Hybrid classes with flexible participation options – If you build it, *how* will they come?

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Abstract

This presentation reports on the participation patterns observed in four graduate courses offered at a large, urban, public university in 2006-2007. All courses were taught by the same instructor. This instructor has been using hybrid teaching methods for more than a decade at several levels of public education, and recently developed a hybrid course design encouraging flexible student participation patterns – the HyFlex course. All students in this study were enrolled in a graduate program in Instructional Technologies leading to a Master of Arts degree. In each course, a mix of face-to-face and online students used a course website (hosted in an open source Learning Management System) to share files, access course information, review past class discussions in various formats, and engage in occasional topical discussions. In addition, online students had the option to participate in live online sessions using a synchronous web conferencing tool. All students were invited to participate either in face-to-face sessions or through online activities in any given week of the semester, depending on their needs and desires. Student participation mode (in-class or online) did vary considerably from week to week in each course. Most students reported that they valued in-class activities and static website resources more than synchronous online sessions or multimedia archives of synchronous (in-class or online) activities. Students felt a strong connection to the course instructor, and most students reported that they met or exceeded their learning expectations. The paper includes a sample of student comments regarding the HyFlex course experience, with a link to raw (aggregate) survey data.

Introduction

The kaleidoscope of teaching and learning continues to shift as instructional technologies evolve and revolutionize the instructional landscape. Currently, the growth in the use of online technologies to support and grow communities – social networks of people with a common interest – has led to an increased use of social networking technologies in education and training. In addition, the rush to develop online-only courses and programs in public U.S. universities seems to have abated somewhat, as the economic realities of limited online enrollments, expensive course development costs, and constricting state budgets for public education have replaced promises of masses of distant students paying dearly to attend [fill in the blank]'s latest degree program (Zemske and Massy, 2004). The "HyFlex" course design was developed to meet the needs of a graduate program to attract and serve distance learners without creating online-only course sections or stand-alone e-learning substitutes. (Beatty, 2006)

What is HyFlex?

Hybrid – combines both online and face-to-face teaching and learning activities
Flexible – students may choose whether or not to attend face-to-face sessions … with no "learning deficit"

The HyFlex course design was developed through a formative research process (Reigeluth and Frick, 1999) and introduced in 2005-2006 to meet the needs of the Instructional Technologies program at SF State to include online students in courses being taught in on-campus classrooms. In HyFlex courses, a mix of face-to-face and online students learn together as they use a course website to share files, access course information, review past class discussions in various formats, and engage in occasional topical discussions. (See table 1.) In addition, online students may have the option to participate in live online sessions using a synchronous web conferencing tool. All students are invited to participate either in face-to-face sessions or through online activities in any given week of the semester, depending on their needs and desires.

The Learning Management System (LMS) in use at this university, iLearn (a Moodle derivative), enables a dynamic teaching and learning setting where the artifacts from the learning activities of face-to-face students (such as audio recordings) can become "learning objects" for online students, and the artifacts of online students (such as

discussion forum posts and chat transcripts) can likewise become learning objects for face-to-face students. (See figure 1.) Because of the seamless nature of this sharing of course content, resources, and even some activities, there is the potential for students to cross over from one participation mode to the other (and even back again) without a major disruption in the "flow" of their learning processes during the semester. (*Note: The HyFlex courses used in this study were developed for in-class teaching setting, but are under constant evolution as the instructor learns more about hybrid teaching and learning modes.*) Since this way of teaching requires extra instructor preparation and involvement throughout a teaching week, an important question is, (how) do students benefit from this flexible approach to participation?

Table 1. Comparison of in-class and online participation for a sample week in ITEC 801 course

ITEC 801 Week 2: Needs and Performance Analysis	
Agenda for in-class participation: 1. History of ISD – Where did it come from? (30 min) Whole class discussion of Reiser article 2. A Brief Overview of Instructional Systems Design – the process perspective (30 min) Review of Chapter 1, recap of Week 1 discussion **Break** – peruse sample final projects from archives 3. Needs Analysis Theory (Chapter 2) (45 min) Performance Analysis Needs Assessment Job Analysis Instructional Goals 4. Choosing a design project topics – discussion (30 min) EXTRA: Try the quiz! "Assessing Performance" Remember, the quiz is designed to help you decide how well you are learning and remembering some of the main concepts your text and our class discussions have been covering. (quizzes are optional, not graded, and can be taken as many times as you like)	**Agenda for online participation:** 1. Read chapter 1 in text - A Brief Overview of Instructional Systems Design 2. Read chapter 2 in text on Needs Analysis Theory. As you read, consider the context for your design project. (Review Week 2 presentation slides/notes posted to site.) A. Post to the "Needs Analysis Components" discussion B. Post to the "Instructional Goals" discussion 3. Review sample design project reports - posted online in the "Sample Design Reports" folder. (These samples are located in the Week 3 space in iLearn.) 4. Post your ideas for a design project to the "Project Topics" forum. (This forum is located in the Week 3 space in iLearn.) 5. Post your weekly reflection. EXTRA: Try the quiz! "Assessing Performance" Remember, the quiz is designed to help you decide how well you are learning and remembering some of the main concepts your text and our class discussions have been covering. (quizzes are optional, not graded, and can be taken as many times as you like)
For next week (this is the same for all students): Read Textbook: Chapter 5 – Learner and Context Analysis Assignment Due: Reflection post (iLearn)	

Figure 1. Screenshot from SF State's iLearn LMS of a sample week in ITEC 801 course

HyFlex Course Design Principles

The HyFlex course design is built around four fundamental principles: Learner Choice, Equivalency, Reusability, and Accessibility. I believe that these principles are important in all instances of effective HyFlex course implementations, and may be considered "universal" principles (Reigeluth, 1999).

Learner Choice: Provide meaningful alternative participation modes and *enable students to choose* between participation modes weekly (or topically). The primary reason a HyFlex course design should be considered is to give students a choice in how they complete course activities in any given week (or topic). Without meaningful choice, there is no flexibility … and therefore no HyFlex. This requires that an instructor value providing participation choice to students more than s/he values forcing everyone into the "best" way of learning a set of content.

Equivalency: Provide *equivalent learning activities* in all participation modes. All alternative participation modes should lead to equivalent learning. Providing an alternative approach to students which leads to inferior learning "by design" is poor instructional practice and is probably unethical. Equivalency does not imply equality, however. An online learning experience (i.e., asynchronous discussion) may turn out to be much less socially interactive than a classroom based discussion activity. In each case, however, students should be challenged to reflect upon learning content, contribute their developing ideas to the discussion, and interact with the ideas of their peers.

Reusability: Utilize **artifacts** from learning activities in each participation mode as "learning objects" for all students. Many class activities which take place in classrooms can be captured and represented in an online-delivered form for online students. Podcasts, video recordings, discussion transcripts or notes, presentation files and handouts, and other forms of representation of in-class activities can be very useful – both for online students and for classroom students wishing to review after the class session is finished. In a similar way, the activities completed

17

by online students, such as chats, asynchronous discussions, file posting and peer review, etc. can become meaningful learning supports for in-class students as well as provide useful review materials for online students. And indeed, artifacts from some learning activities, such as, glossary entries, bibliographic resource collections, and topical research papers, could become perpetual learning resources for all students in future courses as well.

Accessibility: Equip students with technology skills and access to all participation modes. Clearly, alternative participation modes are not valid alternatives if students cannot effectively participate in class activities in one or more modes. If a student is not physically capable of attending class, then in-class participation is not an option for that student. If a student does not have convenient and reliable Internet access, then online participation may not be a realistic option for that student. Students need the technologies (hardware, software, networks) and skills in using technology in order to make legitimate choices about participation modes. It may be incumbent upon an instructor or academic program to provide resources and extra training to students (and instructors) so that flexible participation is a real option.

Another key aspect of accessibility is the need to make all course materials and activities accessible to and usable for all students. For example, audio or video recordings should include text transcripts or be closed captioned, web pages and learning management systems must be "screen reader friendly", and all forms of online discussion should meet universal design guidelines for accessibility. As more students with varied learning-mode abilities enter graduate programs and public, regulatory and legal pressures for universal design for accessibility increase, this aspect becomes increasingly important.

Study Questions

The questions this study attempts to answer for the HyFlex course delivery context are, When given the option to choose between online and face-to-face participation modes, which method do students choose? Why do they choose one method over another? When do they change their participation pattern, and why? Do their participation mode preferences change over the course of a semester? Are students satisfied with their interactions and learning in a HyFlex course? Answering these questions will help faculty choose a more effective mix of instructional options (overall class participation modes, online and face-to-face activities) to meet the needs and desires of their students.

Method

Course participation data was gathered during the Spring 2007 semester in four Instructional Technologies courses taught by the author. This data is either typical attendance information (who came to class, who did not, etc.), or evidence of online participation captured through the iLearn Learning Management System, usually measured by discussion forum participation. Online participation data includes participation frequency and quantity. One end-of-semester survey was used to assess student participation intentions and perceptions. Completing the survey was voluntary. The survey was available for one week after the last in-class meeting of the semester. Thirty four of 44 students (four students were enrolled in at least two of these classes) completed the survey, including 13 of the 15 students registered in the "online-only" section of ITEC 801, 801.02. Table 2 lists the questions asked in the survey.

For the participation part of this study, the analysis consisted of counting the frequency and amount of student participation online, and counting the frequency of class attendance. This data was entered into a spreadsheet for comparison and graphical analysis. Table 3 (in Results section) summarizes course participation for all four courses.

For the student satisfaction part of this study, survey results were tabulated and entered into a spreadsheet for comparison and graphical analysis. This analysis produced general answers to questions about student rationale for participation choices, changes in participation mode or amount, and student satisfaction with various components used in each course. (Note: Rigorous statistical analysis of survey results was not attempted, but is planned for future surveys. The survey instrument with tabulated aggregate data can be accessed at the HyFlex Course Design website: http://itec.sfsu.edu/hyflex/hyflex_home.htm)

Table 2. End-of semester survey questions *(Note: answer format has been changed to conserve space)*

1. Please select which course(s) you were enrolled in during Spring 2007.
ITEC 801.01 (face-to-face: Monday night); ITEC 801.02 (online section: Wednesday night); ITEC 850; ITEC 865

2. Which mode of participation did you plan on using during the semester?
face-to-face only; online only; a mix of online and face-to-face

3. How far is your commute to SF State? 0-5 miles; 6-20 miles; 21-50 miles; greater than 50 miles; Other:

4. On a typical class day, how long does your commute to class take? Please include time to find parking and walk to class.
0-30 minutes; 31-60 minutes (one hour); 61-90 minutes; 91-120 minutes (two hours); more than two hours; Other:

5. How many OTHER HyFlex courses have you taken in the ITEC program? Do not include classes completed this semester.
0 (none); 1 (one); 2 (two); 3 (three); 4 (four)

6. Please rate the value of each type of learning resource used in this class to your learning experience. What was valuable to you? What was of little or no value? (*Note: each element is rated from Very High to Very Low*)
Face-to-face discussions; Face-to-face presentations; Online asynchronous discussions; Archived discussions from class meetings; Online synchronous sessions; Archived Eluminate Live! Sessions; Website links; Linked readings

7. Please indicate how "connected" you felt to the following during class this semester. Compare this class experience to other recent class experiences. (*Note: each element is rated from Very Strong to Very Weak*)
Peers; Instructor; ITEC Program; SF State

8. I feel that I learned as much or more than I expected to in this class.
Strongly Disagree; Disagree; Undecided; Agree; Strongly Agree

9. I wish all of my courses were available (pick one):
fully online; complete in-person; blended (instructor decides what is online and what is face-to-face); HyFlex (hybrid with flexible participation); on CD-ROM for independent study; Other:

10. Please comment on your participation throughout the semester. Did you vary your mode from face-to-face to online or vice versa? If so, why? Did you prefer one mode over the other? If so, why?

Results

Part A of the Results section reports student participation patterns: aggregate for all courses, broken out by course and by individual student. Part B of the Results section reports selected findings from the end-of-semester student survey of participation and satisfaction with their HyFlex experience.

Part A: Student Participation Patterns

In Spring 2007, the author taught four courses, ITEC 801.01 and 801.02 (two sections of the same course, Instructional Systems Design), ITEC 850.01 (Design and Management of Training Projects), and ITEC 865.01 (E-Learning Development). Of the four courses, ITEC 801.01 and 801.02 were identical except that 801.02 was listed in the course catalog as an online course. Students were alerted ahead of time that even if they registered for ITEC

801.02, they would still be welcome to attend 801.01 in person if they desired. Table 3 shows summary data for overall average weekly participation mode for each of the four courses.

Table 3. Spring 2007 Student Participation Mode Summary

Course	Enrollment (N)	Attendance (weekly ave | STD over the semester)		
		in-class	online	absent
801.01 (in-class)	15	**7.20 | 4.69**	**5.07 | 4.01**	2.67 | 1.50
801.02 (online)	13	1.13 | 1.41	8.93 | 1.98	2.87 | 1.68
850.01	10	2.38 | 1.98	1.93 | 2.46	0.21 | 0.43
865.01	10	7.85 | 2.85	1.15 | 2.03	1.00 | 1.35

Looking at the summary data, it is clear that in all courses, students took advantage of the HyFlex flexible participation option, with several students in each course using an alternative option (online for an in-class course, or in-class for an online course) each week. Not surprisingly, the greatest variation in participation mode was for the 801.01 course since there were both in-class and online course sections for 801. In 850 and 865, participating online often meant being the only online student, or being one of only two or three students interacting online in any particular week.

Individual Student Participation

In 801.01, the in-class section of the ISD course, there was at least one student participating online each week. Two class sessions were conducted only online, in part to ensure students had the basic skills to survive in the online participation mode. All but one student chose to participate online at least one more time during the semester.

In 801.02, six of 13 students never came to class in person during the semester. More than half of the students (seven of 13) exercised the option of coming to class to participate in-person at least once, but none more than 5 times (one student came to class 5 times, one came 4 times, one came 3 times, one came 2 times, and 3 came only once).

In 850.01, one week of the course was conducted completely online. All but two students (80%) chose at least one more week to participate online during the semester. Three students (30%) chose online three additional times (beyond the required one online week), three (30%) chose online two additional times, and two (20%) chose online one additional time.

In 865.01, students were never required to participate online during the semester, and three students (30%) came to class every week. Two students (20%) chose online three times, three (30%) chose online twice, and one chose online once.

Part B: Student Survey of Participation and Satisfaction

The end-of-semester survey asked students about their participation preferences, details about their commuting time and distance from campus, satisfaction with their learning, with the HyFlex course design, and their feelings of "connectedness" to various components of the learning community, and their valuing of various instructional resources used in the course. In this paper, I summarize the findings related to instructional resources, feelings of connectedness, satisfaction with learning, preference for course design, and overall satisfaction with their HyFlex participation experience.

Item 6 of the survey asked students to evaluate eight types of instructional resources provided in each class. (See table 4.) The four elements valued the most (ranked very high or high) from students were face-to-face discussions (23 of 34), presentations (26 of 34), website links (26 of 34), and linked readings (30 of 34). Essentially, these are in-class resources and online "expert" non-interactive resources. The interactive online resources were valued by less than 50% of the students, in comparison.

Table 4. Selected Student Survey Results

6. Please rate the value of each type of learning resource used in this class to your learning experience. What was valuable to you? What was of little or no value?

	Number of Responses				
	Very High	High	Neutral (so-so)	Low	Very Low (or did not access)
Face-to-face discussions	**17**	**6**	5	0	6
Face-to-face presentations	**16**	**10**	3	0	5
Online asynchronous discussions	8	9	14	3	0
Archived discussions from class meetings	5	10	11	4	4
Online synchronous sessions	6	16	6	2	2
Archived Elluminate Live! Sessions	4	4	10	3	12
Website links	**15**	**11**	7	1	0
Linked readings	**14**	**16**	4	0	0
Totals	*85*	*82*	*60*	*13*	*29*

7. Please indicate how "connected" you felt to the following during class this semester. Compare this class experience to other recent class experiences.

	very strong	strong	neutral	weak	very weak
Peers	**6**	**14**	8	6	0
Instructor	**10**	**19**	5	0	0
ITEC Program	3	12	11	4	4
SF State	1	10	10	8	5
Totals	*20*	*55*	*34*	*18*	*9*

8. I feel that I learned as much or more than I expected to in this class.

	Number of Responses	Response Ratio
Strongly Disagree	3	8.82%
Disagree	0	0.00%
Undecided	4	11.76%
Agree	**17**	**50.00%**
Strongly Agree	**10**	**29.41%**

9. I wish all of my courses were available (pick one):

	Number of Responses	Response Ratio
fully online	1	2.94%
complete in-person	4	11.76%
blended (instructor decides what is online and what is face-to-face)	8	23.53%
HyFlex (hybrid with flexible participation)	**20**	**58.82%**
on CD-ROM for independent study	0	0.00%
Other**	1	2.94%

** UNDECIDED

Item 7 asked students to evaluate their feelings of connectedness to their peers, the instructor, the ITEC program, and SF State University. (See table 4.) Connecting to others is often a particular challenge in online courses, and a lack of feeling connected contributes to attrition in online courses and programs (Kemp, 2002; Rovai, 2002). Blended courses which implement a mix of in-class and online instruction may improve the sense of community (Rovai and Jordan, 2004), leading to feelings of greater connectedness. In the end-of-semester survey, students reported feeling strongly (marking "very strong" or "strong") connected to the instructor (29 of 34) and to peers (20 of 34), but did not report feeling strongly connected to either the ITEC program or SF State in general.

Item 8 asked students whether or not they agreed with a statement about learning as much as they expected, and 80% (27 of 34) reported that they agreed or strongly agreed.

Item 9 asked students what type of course delivery they preferred. A majority of students (59%) preferred the HyFlex course, many preferred another form of hybrid course, instructor-controlled blended (24%), and most of the rest preferred traditional classroom instruction (12%). Only one student preferred online-only course delivery. This result indicates that these students value the face-to-face components of traditional classroom instruction, perhaps the social connection they experience with peers and the instructor, and the immediacy of rich interaction that is enabled in the classroom but is difficult to achieve online. But what did they say about the HyFlex course experience, when they were free to use their own words? Some of those comments are presented next.

Student Comments about HyFlex

The final survey question asked students to comment on their participation over the semester. Most comments expressed satisfaction with the flexible participation options; many students mentioned the aspects of each mode of class that they especially liked or disliked. A sample of students comments (as submitted in the survey) is presented here. (Full comments can be viewed at the HyFlex design website.)

I did online mostly and caught the tail end of class when I could. I missed seeing and interacting with my peers face to face. online was a great deal of work and I found I needed to really manage my time. Office hour participation , listening to archived class, reading other student forums, posting my own forums, responding with coherence, spelling grammar... wow. office hours time was made to seem optional. I felt it was key and would have liked to see more people there and used more robustly to share projects, get feedback and have a class. It was good to get to know the program. Sharing papers with people online for feedback didn't work so much. people didn't know what to give for feedback. I can't believe how much I have learned.

I enjoyed the hyflex mode of learning based on my very demanding schedule for work. As a consultant, I travel almost 4-5 days per week, and having the ability to attend or not attend class was very helpful.

With a hectic work schedule, having the option to "attend" class online was ideal. The flexible structure kept me from dropping the course.

I took two courses in this mode this semester, and my participation varied more in one than the other. Within a large class, the HyFlex approach is really useful because there is the sense that there will be a community to participate with in either modality. Therefore, I switched from online to face-to-face pretty regularly. Often, I made my choice based on what was going on for me that week (was I prepared for face-to-face session early in the week?) or the content of that week's lesson (am I going to fully understand this topic on my own?). I felt more comfortable participating online when I was confident about my knowledge for the week, and was just looking to peers to further develop that understanding. In contrast, in a small class, I was reluctant to participate online because I was unsure whether or not there would be someone to participate with, or enough of a dialogue to make the experience valuable. I only participated online once, outside of when the whole class was online, and it wasn't a dramatically different experience than if I had just skipped class for the week. I wouldn't recommend the HyFlex course for small classes, unless there is a more structured activity aside from discussion that one could do for the week.

My participation has been about the same with online and in-class. This was my first time having (the option of) an online class. Being online gave me more flexibility with my work schedule, but I still needed to have some face-to-face peer work and discussions, especially regarding the materials we read and talked about. I don't think I think that i prefer being in class. I benefit more with being engaged, or even just listening to a discussion, but the availability of doing some of the work online really helped me.

Throughout most of the comments, students expressed an overall preference for traditional in-class meetings, especially the social nature of the seminar classroom. However, they also often expressed appreciation for the flexible nature of participation so that their studies could more easily integrate into the rest of their busy lives.

Conclusions

If you build it (the online options for traditional classroom-based courses) they *will* come! At least many of these students did. Approximately 15% of the student participation instances (96 of 642 opportunities to choose) took place in alternative modes, primarily in-class students participating online.

Students who register for an online course may not be able to attend class in-person, even if that is an option. If they have chosen an online course section instead of an in-class section, it is probably for as good reason, such as, work conflict, family duties, tie conflicts with other classes, or travel conflicts. Based on the participation patterns in the ITEC program at SF State, it doesn't make sense to prepare in-class options for students if a course is being offered online-only already. In this situation, if you build it, they probably *won't* come!

HyFlex options may be more effective for students choosing online participation if there is a large group of students who are likely to also be online in a given week. If online participation is considered to be a "second choice" option (perhaps because it can be a lonely virtual space when every one else is in class), online discussions may be sparse and relatively ineffective as interactive discussions.

Even when students did not choose alternative participation modes often, many report being very satisfied and pleased that they had the choice to participate in a different mode if they had to (or wanted to). Almost all of the students surveyed preferred a mix of online and classroom participation modes, and most of these students report that they would prefer all of their courses adopt a student-controlled flexible approach to participation.

Looking Ahead (with Plenty of Questions!)

As with any complex learning setting, initial development and research leads to many more questions than a simple study can answer. The end-of-semester survey is being revised and will be used with Fall 2007 and Spring 2008 courses using the HyFlex course model in the ITEC program. There are other areas to pursue, many more questions to ask (and eventually answer, one would hope.) Here are a few under consideration:

Student learning: Do students who choose to participate predominantly online achieve learning objectives? How do their final performance products (design plans, instructional packages, etc.) compare to those of their peers who participate in-class

Online learning environment: Is it possible create a rich, interactive online environment when only a few students are participating online in a given week? Would requiring all students, regardless of participation mode, to participate in online forums make the online participation richer? Could that be accomplished without increasing the workload for in-class students unfairly?

Faculty workload: It isn't fair to the faculty teaching a HyFlex course to require traditional in-class teaching and add on the load of facilitating online students as well. How much additional work is required to conduct a HyFlex course? How can the faculty load for facilitating online learners be lessened? Should faculty be assigned fewer students for HyFlex courses or fewer courses to teach? Can teaching assistants provide the additional instructional support needed?

Student outcomes: All of the students in this study are enrolled in the Instructional Technologies (ITEC) graduate program at SF State. Since these students are learning how to design instruction for a wide variety of education and training settings using technology, their experiences using online technologies in the HyFlex course may affect the way they think about teaching and learning in the various instructional contexts they move into. Does the HyFlex experience lead them to consider the impact of learner control and designing for flexible alternative approaches to learning the same content? Ultimately, do they become more effective designers and educators?

The results of continuing studies and development of HyFlex courses at SF State will try to answer these questions over the next few years. At SF State, especially in the ITEC program, we intend to determine how to select additional existing courses for hybridization with the HyFlex model, develop new courses in hybrid formats to meet the emerging needs of student populations, and help instructors and students better understand how new technologies can support a different approach to course delivery; creating a context for full and flexible participation in a learning community that may be more effective that traditional single-mode course designs.

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