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3-in-1 Hybrid Learning Environment

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Abstract
We propose a learning innovation called 3-in-1 Hybrid environment as a solution for educational institutions to meet the challenge of balancing campus reopening against public health risks amid the COVID-19 pandemic. Our proposed innovation provides students options to attend class synchronously (either face-to-face or remote) or asynchronously (online) in an interactive learning environment that promote emotional, behavioral, and cognitive engagement. We designed and implemented a large Marketing Management class with over 800 students as a 3-in-1 course. We examined its effectiveness in an empirical study and found that (1) students have a positive attitude towards 3-in-1 Hybrid learning; (2) they show a high level of synchronous attendance and a low number of missed quizzes and homework; and (3) their quiz performance is a strong mediator on the relationship between synchronous attendance and actual learning. Our study provides empirical evidence to support the promises of the proposed 3-in-1 Hybrid environment to address logistical and pedagogical challenges of student engagement in large class learning.

Introduction

With the rising cases of COVID-19 following the lifting of lockdown, educational institutions are struggling with the dilemma of risking public health to reopen campuses for face-to-face learning or playing it safe with remote learning. This dilemma is particularly challenging for large classes (with over 200 students) where neither form of instruction is adequate to address the issue of disengagement in large size classes (Dean et al., 2017). In this paper, we propose a learning innovation for large class sizes that helps address this dilemma by offering students the flexibility of learning anywhere anytime (i.e., the flexibility of asynchronous learning), while providing students with an interactive and engaging environment to learn (i.e., the engagement of synchronous learning). Specifically, we extend a model of hybrid learning called HyFlex (Beatty 2014) to a 3-in-1 Hybrid learning environment to capture our effort in combining three learning modalities in one course: face-to-face, synchronous online, and asynchronous online to maximize flexibility while driving three levels of engagement in large classes: emotional, behavioral, and cognitive for academic success.

Our proposed innovation extends current practice and prior literature in three ways. First, prior research on the HyFlex model focused only on two learning modalities where students may choose to attend face-to-face class in-person or complete learning activities online without physically attending a class (Beatty 2014; Liu & Rodriguez, 2019; Sowell et al., 2019). We expand on this model and add an additional modality: the option for students to participate in a face-to-face class synchronously online. This option is critical in driving engagement for students who may feel distracted in a large class setting, or who may feel the need to quarantine, without sacrificing the benefits of face-to-face interactivity. Second, we expand on the HyFlex model to not only include flexibility, but also engagement. Beatty's (2014) definition of HyFlex considers flexibility in terms

of attendance and content delivery. However, it is silent on how instructors can promote student engagement in hybrid settings. The problem is particularly serious for large class sizes in which instructors already struggle with devoting attention to individual students or engaging them in meaningful discussion (Dean et al., 2017). This problem is only exacerbated in a hybrid setting, in which an instructor now must engage students in an equitable way via multiple learning modalities.

Third, we contribute to the literature by designing a 3-in-1 Hybrid learning environment, using existing tools and technologies, in which we carefully craft and combine a menu of different tools and options in which students can receive equitable access to content and instruction regardless of modality. Such work is necessary since different tools are often used in different modalities. For instance, educational technologies such as clickers/student response systems have been used in face-to-face settings (Rana and Dwivedi, 2016; Sprague & Dahl, 2009), while discussion forums, chats, and peer evaluations have been typically used in online courses (Luo et al., 2014). Instructors cannot simply use all these tools since that would be taxing on the instructor and confusing to students. Instructors need to utilize tools and assessments that can easily span across all three modalities. We empirically test our 3-in-1 Hybrid course and examine how it drives three types of engagement identified in prior research: behavioral, emotional, and cognitive (Axelson & Flick, 2011; Bond & Bedenlier, 2019; Fredicks et al., 2004).

Literature Review

Beatty (2014) defines HyFlex as a combination of "hybrid" (includes face-to-face and online components) and "flexible" (students choose to attend face-to-face class sessions or complete learning activities online without physically attending class). Originally conceived to accommodate graduate students who work full time, a HyFlex course offers these students the flexibility of

learning anywhere anytime with no "attendant learning deficit". As such, the interest on HyFlex has been about complimenting a face-to-face course with online content delivery for flexibility of class attendance and content access (Liu and Rodriguez, 2019; Sowell et al., 2019) leaving the benefits of face-to-face engagement unaddressed. We expound on the HyFlex model by including a synchronous online modality for added flexibility while ensuring all students have an engaging learning experience to succeed academically.

According to extant literature, an engaging learning environment should encompass three dimensions of engagement: emotional, behavioral, and cognitive (Axelson & Flick, 2011; Bond & Bedenlier, 2019). Emotional engagement is about students' attitude towards learning that affects their willingness to do the work and positive/negative feeling towards the learning environment (Linnenbrink-Garcia et al., 2011). Behavioral engagement is related to student conduct and on-task behavior such as doing the work and participating in learning actively (Yazedjian & Kolkhorst, 2007). Cognitive engagement refers to the mental effort directed towards understanding/mastering knowledge and skills (Zhu, 2006). Building on this literature, we extend the HyFlex model beyond flexibility to engagement. The idea is to provide students with an interactive learning environment to enhance their emotional, behavioral, and cognitive engagement whereby students are empowered to take control of their own learning process to proactively initiate actions that contribute to enrichment of interaction and learning (Reeve, 2013).

To date, there is little research into the application of HyFlex to large classes where student engagement is a challenging pedagogical issue (Frick et al., 2020). Furthermore, a recent review on student engagement (Bond et al., 2020) concluded that more research is needed to shed light on how learning environment affects student engagement. Consequently, the objective of this paper is to

design a 3-in-1 Hybrid environment and examine how it drives students' emotional, behavioral, and cognitive engagements in large classes.

3-in-1 Hybrid Learning Environment

The building blocks of our 3-in-1 Hybrid learning environment consist of (1) technologies, (2) content, and (3) assessments that drive emotional, behavioral, and cognitive engagements (Figure 1). Technologies play an integral part in connecting students with content, instructors, and peers across all three modalities. Content refers to artifacts (e.g. recordings, slides, mp4, collaborated documents from learning activities) stored in different formats and delivered as resources for all learners across all modalities. Assessments include formative (e.g., quizzes, homework) and summative (e.g., exams) evaluations of student learning. These building blocks are essential in driving engagement and serving as data sources for engagement evaluation.

Figure 1. The Building Blocks of a 3-in-1 Hybrid Learning Environment
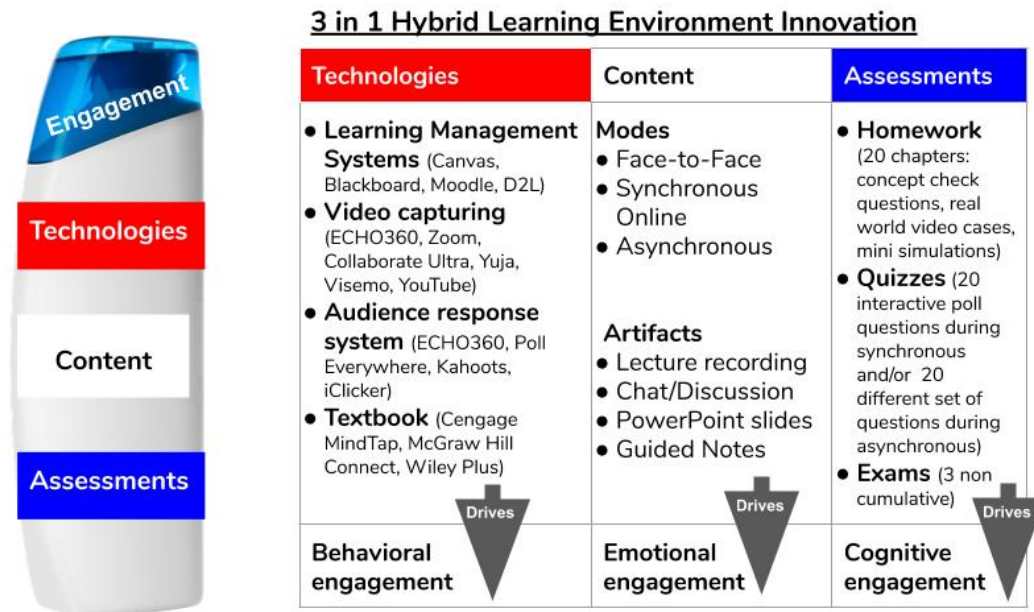
Technologies. We used ECHO360 Active Learning Platform (ALP), a lecture-recording system, to live-stream for synchronous remote learners and record lectures for asynchronous learners (Supplement 1). There is an ECHO360 mobile app that synchronous learners can click to engage in a variety of interactive poll questions including multiple choice, image, and short answer (Supplement 2A to 2C). ECHO360 also has a discussion/chat function for Q&A, a "confusion" flag where students can indicate they are confused, and a note taking feature (Supplement 2D). It collects data on student's engagement activities (e.g., attendance, poll question results, Q&A - discussion chats) and provides instructors with related analytics (e.g., poll question scores, confusion flags, and chats) that inform them of the level of student engagement and performance across all three modalities (Supplement 2E). In addition, we incorporated an online learning tool from Cengage Learning called MindTap to provide students access to the textbook, flashcards, dictionary, notebook, and homework assignments. Both ECHO360 ALP and MindTap are integrated with Canvas, the learning management system (Supplement 3). The Canvas integration saves instructor time in designing and implementing the 3-in-1 Hybrid learning environment. It also gives students a common platform to interact with the course content, instructor, and peers. Data on these interactions is indicative of students' 3-in-1 Hybrid behavioral engagement. While we select specific technologies here for our 3-in-1 course, other technologies can also be used (see Figure 1).

Content. The course content is centered around lecture presentations delivered in-person or live-streamed for synchronous learners and recorded as videos for asynchronous access. Each lecture presentation is accompanied by a set of PowerPoint slides as well as lecture notes that contain a class outline, fill-in-the-blank exercises, and sample exam questions. Additional readings from specific chapters of the textbook serve to expound concepts covered in the lecture. All contents are

close-captioned and accessible in multiple digital formats for viewing, listening, and downloading. The content is structured to provide three modalities for students to self-select: (1) synchronous sessions either in-class (face to face) or (2) live streaming during the designated classroom hours (e.g., Tuesday and Thursday 9:30 a.m.- 10:45 a.m.); (3) asynchronous sessions. Asynchronous learners enjoy the flexibility of learning anywhere and anytime while developing the self-discipline of learning independently. Synchronous learners, on the other hand, participate in learning by being physically present either in the classroom on-site or from a remote location off-site. The ability to receive immediate feedback and interact in real-time with faculty and peers are the main benefits of synchronous learning. Students can plan their class schedule around their preferred mode of participation/attendance to reap the benefits of asynchronous and synchronous learning. Student's perceptions of the importance of learning via different modalities and their attitude towards the learning tools are key indicators of their 3-in-1 Hybrid emotional engagement.

Assessments. To promote understanding of lecture presentations, interactive quizzes are taken during or after each lecture to motivate students to put effort into class participation and interact with their instructor and peers. To monitor learning, homework is used as a formative assessment tool to help students review materials taught and apply previously learned concepts to new situations. Students receive immediate homework feedback and scores to indicate the extent of course content mastery. Finally, exams are used to measure how much actual learning has occurred. Data on the performance of quizzes, homework, and exams can help gauge students' 3-in-1 Hybrid cognitive engagement.

Methodology

The proposed 3-in-1 Hybrid learning environment was implemented at a large American university for a marketing management class in the Fall of 2019. This course had 829 students. To assess how our 3-in-1 Hybrid environment drives engagement for academic success, we obtained data from two sources. First, we collected objective data from online analytics, university records, and instructor records (Supplement 4A). Since this data was available for all students enrolled in the class, we were able to perform corresponding analyses on the full class sample (N= 829). Second, to understand student's attitudes and perceptions toward the 3-in-1 Hybrid environment, we administered a survey (Supplement 4B) third week into the semester. This time frame was selected to give students a chance to gain a complete first-hand experience with 3-in-1 Hybrid learning, and early enough to capture student's attitudes that may subsequently influence learning. We received 661 completed and usable questionnaires out of a total of 829 students, a response rate of 79.7%. We provide the student sample characteristics for the class and survey in Supplement 5.

Measurement

We operationalized the key study constructs including emotional engagement, behavioral engagement, cognitive engagement, and actual learning. Supplements 6A and 6B present correlations and descriptive statistics for the survey data and objective data, respectively.

Emotional engagement measures students' perceptions and attitudes toward the learning environment. We represented emotional engagement using three variables. M*odality preference* captures a student's preference for face-to-face, hybrid, or online modalities along 10 dimensions of learning (Holsapple & Lee-Post, 2006). Students were asked to rank each modality from most preferred to least preferred. *Course delivery preference* assesses a student's preference for the

modality of this large size class. It was measured using a single item on a 10-point semantic differential scale (0-fully face-to-face to10-fully online). Lastly, *satisfaction with instructional learning tools* assesses student satisfaction with the learning tools (e.g., ECHO360 videos, MindTap) selected for this course by the instructor. It was operationalized using three items (α = .89) on a 5-point Likert-type scale, adapted from Sprague and Dahl (2009).

Behavioral engagement captures student conduct and on-task behavior. We examined how students behave in a 3-in-1 Hybrid environment using three variables. *Synchronous attendance,* which was measured as the percentage of total classes that a student attended synchronously. It captures the predominant modality that the student used throughout the semester ranging from attending the class fully asynchronously to fully synchronously. For a sub-sample of 9 classes, we further redefined this variable to capture attendance in face-to-face, synchronous online, and asynchronous online modalities. *Missed quizzes and homework assignments* were used to capture on-task behaviors. Both variables were measured as the number of quizzes and homework assignments that the student missed.

Cognitive Engagement refers to the mental effort directed towards understanding/mastering knowledge and skills (Newman et al., 1992; Zhu, 2006). We assessed student's cognitive engagement via two variables. *Quiz score* captures student's understanding of lecture presentations using interactive polling questions throughout the semester. It was measured as the total number of quiz points that a student earned in the semester (α = .76). Each quiz contained up to 6 questions for a total of 6 points, or 132 points. Student's mastery of course content was measured using *homework score*, which captures the total number of homework points that a student earned in the semester (α = .76). The instructor administered 20 homework assignments, one for each chapter. Each assignment was worth 4 points, or a total of 80 points.

Actual Learning was assessed following prior literature (e.g., Dean et al. 2017) by taking a total of exam scores. The instructor administered three exams in the semester ($\alpha = .78$). Each exam was worth 100 points and contained 60 questions, for a total of 300 points. These exams were not cumulative.

Control and other variables. We included four control variables obtained from objective data: GPA at the beginning of the semester, gender (male or female), major (business or nonbusiness), and ethnicity (Caucasian or other). Further, using survey data we also captured whether a student has a learning disability (yes or no) and whether they are an international/ foreign national student (yes or no).

Results

To assess how our 3-in-1 Hybrid environment drives engagement in large classes, we performed the following analyses. We first discuss our results for emotional engagement, followed by behavioral and cognitive engagements.

Emotional engagement. We used the Friedman test to examine student's perceptions of modality preference along different dimensions of learning. Since rank data does not follow normal distribution, Friedman test, which compares mean ranks among related groups, is appropriate (Zimmerman and Zumbo 1993). The results reported in Table 1 show student's preference for each modality by displaying the mean rank.

Using the Friedman test, we find that the means are significantly different for all dimensions of learning. However, since the Friedman test compares three means, we cannot tell which two means are different from each other. As a result, we also conducted a Wilcoxon signed-rank test and found

that students prefer different modalities for different dimensions of learning. For instance, students prefer face-to-face delivery for 7 out of 10 dimensions of learning that relate to students' direct interaction with the professor or peers. This highlights the critical importance of adding an online synchronous modality to a HyFlex model that enables students to interact with the class as if they were in the face-to-face setting, but from a remote location. Alternatively, we find that students prefer a hybrid delivery when it comes to controlling when and where to learn and learning material in less time ($p < .01$). In other words, they prefer the flexibility it offers. Online is most preferred by students when it comes to completing assignments in less time. A course that offers all three modalities can thus create an environment that is conducive to student learning along all 10 dimensions identified in prior research.

When asking students to report on their modality preference of this course, we find that only 45 students out of 661 (or 6%) desired to have this course fully online, and 34 students (or 5%) desired for this course to be delivered face-to-face. The remaining students desired a mix of those two. However, since the mean was 4.9 (on scale ranging from 0 to 10), students seem to prefer a fully hybrid course. This is supported by a quartile analysis that shows that the lower quartile's median is 4, middle quartile is 5, and upper quartile is 6. Lastly, when assessing student's satisfaction with the learning tools used in this course, the results indicate that students are satisfied with the learning tools selected by the instructor, M = 3.78, t (661) = 26.94, which is significantly higher than the scale midpoint (p < .01).

Behavioral Engagement. Analysis of synchronous attendance obtained from ECHO360 shows that on average, students attended 11 out of 21 classes synchronously, switching between synchronous and asynchronous modalities throughout the semester. To gain a deeper understanding into student's behaviors in a 3-in-1 Hybrid environment, we performed additional analyses. Using

independent sample t-test, we found that there is no difference in synchronous attendance between students with or without learning disability (t = .377, $p > .10$), international or domestic students (t = .538, $p > .10$), and minority or Caucasian students (t = .67, $p > .10$). Independent sample t-test, however, reveals that women (t = 1.73, $p < .05$) and business students (t = 2.14, $p = .05$) attend more classes synchronously than men and non-business students, respectively. Lastly, when comparing GPA and synchronous attendance in a correlation analysis, we find a positive and significant correlation ($r = .26$, $p < .01$), suggesting that students with a higher GPA attend more classes synchronously. Our analysis on a sub-sample of 9 classes, that divides student attendance across each modality, shows that on average, students attended 3 classes face-to-face (38%), 1 class synchronously online (11%), and 4 classes asynchronously online (42%). These results demonstrate that when given a choice, many students prefer to attend classes via mixed modalities.

To assess a student's on-task behavior, we examined the number of missed homework assignments and quizzes. Using objective data, we find that students, on average, missed 1 out of 20 homework assignments and 2 out of 22 quizzes. To assess whether this is a high level of on-task behavior, we compared these results to the number of missed homework and quizzes in another marketing management class taught by the same instructor in the past but delivered fully face-to-face. In the face-to-face course, students (n= 629), on average, missed 5 out of 22 quizzes and 1.5 out of 20 homework. While an independent sample t-test reveals that there is no statistical difference in the number of homework completed between the two courses (t = -.57, $p > .10$), the quiz completion in the 3-in-1 course was significantly higher (t = -13.85, $p < .01$). This difference could be explained by the fact that when a student misses a class in a 3-in-1 course, they can receive their instruction and complete their assignments asynchronously, which is not possible in a fully face-to-face course, thereby enhances on-task behavior and thus learning. These findings demonstrate that the 3-in-1

Hybrid environment helps address the concern of low participation rates in large lecture classes (Yang et al., 2013).

Cognitive Engagement. To assess cognitive engagement, we performed a series of analyses testing relationships among synchronous attendance, cognitive engagement tools (homework and quiz scores), and actual learning. The primary focus was to examine how students' synchronous attendance impacts actual learning. We combined face-to-face and online synchronous attendance into "synchronous attendance", since the ANCOVA analysis on a subsample of 9 classes revealed no significant differences between face-to-face and synchronous online attendance for quiz and homework scores, as well as their completion rates after controlling for gender, major, ethnicity and GPA ($p > .05$). This enabled us to (a) use synchronous attendance as a continuous variable and (b) run additional analyses that capture engagement across multiple classes. Specifically, since quizzes and homework were used to engage students in learning prior to taking the exams, we use a regression model in which we test the mediating role of quiz and homework scores on the relationship between synchronous attendance and actual learning, while controlling for GPA, gender, major, and ethnicity. Process analysis was adopted to test the mediation effects (Hayes 2013). We report the results in Table 2.

When examining direct effects, we find that the more classes a student attended synchronously, the lower their actual learning ($b = -.10$, $p < .05$). While this finding seems counterintuitive, examination of the mediation effects provides a more complete picture. Specifically, we find that quizzes mediate this relationship, where synchronous attendance positively impacts quiz scores ($b = .20$, $p < .01$), which in turn positively impact actual learning ($b = .30$, $p < .01$). Further the 95% confidence interval does not contain zero (95% CI = [.03, .09]), showing that this effect was significant. The mediation effect of homework was, however, not significant. While synchronous attendance

positively impacts homework scores ((b=.06, *p*<.01), homework scores do not impact actual

learning ((b=-.09, *p*>.10). These findings demonstrate the importance of engaging students in a

synchronous setting via interactive polling questions administered throughout the lecture. This help

students understand and process the class material which in turn enhances actual learning. Without

this engagement piece, synchronous attendance negatively impacts actual learning since students

who view lectures synchronously cannot pause or repeat the lecture as needed in an asynchronous

setting.

Conclusion

In this paper, we present an innovation called a 3-in-1 Hybrid learning environment for flexibility

and student engagement in large class settings. The novelty of our 3-in-1 Hybrid environment

includes (1) an added online synchronous modality, (2) an extension of the HyFlex model beyond

flexibility to engagement, and (3) a multi-modal learning environment that offers a menu of

different tools and options in which students can receive equitable access to content and instruction.

We demonstrate how our 3-in-1 environment can be assessed for student engagement and actual

learning. Specifically, results from assessing students' emotional engagement indicate that students

prefer the added synchronous online modality which enables them to learn anywhere while

engaging with the professor and peers in real-time. Such an option is critical for students who get

easily distracted or feel the need to quarantine. It also relieves classroom space limitations to meet

social distancing requirements. Students also prefer attending classes via mixed modalities and are

satisfied with the learning tools selected by the instructor. Further, students demonstrate a high level

of behavioral engagement (measured by on-time completion of quizzes and homework) which

mitigates the concern of low participation rates in large size classes. Lastly, analysis of cognitive

engagement highlights the importance of engaging students via interactive polling questions

(quizzes) administered throughout the lecture, since quizzes serve as a critical mediator between synchronous attendance and actual learning. It also shows that attending classes synchronously enhances quiz and homework scores, highlighting the importance of offering classes synchronously in addition to asynchronously.

While our study was conducted using a course with over 800 students, our findings are applicable to smaller classes of 100 or 200 students as well. Our proposed 3-in-1 Hybrid environment is scalable and easily transferable across all courses especially where the large number of students presents a logistical and pedagogical challenge to instructors. However, it is necessary that the instructor possesses the skill to communicate and simultaneously interact with students within different spaces, engage all audiences via multiple modalities, and be cognizant of the latest educational technologies to design and implement a 3-in-1 Hybrid course. Therefore, further research is in need to further advance our understanding of how instructors could use multiple modalities to effectively reach all students, and which technologies may be most appropriate, effective and time efficient.

Table 1: Results of Student Modality Preference

Learning Dimension	Face-to-Face	Hybrid	Online	Chi-square
actively involved in the learning process	**1.37**	1.49	2.28	380.05**
controlling when/where to learn	1.52	**1.38**	1.81	79.42**
addressing my questions	**1.75**	**1.86**	2.39	155.20**
voicing my opinions	**1.81**	1.92	2.26	72.85**
understanding course materials	**1.62**	1.85	2.53	295.01**
stimulating my interest in marketing	**1.68**	**1.77**	2.55	303.58**
relating marketing to other areas	**1.69**	1.82	2.48	237.71**
putting effort into non-assessed work	**1.90**	**1.90**	2.20	39.55**
learning the material in less time	2.10	**1.86**	2.04	20.54**
Completing the assignments in less time	2.23	1.89	**1.88**	51.11**
Overall rank means	1.77	1.78	2.24	

Notes: The test statistic reports mean rank for each delivery and Friedman Chi-square. The highlighted values represent the lowest rank (highest preference). If there was no statistical difference between two means (p > .05) based on Wilcoxon Signed Rank test, both means are highlighted. *p < .05. **p < .01.

Table 2. Results of Mediation Analysis

	Model 1		Model 2		Model 3	
	Quiz Score		Homework Score		Actual Learning	
Regression results	b	SE	b	SE	b	SE
Synchronous Attendance	.19**	.02	.06**	.01	-.03*	.01
Quiz score					.10**	.02
Homework score					-.03	.044
Control Variables						
GPA	12.8**	.87	5.03**	.47	11.96**	.56
Gender	-2.07*	.95	-1.2*	.50	-.26	.54
Major	-.80	.99	-.11	.54	.87	.57
Ethnicity	-.82	1.12	-1.50*	.60	-1.53*	.65
R^2	.35		.22		.51	
F value	90.33**		45.60**		120.16**	

Direct Effect	Direct Effect	SE	95% CI
Synchronous Attendance → Actual Learning	-.03 ($p<.05$)	.01	[-.05, -.002]

Indirect Effects	Indirect Effect	SE	95% CI
Synchronous Attendance → Quiz → Actual Learning	.02	.006	[.009, .032]
Synchronous Attendance → Homework → Actual Learning	-.002	.003	[-.009,.005]

*p<.05, **p<.01 (two-tailed), b=unstandardized coefficient; SE=standard error; CI= confidence interval Notes: Model testing was based on PROCESS analysis. Unstandardized coefficients were reported.

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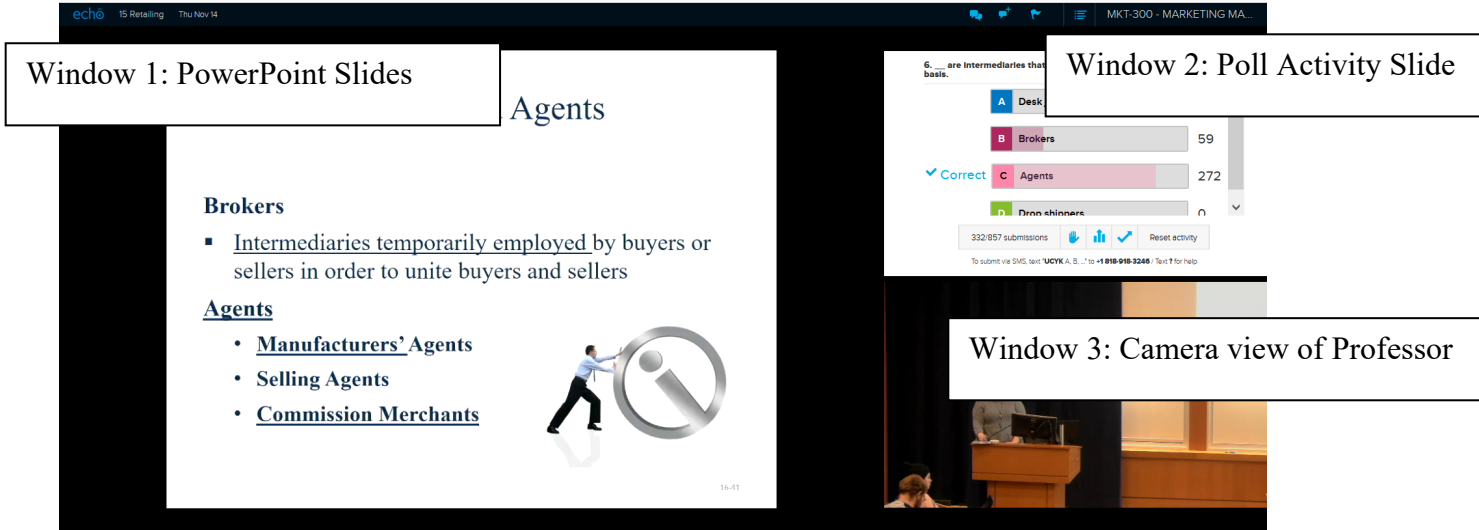
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Supplement to the 3-in-1 Hybrid learning environment

Supplement 1

ECHO 360 lecture presentation [student view asynchronous and synchronous]

A. Sample of Week 14 Chapter 15
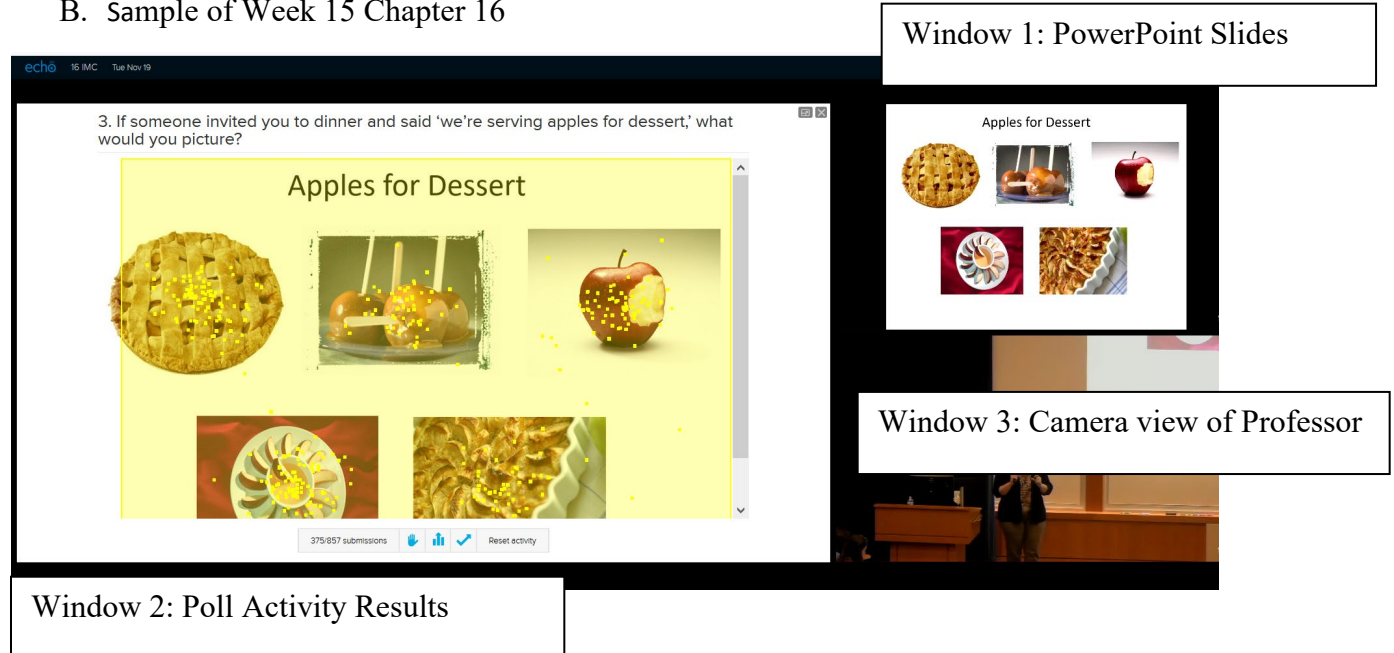
B. Sample of Week 15 Chapter 16

Supplement 2

ECHO 360 lecture presentation [sample of engagement features used]

A. Polling type: Short Answer

B. Polling type: Multiple Choice with Results

C. Polling type: Image with Results

D. Confusion Flag and Discussion chat feature

E. Class Analytics
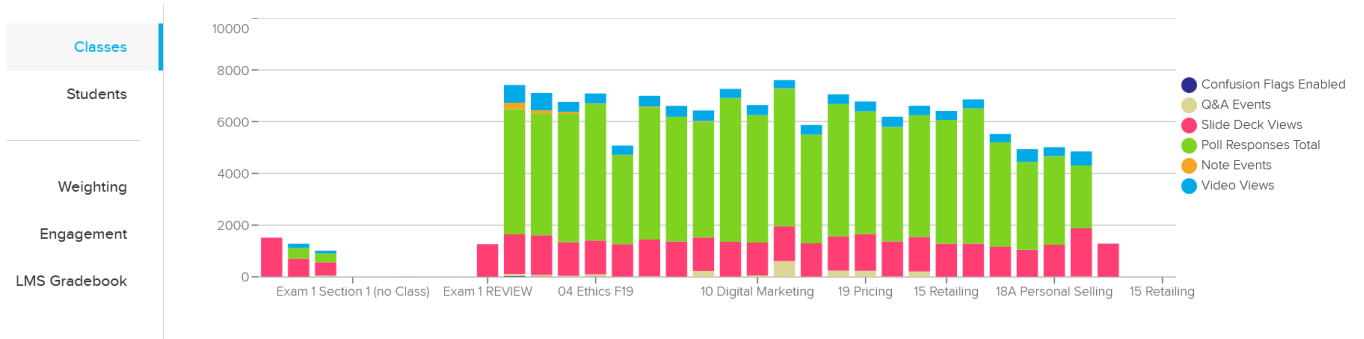
Supplement 3

Sample of Week 1 Chapter 1 in Canvas Module

Home

Announcements

Syllabus

Modules

Grades

▾ Chapter 1: Overview of Strategic Marketing

📄 **Chapter 1: Introduction**

Expanded for you in A

📄 **Chapter 1: Activities**

Expanded for you in B

📎 **01 Ch Outline**

📝 **ECHO Ch 1**
6 pts

📝 **Chapter 01: Concept Check**
Sep 3, 2019 | 4 pts

📄 **Chapter 1: Review**

Expanded for you in C

A: Chapter 1: Introduction

Marketing

An Overview of Strategic Marketing

This chapter introduces the strategic marketing concepts and decisions covered throughout the text. First, we develop a definition of *marketing* and explore each element of the definition in detail. Next, we explore the importance of value-driven marketing. We also introduce the marketing concept and consider several issues associated with its implementation. Additionally, we take a look at the management of customer relationships and relationship marketing. Finally, we examine the importance of marketing in a global society.

📘

Reading

Read or listen to *Marketing 2020* Chapter 1. Learn by doing the interactive reading.

B: Chapter 1: Activities

Marketing
An Overview of Strategic Marketing

🔄 **Class Notes**

Complete the guided class notes to assist you while listening to the class lecture.

▶

Watch

Listen to the class lecture and answer ECHO360 questions.

⚙

MindTap

Complete in MindTap Chapter 1 Concept Checks.

Expanded view of MindTap Chapter 1 Concept Check

Chapter 01: Concept Check   ✖

Your assignment, Chapter 01: Concept Check, is ready.

Please Note

- This will be your 1st take of this assignment. A "take" starts when you click the Start button below, and ends when you submit the assignment for grading. You are not limited in the number of times you can take this assignment.
- If your computer loses its connection to the server during this take, you will be able to resume if you return to the assignment within a few minutes.

Start Assignment Now

C: Chapter 1: Review

An Overview of Strategic Marketing

Review

Expand the Study Tools folder in MindTap. Study with existing flashcards and make your own. Create customized practice quizzes powered by Adaptive Test Prep (ATP) using test-bank like questions and receive immediate feedback as you prepare for exams.

Have you?

- READ the chapter
- ANSWERED the concept check questions
- COMPLETED the class notes
- APPLIED concepts from lecture to real world marketing issues
- STUDIED key terms with flashcards, practice test prep and PowerPoint slides

by the due dates outline in the syllabus!

Great job - now you are ready for the next chapter.

Supplement to the Methodology Section

Supplement 4A: Construct Measures for Objective Data

Synchronous Attendance
Obtained from ECHO360 analytics
% of total classes that a student attended synchronously

Missed quizzes
Obtained from instructor records
Number of quizzes that the student missed

Missed homework assignments
Obtained from instructor records
Number of homework assignments that the student missed

Quiz score
Obtained from instructor records
Total quiz points that a student earned in the semester

Homework score
Obtained from instructor records
Total homework points that a student earned in the semester

Actual learning
Obtained from instructor records
Total of student scores obtained from three exams administered throughout the course of the semester

GPA
Obtained from University records
Student's GPA at the beginning of the semester

Gender
Obtained from University records
Whether the student is a male or female

Major
Obtained from University records
Whether the student is a business or nonbusiness major

Ethnicity
Obtained from University records
Whether the student is Caucasian or other

Supplement 4B: **Construct Measures for Survey Data**

Modality preference

For the following questions, please rank the delivery options (online, hybrid, face-to-face) from most preferred to least preferred.

Which of the following delivery options do you prefer in terms of:
- being actively involved in the learning process
- controlling where and when to learn
- addressing student questions
- voicing student opinions
- understanding course material
- stimulating interest in marketing
- relating marketing to other areas
- putting effort into non-assessed work
- learning the material in less time
- completing assignments in less time

Course delivery preference

On a scale from 0-10, in your opinion, how should this course be delivered? (0 = fully face-to-face, 10 = fully online)

Satisfaction with the instructional tools (adapted from Sprague and Dahl (2009)

Please indicate how strongly you disagree or agree with the following statements.

1. I expect I like the use of different instructional tools in my marketing management class
2. I expect that by using the instructional tools, my enjoyment of learning about marketing will increase
3. I expect that this class will be more fun because of the use of the different instructional tools

Learning Disability

Do you have any learning disabilities? (yes/no)

International Student

Are you an international student or foreign national? (yes/no)

Supplement 5. **Student Sample Characteristics**

	Full Class (N = 829)	Survey Respondents (N = 661)	Survey Respondents vs. Nonrespondents Test statistic (p)
Gender			
Male	51.7%	48.4%	14.6** (.00)
Female	48.3%	51.6%	
Major			
Business	60.9%	61%	.004 (.95)
Nonbusiness	39.1%	39%	
Ethnicity			
Caucasian	77.8%	80.8%	16.8** (.00)
Minority	22.2%	19.2%	
GPA (mean)	3.15	3.21	-6.48** (.00)

Note: The test statistic reports either Pearson chi-square or t test comparing survey respondents with nonrespondents. *p < .05, p** < .01.

Construct	1	2	3	4	5
2. Course delivery preference	.50**	-.20**	-.46**	N.A	
3. Satisfaction with instructional tools	.21**	-.21**	.04	.15**	.89
Mean	1.77	1.78	2.2.4	4.9	3.78
Standard Deviation	.47	.37	.47	2.33	.74

Notes: N.A. = not applicable. Cronbach's alphas are on the diagonal.
*$p<.05$, **$p<.01$

Construct	1	2	3	4	5	6	7
1. Synchronous attendance	N.A						
2. Missed quizzes	-.38**	N.A					
3. Missed homework	-.24**	.59**	N.A				
4. Quiz score	.38**	-.95**	-.59**	.76			
5. Homework score	.26**	-.64**	-.96**	.66**	.76		
6. Actual learning	.16**	-.38**	-.32**	.46**	.34**	.78	
7. GPA	.26**	-.47**	-.40**	.54**	.43**		N.A
Mean	54.26	2.35	2.45	112.71	16.50	229	10.81
Standard Deviation	21.75	1.05	1.9	74.39	8.02	32.45	0.58

Notes: N.A. = not applicable. Cronbach's alphas are on the diagonal.

*$p<.05$, **$p<.01$