: Somewhat Disagree (or Difficult), and a higher number represents a positive response including 4: Somewhat Agree (or Easy) and 5: Extremely Agree (or Easy). The response “3: Neither Agree (or Easy) nor Disagree (or Difficult)” indicates neutral. For the purpose of research analysis, the same scale system (1 through 5) was adopted for the below questionnaire.

- Do you like learning during COVID-19?
- Have you been satisfied with the instructor’s response to COVID-19?
- Do you have the necessary support/resources you need from the University during COVID-19?
- How difficult or easy is it to use technology for distance learning?

In addition to this multiple-choice type of questionnaire, the following additional questions were asked to get a more detailed response with student-written comments:

- What is the most challenging aspect of online learning?
- What could be done to improve your virtual learning experience?
- What did you miss most about attending class in person?

2.4 Procedures

The author and instructor conducted an anonymous survey whose completion provided with students extra credit (1% of the total grade) before they received the final grade. This is because teaching evaluations and student feedback are often affected by students’ final grades. To avoid a more biased result, the anonymous student survey was conducted before they received their final grades (Meinck et al., 2022).

2.5 Data Analysis

(i) Spring 2020: Transition from in-person to online

- 300-level economics course: 1 freshman, 23 sophomore, 3 junior, and 2 senior students (29 students total: 17 male and 12 female students. Survey response rate: $22/29 = 75.8\%$).

Table 2. 300-level Course Survey Result with Transition from In-person to Online

Questionnaires and Selected Written Comments	Mean	Standard Deviation	Min	Max
➤ Do you like learning during COVID-19?	2.78	1.02	1	5
➤ Have you been satisfied with the instructor’s response to COVID-19?	3.94	.84	1	5
➤ Do you have the necessary support/resources you need from the University during COVID-19?	3.10	.92	1	5
➤ How difficult or easy is it to use technology for distance learning?	3.37	1.14	1	5
❖ What is the most challenging aspect of online learning? [written comments] Technical difficulties, Confusion, Teaching myself, I am not a fan of online learning		N/A		
❖ What could be done to improve your virtual learning experience? [written comments] Complete homework on time, Feedback from instructors		N/A		
❖ What did you miss most about attending class in person? [written comments] Asking questions to understand the concepts, Some of my classes are unstructured and figuring things out as they go is pretty stressful		N/A		

- 400-level economics course: 4 junior and 18 senior students (22 students total: 16 male and 6 female students). Survey response rate: $12/22 = 54.6\%$.

Table 3. 400-level Course Survey Result with Transition from In-person to Online

Questionnaires and Selected Written Comments	Mean	Standard Deviation	Min	Max
➤ Do you like learning during COVID-19?	3.02	.97	1	5
➤ Have you been satisfied with the instructor’s response to COVID-19?	3.73	.89	1	5
➤ Do you have the necessary support/resources you need from the University during COVID-19?	2.82	1.19	1	5
➤ How difficult or easy is it to use technology for distance learning?	2.99	1.37	1	5
❖ What is the most challenging aspect of online learning? [written comments] Communication with my research partner, Vague instruction, Time management		N/A		
❖ What could be done to improve your virtual learning experience? [written comments] Make the lecture videos less lengthy, Deadlines on assignment/quiz to be consistent, More examples, Technology, Get help from the instructor		N/A		
❖ What did you miss most about attending class in-person? [written comments] Interaction with classmates, Open discussions		N/A		

(ii) Fall 2020: Fully online (record lectures and notes provided)
- 300-level economics course: 2 freshmen, 23 sophomore, 4 junior, and 2 senior students (31 students total: 22 male and 9 female students). Survey response rate: $25/31 = 80.6\%$.

Table 4. 300-level Course Survey Result with Fully Online

Questionnaires and Selected Written Comments	Mean	Standard Deviation	Min	Max
➤ Do you like learning during COVID-19?	3.64	.58	1	5
➤ Have you been satisfied with the instructor’s response to COVID-19?	4.23	.62	3	5
➤ Do you have the necessary support/resources you need from the University during COVID-19?	4.04	.92	3	5
➤ How difficult or easy is it to use technology for distance learning?	2.97	.71	2	5
❖ What is the most challenging aspect of online learning? [written comments]				
Technology: I am only able to use my cellphone to access content, My access to reliable internet, Learning experience and Social interactions, Family emergency		N/A		
❖ What could be done to improve your virtual learning experience? [written comments]				
Prefer hands-on learning experience, Develop discussion board on Canvas, Hard to focus on study due to quarantine, Lack of desire to learn		N/A		
❖ What did you miss most about attending class in-person? [written comments]				
Face-to-face learning, Opportunities to ask questions, Course lessons were not happening live		N/A		

- 400-level economics course: 3 junior and 15 senior students (18 students total: 11 male and 7 female students). Survey response rate: 15/18 = 83.3%.

Table 5. 400-level Course Survey Result with Fully Online

Questionnaires and Selected Written Comments	Mean	Standard Deviation	Min	Max
➤ Do you like learning during COVID-19?	3.42	1.01	1	5
➤ Have you been satisfied with the instructor’s response to COVID-19?	4.11	1.06	1	5
➤ Do you have the necessary support/resources you need from the University during COVID-19?	3.74	.84	2	5
➤ How difficult or easy is it to use technology for distance learning?	3.13	1.09	1	5
❖ What is the most challenging aspect of online learning? [written comments]				
Level of difficulty, Unhappy with having online class, Conflict with work schedule		N/A		
❖ What could be done to improve your virtual learning experience? [written comments]				
This class should have been delivered in-person, Heavy coursework, Paying attention to remote activities		N/A		
❖ What did you miss most about attending class in-person? [written comments]				
One-on-one step by the instructor, No instant interactions between students and the teacher		N/A		

(iii) Spring 2021: Flipped Classroom and Hyflex (Students were required to watch and record lectures prior to attending class as well as participate in online discussions)

- 300-level economics course: 5 sophomore, 13 junior, and 5 senior students (23 students total: 18 male and 5 female students). Survey response rate: $21/23 = 91.3\%$.

Table 6. 300-level Course Survey Result with Flipped Classroom and Hyflex

Questionnaires and Selected Written Comments	Mean	Standard Deviation	Min	Max
➤ Do you like learning during COVID-19?	4.32	.51	2	5
➤ Have you been satisfied with the instructor’s response to COVID-19?	4.67	.48	3	5
➤ Do you have the necessary support/resources you need from the University during COVID-19?	4.48	.75	3	5
➤ How difficult or easy is it to use technology for distance learning?	4.33	.80	2	5
❖ What is the most challenging aspect of online learning? [written comments] Complete lecture videos and assignments before the due dates, Limited attempts on lecture quizzes		N/A		
❖ What could be done to improve your virtual learning experience? [written comments] Reviews on assignments and quizzes, More hands-on activities, Lecture videos disappeared after deadlines		N/A		
❖ What did you miss most about attending class in-person? [written comments] More discussions instead of lecturing, Variety of topics and more interesting examples		N/A		

- 400-level economics course: 2 junior and 23 senior students (25 students total: 17 male and 8 female students). Survey response rate: $23/25 = 92\%$.

Table 7. 400-level Course Survey Result with Flipped Classroom and Hyflex

Questionnaires and Selected Written Comments	Mean	Standard Deviation	Min	Max
➤ Do you like learning during COVID-19?	4.51	.88	2	5
➤ Have you been satisfied with the instructor’s response to COVID-19?	4.74	.45	3	5
➤ Do you have the necessary support/resources you need from the University during COVID-19?	4.74	.54	3	5
➤ How difficult or easy is it to use technology for distance learning?	3.37	.89	3	5
❖ What is the most challenging aspect of online learning? [Written comments] Taking the final exam online, Connection with classmates		N/A		
❖ What could be done to improve your virtual learning experience? [Written comments] Synchronous Zoom video call, Microphone volume, Technical difficulties		N/A		
❖ What did you miss most about attending class in-person? [Written comments] Spending time on assignments to get help		N/A		

3. RESULTS

The survey results by semester are provided in Table 8 below. Both students and educators struggled with the unexpected transition from in-person to online classes. Students expressed that it was very challenging to adjust with no preparation during unprecedented times. In addition, difficulties in technology and conflicts with work schedules were critical issues for student learning. When fully online courses were offered in the following semester, students showed their desire for in-person classes and requested more clear organization and live sessions for a better learning experience. Due to the structure of online course settings, students showed little or no effort in learning. They also reported family and health issues that impeded their learning. Lastly, students were much more satisfied with the diverse course delivery modalities when an effective learning environment was offered to students such as Flipped classroom and HyFlex (Bower et al., 2015). As the findings suggest, one size of teaching modality does not meet student needs and their learning goals. They appreciate a flexible learning environment with clear organization and communication inside and outside of the classroom.

Table 8. Summary Results of Student Survey by Semester

Spring 2020 (transition from in-person to online)	Fall 2020 (fully online)	Spring 2021 (Flipped Classroom and Hyflex)
<ul style="list-style-type: none">- Students faced a hard time to get used in an online setting- Because of the unexpected transition to online, students revealed their struggles, uncertainty, confusion, miscommunication, stress, and/or technical issues- Students showed their desire for the interaction with peers and the instructor	<ul style="list-style-type: none">- Most students preferred in-person class, requested synchronous sessions, flexible office hours, and online discussion activities- Students also showed lack of effort on participation, such as; Getting tired of the pandemic situation, Health and family issues reported	<ul style="list-style-type: none">- Student survey results indicate that they were more satisfied with the diverse and flexible teaching modalities- Most of the student feedback were based on the course content and assessment, not the course delivery modes- Students greatly benefit from flexibility, accessibility, clear communication and organization, as well as a safe learning environment created by the instructor

4. DISCUSSION

According to the student survey outcomes provided in Table 2 and Table 3, students either somewhat disagreed with the statement that they liked learning during the pandemic (average value is 2.78 in the 300-level course), or neither agreed nor disagreed (average value is 3.02 in the 400-level course) in Spring 2020. Students, however, did indicate that they were somewhat satisfied with the instructor's response to COVID-19. This slight increase in satisfaction could be due to the fact that the instructor recorded lecture videos for the rest of the semester, rather than providing readings and supplement materials only, as most other instructors did due to the unexpected transition to remote. On the other hand, the results of the third question show that students did not get the necessary support or resources from the university.

This outcome may result from the fact that the university facilities including tutoring center and library service were not provided for the rest of the spring semester in 2020. Finally, students responded that utilizing technology for distance learning was neither difficult nor easy. Because those students surveyed spent at least one year in higher education, their responses may reflect previous experiences with utilizing technology, especially in online classes. In their written comments, students expressed their feeling about learning and the challenging experience in remote study. Specifically, the selective written feedback indicates that students got confused with the less organized online structure, taught themselves, and/or struggled from a lack of communication with their fellow students and the instructor.

As the teaching modality changed to fully online in Fall 2020, the survey results in Table 4 and Table 5 show a bit of improved student learning experience. For instance, student responses to learning experience during the pandemic were either higher (3.64 in the 300-level course), or neither agreed nor disagreed that they liked to be learning (3.42 in the 400-level course) than in Spring 2020 (2.78 in the 300-level course and 3.02 in the 400-level course, respectively) on average. The second survey question “*Have you been satisfied with the instructor’s response to COVID-19?*” shows that students were somewhat satisfied with how the instructor prepared and delivered the courses in the online format. The instructor had more time to prepare for the course material in online and provided a variety of activities that students could get involved in remote learning. More dramatically and positively, students revealed that they were somewhat able to receive support and resources from school (if necessary), because the university provided online services such as tutoring sessions via Zoom, checking out books, laptops, or software from the library. Although students became used to online learning, the last question indicates that it was not necessarily either difficult nor easy to use technology for distance learning for those students in both 300- and 400-level courses. As the written feedback indicates, several students still encountered challenges with internet access and technology as well as conflicts with work schedules and family emergencies that kept them from remote learning during the pandemic. Lastly, several students shared that they preferred in-person learning, experienced a lack of motivation, and struggled to pay attention in online learning. A handful of students expressly complained about “*interactions with other students and the instructor were left out.*”

Not only did the survey responses to each questionnaire improve, but student feedback on their learning experiences was more positive with flexible and effective instructional modalities (Bozan et al., 2023). The results are shown in Table 6 and Table 7. First, the average values on the student responses, regardless of the survey questionnaires, are much higher in Spring 2021 compared to the previous academic year. For example, students in the 300-level course somewhat agree that they like to be learning during COVID-19, and those students in the 400-level capstone course tend to enjoy their learning experience more dramatically with Flipped Classroom and Hyflex. It can be interpreted that students who watch the pre-recorded lecture videos before they show up to class come up with questions for the instructor and prepare for discussions ahead of time, which increases their engagement and enjoyment in learning (Mentzer, Isabell, and Mohandas, 2023). The class hours were utilized to clarify some difficult concepts and help students solve problem sets and quizzes with collaboration as well as demonstrate programming codes and commands in statistical software used for economic analysis (Eduljee et al., 2023). As a result, student responses to the question “*Have you been satisfied with the instructor’s response to COVID-19?*” received the highest value: *Extremely Satisfied*, 4.67 and 4.74 in both upper-level courses, respectively. Furthermore, most students agreed that they had the necessary support and resources

from the university during Spring 2021. In fact, the university returned to almost pre-COVID-19 times with 75-percent capacity. This provided students with better academic service and effective learning experiences inside and outside of the classroom. With the flexible learning environment, students in the 300-level course were more satisfied at least in part because it was easy to utilize technology for distance learning. However, students in the 400-level course felt that it was neither difficult nor easy to utilize technology for online learning. This may be because capstone courses are more challenging regardless of the instructional modality. However, the average value on the question, “*How difficult or easy is it to use technology for distance learning?*”, still improved (3.37) a bit more than the unexpected transition to online or a fully online setting (2.99 and 3.13, respectively). Most written feedback was based on the course content and assessment, but not necessarily on the course delivery modes in Spring 2021. These constructive and positive outcomes from the student survey provide evidence that students greatly benefit from the flexible atmosphere, clear organization, and availability as well as a safe learning environment. Students indicated that they were more satisfied with the diverse and flexible teaching modalities in such ways students could choose an option to attend a class in person or online, had a flexible learning schedule, and appreciated clear organization and communication with the instructor (Bashir et al., 2021; Shek et al., 2022). Lastly, it should be noted that the survey response rates are the highest (91.3 percent and 92 percent in 300-level and 400-level courses, respectively) in Spring 2021, compared to the previous academic year.

5. CONCLUSION

The development of more flexible teaching modalities and effective instructional approaches has been a silver lining in the post-2020 higher education landscape. The findings of this paper illustrate that educators should encourage and foster this development in higher education. Furthermore, alternative teaching modalities can be adopted as needed, based off the class size, departmental needs, and institutional goals. As previous research findings suggest, smaller class sizes may be preferred to larger ones because students value more interactions with their instructor and classmates (Bedard & Kuhn, 2008; Harter et al., 2015). Fully remote classes taught online can negatively impact student learning, but this can be mitigated by using more flexible strategies and technology. Modalities like Flipped Classroom and Hyflex are more secure, flexible, and accessible alternatives to the traditional learning format in higher education, with no limit in time, location, and resources. Moreover, contrary to popular belief, the educator’s choice of textbook does not necessarily impact student learning outcomes if the textbook chosen is one of the popular textbooks used for the course (Allgood et al., 2015).

The survey results in this paper indicate that these innovative teaching strategies enhance student learning experience and satisfaction levels (Tharapos et al., 2022). Not only do these new strategies have the potential to improve students’ academic achievement and growth, they also have the potential to significantly reduce costs for educators and students alike (Reimers, 2022; Verrecchia & McGlinchey, 2021).

While this research uses students in economics classes only as its case study, the meaningful outcomes and lessons from the student survey questionnaires are applicable to other disciplines in higher education. The pandemic affected how almost all higher education courses are offered and taught, and it is anticipated that future case studies of other groups of students at public and private universities would elicit the same student preferences and positive experiences with flexible teaching modalities. The survey

results also show that the implementation of these modalities will be most successful if paired with support from the university at the administrative, department, and leadership levels, as well as the funds to realize these strategies (Biggs, 1989; Kohnke & Moorhouse, 2021). Support also needs to come in the form of additional professional training with technology so that the educator can better implement these more modern and sophisticated strategies and better adapt as these strategies are themselves replaced and updated (Alea et al., 2020; Kebritchi et al., 2017).

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