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The Clipper Project: Lessons Learned Teaching an Online Economics Course

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ABSTRACT

THIS PAPER describes the three-year evolution of an online Economics I course, reports on student outcomes and evaluations, and discusses the lessons learned. Results show that, as the course evolved from an instructor-led to a student-centered learning pedagogical model, several indicators of completing students' learning and satisfaction with the course increased. At the same time, however, withdrawal rates also increased significantly—perhaps revealing students' discomfort with the increased effort required in taking responsibility for one's learning. The authors concluded that, in the end, the Clipper Project had actually provided the catalyst for exploring best practices for teaching in any medium rather than simply providing an opportunity to experiment with online teaching and learning. (*Keywords: distance learning, virtual classrooms, economics instruction, higher education, student-centered learning*)

INTRODUCTION

ONCE PEOPLE find a solution to a problem, they tend to stick to it regardless of how the available technology changes (Duncker, 1945). This "functional fixedness" is poignantly illustrated by the 1927 photograph that Cuban (1986) included in the front of his book, *Teachers and Machines: The Classroom Use of Technology Since 1920.* Depicted is an extraordinary opportunity, even by today's standards, for students to experience geography firsthand from the windows of an airplane. But the students aren't looking out their windows from their bolted-to-the-floor airplane desks. Instead, their attention is focused on the teacher standing before a chalkboard at the front of the cabin. She is pointing at a globe.

In the absence of guidelines, educators will tend initially to use newer technologies as they had used comparable older technologies. But the history of technology's use in education reveals repeatedly that the tedium of a long, noninteractive lecture delivered mechanically is only intensified once "computerized" (Saettler, 1990). Poorly designed instruction is poorly designed instruction, regardless of delivery mode (Lockee, 2001). This means that—in much the same way that instructional film, radio, and television challenged educators in the 20th century—the World Wide Web calls for us to move away from the chalkboard and explore ways that capitalize on 21st century technology's affordances to enhance learning in various content areas. The Clipper Project has been an attempt to do just that.

Funded by The Andrew W. Mellon Foundation in 1999 as a five-year research and development initiative, the Clipper Project set out to explore the future of teaching and learning technologies by evaluating the short- and long-term costs and benefits associated with offering five introductory online courses to high-school seniors who had been "pre-admitted" to a medium-sized private university. Among the many questions that the Clipper Project planned to examine, described here are the effects that transitioning from the lecture-based Economics I course to wholly online delivery had on the students, faculty, and staff involved. Questions raised were:

1. How would faculty and instructional technology support the transformation of a "traditional" on-campus Economics I course for online delivery?
2. What would be the learning outcomes for students participating in an online Economics I course?
3. How would participating students evaluate an online Economics I course as it evolved over three years?

This paper describes the evolution of the Clipper Economics I course, reports on the study and its findings, and discusses lessons learned.

METHOD

THE CLIPPER PROJECT was designed as a quasi-experimental study with both qualitative and quantitative measures to assess the experiences and outcomes associated with these courses for students and faculty. The research design was developed to allow within- and between-group comparisons across time between face-to-face classroom instruction and online instruction taught by the same instructor.

PARTICIPANTS

Table 1 shows the number of Economics course student participants by year and summarizes the background information data collected from them prior to their participation in either the online or face-to-face sections of Economics I. Typical of the university's population, participating students were male (59%); female (41%); white, non-Hispanic (92%); and graduates from suburban high schools (77%). Not surprisingly, the largest college enrollments were Business and Economics students (39%). Chi-square tests on gender, college of enrollment, location of high school, and race indicated there was no significant difference between the online and face-to-face student groups on these background variables. Prior to their participation in

Table 1.
Number by Year and Background Information for Clipper Economics Participants

		Participant type			Pearson Chi-Square	df	Asymp. Sig (2-sided)
		Online	F2F	Total			
Year of Clipper Study	Year 1: 2000-2001	23	6	29			
	Year 2: 2001-2002	22	16	38			
	Year 3: 2002-2003	19	12	31			
	TOTAL	64	34	98			
Gender	Male	37 (58%)	21 (62%)	58 (59%)	.027*	1	.871
	Female	27 (42%)	13 (38%)	40 (41%)			
Location of High School	Urban	5 (8%)	6 (18%)	11 (11%)	5.557	2	.062
	Suburban	53 (83%)	22 (65%)	75 (77%)			
	Rural	3 (5%)	5 (15%)	8 (8%)			
	No response	3 (5%)	1 (3%)	4 (4%)			
Race	Non-white	5 (8%)	1 (8%)	6	.000*	1	1.000
	White, non-Hispanic	57 (92%)	11 (92%)	68			
College of Enrollment	Arts & Sciences	21 (33%)	10 (29%)	31 (32%)	4.70	2	.095
	Business & Economics	28 (44%)	10 (29%)	38 (39%)			
	Engineering	13 (20%)	14 (42%)	27 (27%)			
	No response	2 (3%)	0 (0%)	2 (2%)			

*Yates Correction for Continuity for 2x2 table

the Clipper Economics course, students also were asked to self-assess their current technology and academic skills. There were no statistically significant differences between the online and face-to-face groups across these variables.

EVOLUTION OF THE CLIPPER ECONOMICS I COURSE

The five online courses envisioned for the Clipper Project did not exist and had to be developed as part of the grant. To accomplish this, each faculty member was assigned an instructional technology consultant from within the university's Library and Technology Services Department. This consultant served as the "point-of-contact" between the instructor and the technical and support personnel to form a course development team. During the three years that Economics I was offered, this team worked together to develop the online course from its initial conception to the final version.

Year 1: Comprehensive Archived Lectures

Initial planning for the online version of the lecture-based economics course began in the spring and summer of 2000. At that time, the course development team decided that interactive graphic models were the single most important way in which the computer could contribute to economics instruction. We believed such models would take full advantage of the computer as an educational medium, creating more opportunities for the student to interact with the instructor than is the case in the typical, large-lecture Economics I course. The initial prototype of these materials was a table illustrating the concept of diminishing marginal productivity. The table, programmed in *Flash*, featured a marginal product with calculations and numbers entered into appropriate cells. The program showed the formula for the calculations with a voiceover that explained what was occurring. After a few of these calculations were modeled for the student, he or she was invited to complete the table. Correct numerical entries received an appropriate audio response, while incorrect entries led to suggestions for redoing the calculations. The course development team envisioned eventually developing similar graphic models in which the graphs would build on the screen accompanied by audio explanations. Assignments would then require students to manipulate the graphs in response to changes in determinants.

The course development team pursued this approach throughout the second half of 2000. However, even with dedicated instructional technology support, it soon became apparent that the programming requirements for a "simple" supply and demand interaction were extremely time consuming. Additionally, significant resources had to be devoted just to synchronize the audio files with the interactive presentations. Finally, the practical consideration of bandwidth requirements and download time for *Flash* files raised serious questions about the feasibility of this approach.

By late fall 2000, with the first scheduled online offering of the course imminent and limited progress made on the interactive materials, the team decided to adopt the online course development model used by the university's Distance Education Department. This involved

recording audio/video *PowerPoint* lectures that had been prepared for on-campus students, then archiving and streaming them for access by online students. While this approach mimicked the student experience in the "traditional" on-campus course, it was far removed from the original plans. However, the course seemed to work well and student responses on common exam questions demonstrated that the online students performed as well as the on-campus students in mastering economic concepts.

Year 2: Web-based Text Supplements With Increased Student Interactions

In summer 2001, the course development team carefully evaluated the first Clipper Economics Course I offering, using student feedback on mid- and end-of-term surveys and a report by an award-winning high school economics teacher with experience in the development and delivery of online courses. The student reports indicated that most students had concentrated on studying the textbook and the hard copy of the PowerPoint presentations available on the course Web site and devoted substantially less time to viewing the recorded lectures accompanying those presentations.

Since student performance was on par with the performance of those in the on-campus course, the course development team took this information as an indicator that the online students were capable of learning the subject matter from the material presented without a need for the instructor to rehash that material through a lecture. The economics teacher consultant suggested ways of stimulating student interaction through assignments that required postings on the bulletin board and through group assignments. She hypothesized that such text-based interaction could be as successful in helping students learn economics as the computer-student interactions originally envisioned for the initial course design.

As a result of the students' and consultant's evaluations, the course development team made two changes to the Clipper Economics course for the second offering in the spring semester of 2002. First, they eliminated the hour-long streaming video lecture format that mim-

icked the on-campus lectures and substituted shorter video clips that were designed to *supplement* the textbook readings rather than comprehensively *repeat* that material. This change was intended to facilitate the pedagogical paradigm shift that, based on the students' reports, was already moving away from faculty-centered teaching in favor of student-centered learning.

The short video clips were made on the instructor's office computer using new software called *Camtasia*. This software allowed the instructor to "video" activities taking place on the computer screen while simultaneously recording narrative explanations. The instructor made two types of these short videos: discussions of graphs or equations within *PowerPoint,* using the marker to highlight and emphasize aspects of the presentation, and discussions of numerical illustrations, often based on end-of-chapter questions from the text that explained key calculations while the student watched the spreadsheet develop. The students viewed these asynchronous streaming videos on their computers at their convenience. Based on informal discussions during Year 2, the students made greater use of the revised video clips than the Year 1 students.

A secondary change was the development of a number of assignments designed to provide more opportunities for student-instructor and student-student interaction. Six discussion board assignments, together accounting for 6% of the student's final grade, required students to respond to the instructor's questions on various topics and react to other students' responses. The instructor also assigned students to two- to three-member groups who were responsible for preparing two five- to eight-page papers on a specific research theme. Group grades for the papers were assigned, accounting for 10% of the student's final grade.

Year 3: Less Formal Bulletin Board Assignments and Limited Group Work

Again, the course development team evaluated the course offered in 2002 on the basis of student feedback. From that feedback, the team concluded that the bulletin board assignments had not worked

as intended. After the first posting or two in response to a question, students could add little to the discussion beyond agreeing with a previous posting. The grade for this assignment then could not be based on the quality or accuracy of the responses but only on whether or not a student posted anything on the issue. Unlike a classroom setting where the instructor can direct questions to students who are not raising their hands, the bulletin board assignments were dominated by a few students, with increasingly reduced incentives for others to participate. While there were 45 student postings for the first discussion board assignment, the final two elicited just 13 and 11 postings, respectively. As a result, the course development team decided to try using the bulletin board in the third year for text-based, nongraded discussions by inviting students to post and answer questions about course material. Further, the instructor used the announcement feature in Blackboard to inform students about current events and then used these events to ask course-related questions and invite student postings on these questions. While there was some variation from week to week depending on the topics covered, the Year 3 students used the bulletin board more actively than their Year 2 predecessors had, even sometimes taking the initiative to answer others' questions before the instructor could.

In addition to the problems with the Year 2 bulletin board assignments, the group assignments had generated a lot of dissatisfaction among the students. Students reported having considerable difficulty organizing group tasks at a distance and communicating with their group. This was likely further complicated by the fact that the students had not been prepared for online group work. In addition, students also were concerned about the heavy weight that the course's two exams—a midterm covering the microeconomics topics and a final covering the macroeconomics material—had on their final grades. So, the third version of the Clipper economics course utilized weekly online quizzes in addition to the two exams and did not assign group projects.

Several students in the first two years of the Clipper Economics course reported missing the richer communication that occurs in face-to-face classroom environments. So, in order to address the faculty-

student interactions reported missing and to help students better prepare for the two major exams, the course development team added a synchronous component for Year 3: Sunday evening review sessions. Using Centra Web-based conferencing software, the instructor was able to simulate a classroom setting with two-way audio and various interactive visual tools that could be used by all participants. Unfortunately, the response to these synchronous sessions was disappointing. Even though they were scheduled on Sunday evening, many students found that they had conflicts with work, sports, and other activities. And while the purpose of these sessions was to give students the opportunity to ask questions in preparation for major exams, very few of the students attended with prepared questions. Further, few students had computers equipped with microphones. As a result, the sessions largely became lectures in which the instructor reviewed the key topics covered by the exam.

Thus, the Clipper Economics course underwent many revisions and iterations during the project's three-year tenure. It is not surprising, therefore, to see changes across the three years in online student outcomes and evaluations.

FINDINGS

AS SEEN IN TABLE 2, overall withdrawal rates from the online sections (37%) of the Economics course were much higher than the face-to-face sections (3 %). Chi-square comparisons by year across instructional conditions indicate no difference between the online and face-to-face groups in Year 1, but significantly higher dropout rates for online students than face-to-face students in Year 2, Year 3, and for all three years combined. Further, Chi-square tests indicated that, while there was not a significant difference in withdrawal rates among face-to-face students by year [$\chi^2(2, 34) = 4.808$, $p = .09$)], differences in withdrawal rates among online students by year did reach statistical significance [$\chi^2(2, 64) = 6.42$, $p = .04$)].

Table 2.
Clipper Economics Students' Withdrawal Rates by Year

	Online		F2F		X^2 test		
	Completed	Withdrew	Completed	Withdrew	Pearson Chi-Square*	df	Asymp. Sig (2-sided)
Year 1	19 (83%)	4 (17%)	5 (83%)	1 (17%)	.000	1	1.000
Year 2	12 (55%)	10 (45%)	16 (100%)	0 (0%)	7.665	1	.006
Year 3	9 (47%)	10 (53%)	12 (100%)	0 (0%)	7.070	1	.008
TOTAL	40 (63%)	24 (37%)	33 (97%)	1 (3%)	13.955	1	.000

* Yates Correction for Continuity for 2x2 Table

As measured by final grades, outcomes data collected during the three Clipper Economics course "cycles" indicated that students who completed the online sections of the course achieved at levels commensurate with those students who participated in face-to-face sections of the same course and that the mean GPA for the online students increased with each new iteration of the Web-based course (Table 3). A one-way between-groups analysis of variance test was conducted to explore the impact that the year of the study had on both the online students' and the face-to-face students' final course grades. There was a statistically significant difference at the $p < .05$ level in the online students' final course grades across the three years [$F(2, 37) = 5.06$, $p = .01$]. The effect size, calculated using eta squared, was 0.21—a large effect in Cohen's (1988) terms. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the Year 1 online students was significantly different from the Year 3 online students. The Year 2 online students did not differ significantly from either the Year 1 or the Year 3 online groups. There was no statistically significant difference at the $p < .05$ level in the face-to-face students' final course grades across the three years of the study [$F(2, 30) = 1.62$, $p = .21$]. A two-way analysis of variance was conducted to explore the impact of participant type and year of the study on final course grades. The main effect for participant type [$F(1, 67) = 2.28$, $p = .14$], year of study [$F(2, 67) = 1.91$, $p = .16$], and the interaction effect [$F(2, 67) = 2.57$, $p = .08$] did not reach statistical significance indicating that the two groups' final grades did not differ appreciably at any time during the three years of the study.

Table 3.
Clipper Economics Students' Final Numerical Grades by Year (4-Point Scale)

	Online					F2F				
	Min	Max	*M*	*SD*	*n*	Min	Max	*M*	*SD*	*n*
Year 1	2.33	4.00	2.84	.593	19	2.33	3.67	2.93	.686	5
Year 2	2.00	4.00	3.33	.725	12	2.00	4.00	3.27	.743	16
Year 3	2.33	4.00	3.59	.549	9	1.33	4.00	2.78	.730	12
TOTAL	2.00	4.00	3.16	.689	40	1.33	4.00	3.04	.745	33

In addition to tracking withdrawal rates and collecting students' final marks, each year students who finished their Clipper Economics course also completed a "Survey of Course and Teaching Effectiveness" questionnaire $\alpha = .96$). The survey began by asking students to rate on a 5-point Likert Scale how often the instructor used various instructional delivery strategies (19 items, $\alpha = .82$), assessment/feedback strategies (11 items, $\alpha = .88$), and teacher/student interaction strategies (7 items, $\alpha = .82$). Mean scores and standard deviations for online students' evaluation of the instruction appear in Table 4. A one-way between-groups ANOVA was conducted on each of the three dependent variables and found a statistically significant difference at the $p < .05$ level only in students' evaluation of the frequency of course assessment/feedback strategies used [$F(2, 37) = 7.14$, $p = .002$], with a large effect size, as indicated by an eta squared of 0.28. Post-hoc comparisons using the Tukey HSD test indicated that the mean assessment/feedback score for Year 1 was significantly lower than both Year 2 and Year 3. The mean score for Year 2 was not significantly lower than Year 3. No statistically significant differences by year on the instructional delivery subscale or interactions with students subscale were found.

Table 4.
Online Students' Evaluation of the Instruction by Year

	Instructional Delivery Subscale		Assessment/Feedback/Evaluation		Interactions with students	
	M	*SD*	*M*	*SD*	*M*	*SD*
Year 1 (*n*=18)	3.89	.423	3.65	.628	3.68	.609
Year 2 (*n*=14)	4.15	.348	4.23	.470	3.95	.600
Year 3 (*n*=8)	4.00	.392	4.38	.349	4.14	.577
Total	4.00	.399	4.00	.609	3.87	.612

Note. 1=Never, 2-Seldom, 3=Someties, 4=Often, 5=Almost always

As part of the end-of-course survey, students were asked to assess the helpfulness and ease of use of supportive services (10 items, α = .85) and supportive technologies (12 items, α = .90). Mean scores and standard deviations for those items are reported in Table 5. A one-way between groups ANOVA on each of the four dependent variables in this grouping revealed a statistically significant difference at the $p < .05$ level in students' assessment of the helpfulness of technologies used to support student efforts during the course [$F(2, 37) = 10.75$, $p = .000$] with a very large, eta squared effect size value of 0.37. As was the case above, Tukey HSD post hoc tests found that the mean score for Year 1 was significantly lower than Years 2 and 3, but that the mean score for Year 2 was not significantly lower than Year 3. There were no statistically significant differences by year on the other three variables.

The survey also asked students to report the amount of time they spent per week on the course (2 items, α = .82) and the amount of effort they put into the course (2 items, α = .88) (see Table 6). A one-way, between groups ANOVA revealed statistically significant differences at the $p < .05$ level in scores on both the amount of effort put into the course [$F(2, 37) = 19.95$, $p = .00$] and the amount of effort necessary to succeed in the course [$F(2, 327) = 43.810$, $p = .00$] with very large, eta squared effect sizes of 0.52 and 0.70, respectively. Tukey HSD test post-hoc comparisons on scores for both the amount of effort put into the course and the amount of effort necessary to succeed showed that the mean scores for Year 1 were significantly lower than Year 2 and Year 3.

DISCUSSION

STUDENT OUTCOMES

ONLINE COURSE WITHDRAWAL RATES reported in the literature over the last 10 years vary considerably, ranging anywhere from 15% - 80%. However, from anecdotal evidence and studies by individual institutions, it does appear fairly clear

Table 5.
Online Students' Evaluations of Supportive Services and Technologies by Year

	Helpfulness of supportive services*		Ease of use of supportive services**		Helpfulness of supportive technologies*		Ease of use of supportive technologies**	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Year 1 (*n*=18)	3.83	.689	3.96	.769	3.32	.618	4.12	.526
Year 2 (*n*=14)	3.76	.499	3.82	.609	4.10	.553	4.42	.725
Year 3 (*n*=8)	4.18	.580	4.03	.495	4.28	.534	4.28	.526
Total	3.88	.611	3.93	.657	3.79	.711	4.26	.603

*1= Very unhelpful, 2=Unhelpful, 3=Somewhat helpful, 4=Helpful, 5=Very helpful
**1=Very difficult, 2=Difficult, 3=Somewhat easy, 4=Easy, 5=Very easy

Table 6.
Online Students' Estimated Number of Hours and Effort by Year

	Hrs per wk spent on course*		How many hrs spent per week were valuable*		Amount of effort put into course**		Amount of effort necessary to succeed in course**	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Year 1 (*n*=18)	2.17	.707	1.71	.588	2.28	.752	2.11	.758
Year 2 (*n*=14)	2.36	.842	2.00	.784	3.86	.663	4.29	.611
Year 3 (*n*=8)	1.75	.463	1.50	.535	3.38	.744	3.88	.641
Total	2.15	.736	1.77	.667	3.05	1.011	3.22	1.230

*1=Less than 5 hours per week, 2=5-10 hour per week, 3=11-15 hours per week, 4=16-20 hours per week, 5=More than 20 hours per week
**1=Very low, 2=Low, 3=Moderate, 4=High, 5=Very high

now that more online students withdraw than do their face-to-face counterparts (Carr, 2000; Phipps & Merisotis, 1999) and that, lately, those dropout rates seem to be closer to around 30% (Hill, Han, & Raven, 2001; O'Connor, Sceiford, Wang, Foucar-Szocki, & Griffin, 2003). Thus, by comparison our 17% online withdrawal rate in Year 1 was not especially alarming, particularly given that the number who withdrew was not statistically different from the face-to-face group for that same year. The significantly higher number of students who withdrew in Years 2 (45%) and 3 (53%), however, raised some concerns.

In students' responses to a six-item, open-ended Drop Survey administered to all who withdrew from the online course, the reported primary factor contributing to online student attrition in Years 2 and 3 was the challenge of finding time to participate in a college-level course while completing high school requirements and extracurricular activities. But, given that online students' reports of the number of hours spent on the course per week did not vary significantly over the three years of the study and that online students' reports of both

the amount of effort put into the course and amount of effort necessary to succeed rose significantly in Years 2 and 3, the issue might have been more about expended effort rather than just time alone. Therefore, it might be hypothesized that the increased effort required in the shift toward student-centered learning in Years 2 and 3 contributed to the significantly higher withdrawal rates (Table 2).

That said, research has also shown that the increased psychological independence fostered by the pedagogical shift from instructor-led to student-centered instruction may enhance learning from online courses (Agarwal & Day, 1998; Garrison, Cleveland-Innes, & Fung, 2004; Johnson, Burnett, & Rolling, 2002; Knowlton, 2000). Our finding that the online students' final marks improved steadily over the three generations of the course with a large effect size appears to support this hypothesis (Table 3). It is encouraging to think that the team's efforts to be responsive to student feedback, through course design changes implemented from year to year, might have had this effect.

Of course, a wary social scientist could easily poke holes in these conclusions. For example, it could be argued that the increased course grade point average over the three years is a reflection of the increased withdrawal rate. If students who were doing poorly in the course became more likely to withdraw over the three year Clipper period, then this would certainly account for an improved average GPA. However, while there isn't enough information to rule out this alternative explanation for the rising GPA over time, at least the data are moving in the right direction and lend some support for the notion that the changes incorporated in the Clipper economics course may have contributed to student learning.

STUDENT EVALUATIONS

Because the instructor's actual assessment/feedback strategies did not vary substantially over the three years of the course, students' significantly lower rating in Year 1 may be largely attributable to inevitable feedback delays caused by the usual workload and time pressures imposed on faculty when offering an online course, particularly for the first time (Collis, Winnips, & Moonen, 2000; Palloff &

Pratt, 1999). What is more interesting than the significant differences within the students' instruction evaluations is that, when asked to evaluate the frequency of their interactions with the instructor, students' ratings did not drop significantly despite the shift from instructor-led to student-centered pedagogy (Table 4). Likewise, students' assessments of instructional delivery strategies used did not vary significantly either. Concomitantly, students rated the revised, *supplemental* supportive technologies that delivered those instructional strategies significantly higher than the earlier, redundant supportive technologies (Table 5).

Thus, in order to get the course up-and-running within a short time frame, the team initially filled an online learning environment with traditional university "chalk and talk" lecture-based instruction—an approach not unlike equipping an aero-geography classroom with a chalkboard and a globe (Kearsley, 2000). While this model did allow the Year 1 course to run and provided the early-decision high school students with a high-fidelity introduction to college instruction, it does not appear to have been the best pedagogical approach across a number of the variables measured here, including the final course grade. In Years 2 and 3, when the online course was redesigned around a more student-centered model, it appears that learning may have increased and students were more satisfied—despite the fact that the additional responsibility for learning may have led more students to withdraw.

LESSONS LEARNED

MAKING THE TRANSITION from a traditional, face-to-face classroom to a cyberspace classroom poses more challenges than are readily apparent (Palloff & Pratt, 1999). Through the Clipper Project several important lessons were learned:

1. *Online Courses Necessarily Bring About a Pedagogical Shift*

Students in a typical Economics I course at most institutions gather at a designated location and a prespecified hour once or twice a week.

While these students do take a certain amount of responsibility for getting to class regularly and on time, it is not incumbent upon them to initiate those learning sessions. Online students, by comparison, are not obligated to be at a particular place, at a specified time. It is entirely up them to decide when, where, and how long to engage in the online course materials. While freedom from locational and temporal constraints makes online learning more accessible and convenient, this independence also shifts the primary burden for initiating learning from the instructor to the students.

Some learners are empowered by the autonomy even to the extent of feeling they could choose to skip archived lectures that they felt were not well suited to their learning needs. Research has shown that other learners, however, are made uncomfortable by this pedagogical shift and that the resulting increased workload is a significant factor in online course withdrawal rates (Navarro, 2000; Vachris, 1999). The Clipper Economic course findings support these studies and show waning comfort levels that led to students' withdrawals. Two students report their reasons for withdrawing:

> I did not like the fact that I felt like I was trying to teach the course to myself. I had a hard time paying attention to someone I couldn't see (the movies) or ask questions without speaking or understanding answers to my questions through posted messages. (Year 3, Student 1)

> ...there was just not enough time in my schedule for an additional class that I had to teach myself. (Year 3, Student 2)

In order for the Clipper Economics course to be more successful in the future, it will be necessary to continue exploring ways to support student-learning activities—such as help with organization and management of resources—so that students can assume more responsibility for their learning.

2. *Passive Instructional Methods Don't Easily Make the Transition to Online Delivery*

In a well-planned lecture, the instructor delivers more than content, but also answers students' questions, clarifies points, elaborates on concepts presented, interjects opinions, and otherwise actively responds to the students' verbal and nonverbal feedback. In contrast, when that same instructor is asked to sit at a computer and record his or her presentation so that it can be archived for others to view later on a computer screen, the results too often are transmission of the information model of teaching so common in the classroom, which becomes a passive experience for learners. Two Year 1 students described their experience with the hour-long lectures used that year:

> I feel that a student needs full communication with an instructor and sitting in front of a computer screen and listening to a lecture is inadequate (Year 1, Student 3)
>
> Listening to the professor from a small rectangular screen was somewhat fascinating, but also would have been a difficult adjustment for my initial college course. I realized that I would learn a lot more if I took the course at Lehigh in a classroom (Year 1, Student 4).

The findings from the Clipper Economics course support Coates and Humphreys' (2001) suggestion that Economics faculty who are engaged in developing online courses should focus less on generating "passive" online content and more on creating technologies that support "active" learning tasks. While the change made from content-delivery to "supplemental" video-based archives is a step in the right direction, other methods need to be explored for making online learning more engaging and interactive, such as sharing or developing tools for students to learn *with,* as suggested by Jonassen and Reeves (1996).

3. *Online Instructors Must Design Interactions*

Unlike the face-to-face instructor, who is physically present to react to the classroom discourse, the online instructor is not immediately available online to support and facilitate critical thinking and

higher order outcomes through online discussions. Facilitating such discussions online requires advance planning, well-structured discussion topics, instructor participation or monitoring, and some form of assessment (Christoper, Thomas, & Tallent-Runnels, 2004; Fauske & Wade, 2004).

In the Clipper Economics course, "tried-and-true" instructional strategies that have been used for years in classroom-based courses—such as class discussions and collaborative group work—were unlikely to be as successful online without altering them to accommodate the more-constrained and less-familiar computer-mediated communication channel (Koszalka & Ganesan, 2004; Slagter van Tryon & Bishop, in press). While there is a growing body of evidence to suggest that meaningful discourse through asynchronous communication can be an important pedagogical tool in an online course, the Economics I course demonstrated that simple interaction absent of carefully designed structure and leadership was insufficient—a finding supported by others (Garrison & Cleveland-Innes, 2005; Gilbert & Dabbagh, 2005; Hewitt, 2003; Vonderwell, 2003; Wu & Hiltz, 2004). In order for the asynchronous discussions in the Economics I course to be more successful in the future, we must explore ways to replicate the features of good face-to-face discussions in online learning environments.

CONCLUSION

FEW COLLEGE AND UNIVERSITY FACULTY view the addition of Web-based technologies in their instruction as more than a convenience (Twigg, 2003). Consequently, many fail to take advantage of the opportunity to explore innovative pedagogical approaches that new technologies offer education (Cuban, 2001). The Clipper Project provided the chance for participating faculty to learn how to design instruction for online delivery. More than that, it became a test bed for exploring best practices for instructing in *any* medium and renewed interest among faculty in the "scholarship of teaching," whereby a portion of their time was spent assessing their pedagogical

styles and seeking a better overall teaching and learning environment. The challenge now facing educators is how to capitalize on the potential of new technologies and the sophisticated communication strategies of this generation of e-learners and recast them into more formal pedagogical structures.

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