BLENDED ENVIRONMENTS: LEARNING EFFECTIVENESS AND STUDENT SATISFACTION AT A SMALL COLLEGE IN TRANSITION

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ABSTRACT

As higher education moves increasingly to blended and fully online environments, smaller institutions often ask whether this is a desirable trend. They face many challenges in transforming their largely face-to-face didactic teaching traditions to the technology mediated learning environments. Learning effectiveness and student satisfaction are seen to be decisive in whether blended environments are a positive development or not. Using survey data from a liberal arts and sciences institution, we show that student satisfaction with blended learning depends largely on the challenges presented by the subject matter, the degree to which self-directed learning and problem solving are required, and the effectiveness of the chosen pedagogies by which face-to-face and online methods are combined. Blended environments that provide multiple modalities for learning, significant interactivity, familiar technologies, and sustained connections with teachers and peers are preferred by increasing numbers of students in this institution. Although many students and faculty remain skeptical about blended learning, there are others who are very satisfied learners.

KEYWORDS

Small liberal arts colleges, blended learning, student satisfaction, learning outcomes, learning effectiveness

I. INTRODUCTION

There are vast differences between institutions of higher education in the US based on their mission, history, culture, resources and the kind of students they attract. Many smaller institutions, want to be both distinctive, and competitive. On the one hand, they want to maintain their smallness, unique character and campus culture and resist the push for bigger operating budgets, more facilities, higher enrollment and see it as 'academe's shift toward an increasingly corporate, numbers-heavy approach' [1], on the other hand, they must continue to attract students.

Following national trends, most small colleges have increased the use of technology in teaching, promoted blended learning and even supported fully online programs. Many promote themselves as being small and innovative, offering unique educational environments strongly driven by the preferences of students. They attempt to attract students by offering an education that is uniquely personalized and supported by rich interactions with faculty and peers.

The objective of this study is to discuss a blended learning environment at a small liberal arts and sciences college with the goal of contributing to the research literature on smaller institutions. This college, is transitioning from a primarily face-to-face approach to the use of information and communication technologies, to a greater focus on learning rather than on teaching, and to collaborative and active learning as positive goals. The introduction of technology tools such as course management systems and social networking have been at the core of the transformations. This study investigates to what extent, in the opinion of students, the introduction of online methods has improved learning effectiveness, increased engagement and improved satisfaction.

II. WHAT IS KNOWN ABOUT SMALLER INSTITUTIONS OF HIGHER ED

There has been a significant increase in knowledge about Millennial students (those born after 1981), their learning styles, and the ways in which they socialize, interact and succeed in learning. However, little of this research specifically reflects the experiences of students at smaller institutions. Not enough is known about teaching practices at the nation's six hundred and forty-nine small colleges and institutions (with less than 4000 FTE students) and the ways in which they are meeting the needs of students. There is a significant need for fine-grained empirical research of online environments at smaller institutions.

Large institutions, and increasingly, for-profit ones, drive trends in higher education and their experiences are often adopted uncritically. However, as blended and online pedagogies have matured, it has become clear that not all learning environments are the same; much satisfaction with learning with technology depends on student expectations, characteristics, institutional culture, and the resources available. Smaller institutions, which look positively on blended environments, will have to discover the mix of online and face-to-face methods that best fits their own needs.

Research from large institutions has documented that online learning is not simply a new way to deliver education using technology, but in fact has further additional benefits that promote deep, life-long learning. For example, the US Department of Education conducted a systematic search for empirical studies of the effectiveness of online learning and did a meta-analysis of those studies from which effect sizes that contrasted online and face-to-face instruction could be extracted or estimated. They discussed technology mediated learning along a continuum of courses and programs that ranged from simple web enhanced face to face classes, to many varieties of blended and fully online programs. The authors showed that the technology chosen to deliver course content is much less important than the types of learning activities undertaken, the time spent on task, the degree to which the learning pedagogies facilitated student-teacher and student-student interactions, and whether the pedagogy encouraged reflection about what was being learned [2].

Information about smaller institutions is scarce and scattered but a few studies stand out. The annual surveys by EDUCAUSE Center for Applied Research (ECAR) are a valuable source of information. Their national survey Undergraduate Students and Information Technology in the 2008, provided detailed information about the use of technology at institutions of varying sizes [3].They reported how 27, 317 students, nationally, were using technology in courses, their preferences for learning with technology and the behaviors and attitudes towards information technology as it relates to academic and social experiences. Although the number of smaller institutions represented in their sample was relatively small (66.4% of their institutions had over 8000 students), the report provides a comprehensive source of information for comparing technology use across institutions. A second study, Redefining Community: Small Colleges in the Information Age [4] is a report of a symposium on small institutions held in 2001. Using case studies, the authors offered an insightful view of the culture of teaching and learning at several smaller colleges. A third study, Using NSSE to Enhance Student Engagement and Success [5] also used a case-based approach to discuss student satisfaction and effectiveness of teaching methods at several small institutions. These resources were helpful in framing the present study.

III. THE NEED FOR CHANGE

To attract more students many smaller schools have pitched distinctiveness of curriculum, small size and close-knit communities, as positive values. They increase student access by reducing barriers, improving the curriculum and extending additional services. To a large extent administrators at smaller institutions have been successful but are torn between maintaining uniqueness and meeting rising college costs. Increasingly smaller institutions acknowledge that to grow, the imperative for change must come from faculty. Faculty at smaller institutions who have not wholeheartedly acknowledged the urgent need to improve educational outcomes may be a serious impediment to future growth. Many faculty do not recognize how deeply technology has embedded itself into the lives of students and remain skeptical

about teaching with technology. To acknowledge that technology can facilitate learning would require that faculty do something about their own teaching methods; it may mean abandoning the old ways of teacher centered classrooms and adopting more online methods. This may be difficult for some.

An important reason for faculty skepticism is the paucity of information about blended and online programs at smaller institutions. Faculty who are interested in improving learning outcomes for students are not quite sure whether online tools are equally satisfactory in the smaller, face-to-face environments they are successful in and a great deal more evidence is needed to turn their skepticism around.

IV. ADVANTAGES OF BLENDED ENVIRONMENTS

Smaller institutions can draw upon a large and growing literature on blended and online learning. For example, Garrison and Vaughn have observed, that blended environments do not focus on the dualism of either face-to-face or online learning. Rather, they use the convenience of the Internet and web to enhance existing teaching and learning practices while introducing new pedagogies [6]. Nationally, online learning is growing rapidly and many institutional leaders see it as a critical component in the future vitality of higher education. Reporting on a national survey of over 1000 colleges and universities Allen, Seaman and Garrett, discuss blended learning and where it is being used. They ask questions such as 'are blended courses more prevalent than fully online courses (the answer is no)', 'do blended courses hold more promise than fully online courses'. They find that blending may hold truer in smaller institutions which do not offer online courses [7]. In another study, Bonk & Graham note that people choose blended learning for three main reasons——improved pedagogy, increased access and flexibility in teaching and learning, and increased cost effectiveness. Using examples from higher education and the corporate world they discuss blended designs from New Zealand, Wales, UK and the U.S. [8]. Dzuiban, Hartman and Moskal note the differences between the ways our current students, the Millennials, and their predecessors use technology. They observe that the rising expectations of technology-literate students are often difficult to meet leading to declining levels of satisfaction with learning for each generation [9]. Bourne and Moore edited a series of studies arising out of a summer workshop that tied together the five Sloan pillars of quality education: learning effectiveness, cost effectiveness, access, faculty satisfaction and student satisfaction. In their report, they state "now that the digital natives are coming of age, on-ground and online education can no longer stand apart. The blending of the two modes is continuous and unstoppable." [10]. The papers in their collection are useful because they trace the early work in blending at the University of Central Florida , and 'the transformative effects of active pedagogy, inquiry based, resource centered, collaborative, serving community, service and internship learning' and other topics.

In a more recent study, focused on content and design, Picciano shows how blended environments can improve access to learning by meeting the needs of many different kinds of learners. His model entitled 'Blending with Purpose: the Multimodal Model,' is useful for conceptualizing the development of blended learning courses and programs for those smaller institutions who may just be starting out in this modality [11]. In his model, many related aspects of content and design are integrated. Some are familiar, some less so. For example, he shows how to deliver content, how to be mindful about the social and emotional needs of students in an online format, where discussion boards can be used to explore dialectic elements of the pedagogy, how synthesis and evaluation can be reflected in papers, tests, and portfolios, and the role of blogs and journals to promote reflection, among other topics. Picciano' s model is very useful for newcomers to blending as they think through content and design issues and integrate them into courses or programs.

For faculty and administrators, there are many advantages for considering a transition to the blended format but how blended experiences from larger institutions can be accommodated at smaller institutions will depend greatly on faculty. Recognizing the advantages of online methods, and despite many overwhelming challenges, faculty at an increasing number of smaller institutions are turning towards online pedagogies. Most significantly, they realize that when blending is done well, learning outcomes and student satisfaction can increase significantly. Moreover, faculty can use their expertise and time in more flexible ways, can accommodate a greater variety of teaching and learning styles in a single course,

use more variety in assessing work and the college can use scarce classroom, lab and computer spaces, more efficiently.

V. CHALLENGES AT SMALLER INSTITUTIONS

Although many faculty recognize the potential of online and blended learning to enrich and deepen the scope of teaching and learning, mastering new technologies, understanding their pedagogical potential and integrating them into existing face-to-face courses is very perplexing. The rapid pace at which new technologies become available is overwhelming. With the greater focus on teaching, smaller departments, limited staff and resources at many smaller institutions, keeping up with online technologies/pedagogies are daunting. Pioneering faculty who want to go 'blend' must spend an enormous amount of time (which they do not have) since they know that they are responsible for both the entire course's content and design.

New tools for learning may energize innovative faculty, but the expectation of some parents and students is that teaching occurs in small classes in highly interactive ways. Many students expect to meet regularly in the classroom environment for lecture based classes; they may use a significant amount of technology in social interactions, but for academic work the expectation is for only moderate use. Teaching in blended environments may pose additional threats. The majority of students learn the intricacies of Facebook, wikis, Twitter, and blogs, relatively quickly; these students are moving teaching and learning in entirely new and exciting directions [12]. The availability of so much technology, however, raises the hackles of stakeholders who have to pay for them and keep them updated. In addition, there may be students in the class, as at any institution large or small, who may not be ready for either blended or online learning. These students may encounter problems with self-efficacy, time management, academic preparation, and independent learning. Some may even lack the simple technology and Web skills that course management systems require.

Thus, for teachers who are open to the idea of a technology mediated course, the big challenges are finding the time, creating a balance between the expectations of the students, adhering to the prevailing culture of the college, and their own needs to experiment with new pedagogies. Barriers to widespread shared experiences with blended methods prevail at many smaller schools. Expertise is limited, instructional designers few and far between and although institutional support for online learning has increased, when support is available, it is in the form of stipends and course release. Monetary incentives, while highly desirable, remain ineffective because they continue to place the burden of learning on time constrained faculty.

VI. DETAILS OF SURVEY METHODS

In this paper we discuss how students use technology for learning, and student satisfaction and perceptions about online and blended environment at a small college of liberal arts and sciences. The results of two surveys conducted during fall 2008-2010 are shared to document 1) how online learning has progressed, and 2) to measure student satisfaction and perceptions of blended methods.

The college is located in a large urban area, surrounded by many elite institutions of higher learning. It offers programs in the humanities, natural and social sciences, education, business, nursing, and a few master's degrees. There are roughly 3000 undergraduate students, the majority are registered fulltime (98.3%) and live on campus (74%). In 2010, the largest majors were in psychology, business management, English communication, biology, history, education, and art. The majority of baccalaureate programs meet face-to-face and increasingly, many of them are offered in a blended or web enhanced format. In 2007 the college introduced seven fully online summer courses; these have now grown to ten courses with additional students. There is also one fully online program of studies, offered to adult learners.

Two surveys were conducted. In fall 2008 we used a survey instrument developed by ECAR for its national study [3]. Two hundred and forty students across the college were asked how they used

technology in courses, their preferences for how much technology is used, and attitudes towards learning with technology. In addition, we asked students how satisfied they were with faculty using online methods and how effective their teachers were in blending technology into face-to-face classrooms. Sixteen faculty members in varied disciplines gave up a class period to allow the survey. We present selected results from the first survey in Section VII.

A second study used a different approach; it combined student evaluations with a survey. Starting in fall 2008, and ending in fall 2010 we looked at student evaluations of a course offered by this instructor and a follow-up survey of students in the blended classes taught by the instructor. The objective was to specifically understand whether or not students were motivated, engaged and satisfied with blended learning. The course, Problem Solving with Computers, used problem-based learning methods combining computer software, statistics and data analysis. Students in the group represented nine majors and ranged in age from 18-23, majoring in the natural and social sciences, and the humanities. We used online, anonymous student evaluation of this faculty member for the course taught in fall 2008-2010. The results of student evaluations for fall of 2008, 2009, and 2010 are shown. This course is an elective one, and in keeping with this small college's tradition class is capped at 21 students, and course evaluations are voluntary. The printed survey asked questions about the blended methods used in class and students responded anonymously. The qualitative responses of this survey are shared in Section VIII.

VII. LEARNING WITH TECHNOLOGY AT A SMALL INSTITUTION

A. Social Networking has been Positive for Blended Learning

In the national study by ECAR, 33% of students spent eleven to twenty hours online per week for academic work, jobs, and recreation (ECAR, 2008). In this residential college, 35% of students spent the same amount of time online (N=240). Social networking technologies (SNS) have been a positive force facilitating student comfort with blended courses on this campus. Ellison [13] noted that SNS have changed relationships among Millennials. She observed that sites such as Facebook, are leading to significantly more online communication and fewer face-to-face contacts. Among students, Facebook is used primarily for social networking, but faculty on this campus has witnessed more using Facebook for interactions with instructional assistants and peer tutors. Students organize study groups, conduct team project, write labs reports, and plan sport and club activities. Traditional 18-24 year old students at this college use SNS for many reasons—to manage extended social networks, acquire information about people they meet, and find new ways of connecting over shared interests, problems and experiences. SNS are also used to mobilize people, create and display content to a larger audience. In this institution, faculty comment that students, comfortable with Facebook, develop familiarity with course management systems, Web 2.0 tools and online collaboration with significant ease and are often more open to learning in blended classrooms.

B. Wide Use of Course Management Systems

Discussions with the instructional technologist indicated that more than half of all courses at this college are web enhanced. In her estimation, there are thirty blended courses and, less than twelve fully online courses. Course management systems are used across the college, but how it is used varies significantly.

Blackboard course management system (CMS) was first introduced in 2003 to enhance face-to-face learning. With the hiring of younger faculty (often more willing to experiment with new pedagogies/technologies) both web enhanced and blended courses have grown. In fall 2009, sixty-six percent of the students (N=240) noted that they had used CMS. Twenty-six percent noted that using CMS was required. One third of students used Blackboard weekly (33%), or several times a week (26%). Ten percent never used CMS during the semester.

In fall 2010, a similar quick poll showed that eighty percent of students had used CMS. They indicated that in most classes CMS are used for posting course materials, exchanging email, and engaging in

threaded discussions, and these classes can be categorized as web enhanced courses. In blended classes, on the other hand, most faculty used CMS with greater sophistication. For example, in the course to be discussed in later sections, CMS is used to create assignments, submit student work, and receive feedback. In addition, more asynchronous tools such as blogs, threaded discussions, and online journals are used. Students observed that in blended courses there is more independent learning with YouTube, podcasts and web resources. Students also interact more with each other using Google docs, blogs and wikis. Attendance in face-to-face class is required but class time is used differently, lectures are limited. Collaboration outside class is expected and team projects, surveys and polls are frequently mentioned. Many blended classes are designed to increase access, meet the needs of students who are doing internships several times a week, are engaged in service learning off campus, or otherwise unable to meet frequently in a physical classroom.

C. How Students Use Technology for Learning

There were similarities in how students view the use of technology at this institution and students in the national survey by ECAR (Table 1).

Learning Preferences	*Small College*			*ECAR Study*		
	Yes (%)	No (%)	Don't Know (%)	Yes (%)	No (%)	Don't Know (%)
I like to learn by running Internet searches	86.2	10.8	2.9	80.2	13.2	6.6
I like to learn through programs I can control such as video games, simulation	45.8	37.9	16.2	50.8	33.5	15.6
I like to learn through contributing to websites, blogs, and wikis	43.8	40.4	15.8	35.5	46.9	17.5
I like to learn through text-based conversations over e-mail, IM, and text messaging	42.9	43.8	13.3	44.3	41.2	14.5
I like to learn by creating or listening to podcasts and webcasts.	21.2	57.9	20.8	29.0	45.2	25.8

Table 1. How Students like to use technology for learning

The preference for using Internet searches is ubiquitous, and students appear similar at small and large schools and evenly divided between yes/no in the use of email, IM and text messaging (Table 1). Podcasts and webcasts are fairly new at this college and not used widely. Within this small college, there are equal numbers of students who like email, IM, text messaging, blogs and wikis and those who do not like using them, they are evenly split. From these responses it appears that a preference for face-to-face classes remains strong.

We asked students how much technology they preferred in courses. Fifty-nine percent of students in the national survey preferred 'a moderate amount of technology for learning'. In this college fifty-eight percent preferred the same (Table 2). Most did not view the Internet as a "technology." Most students' overwhelming preference called for a 'moderate' amount of technology requiring a balance between CMS and face-to-face methods. Students in the disciplines of business, information technology, and education, in general, preferred more technology and they made clearer distinctions between learning face-to-face and online. Learning online included more independent learning and collaboration, greater use of multimedia, and more out of class learning with wikis, blogs, twitter, Google docs and podcasts.

	Small College		ECAR Study	
	%	N	%	N
Courses with no information technology	2.1	5	1.9	NA
Courses with limited information technology	11.3	27	13.9	NA
Courses with moderate levels of information technology	58.3	115	59.3	NA
Courses with extensive use of technology	21.1	74	21.4	NA
Courses with exclusive uses of technology	7.1	17	3.6	NA
Total	100	238	100	

Table 2. Student opinions on how much technology is preferred in courses

D. Student Satisfaction with Learning with Technology

Students noted that using technology for learning offered—greater convenience, time shifting, better pacing, more access, and ease of communication, but, they still prefer the "high-touch" of face-to-face teaching. Some noted that faculty in blended classes had 'unrealistic' expectations. Teachers expected that students would read voluminous amounts of materials, post responses to discussion boards regularly, participate in class, and do research independently and online. Blended classes were 'more work' for students. They recommended cutting back on the use of technology and some of these Millennials remain only slightly satisfied with the online modalities.

Male students had a greater preference for learning with technology in this study and 57 percent agreed or strongly agreed that the use of technology in courses improved learning. In contrast, 41% of female students felt the same way. Sophomores, juniors and seniors, doing internships or working off-campus especially liked blended courses which required fewer face-to-face meetings, often only once a week for 2 or more hours (more than 53%). Senior students were very satisfied with using online discussions, journaling and blogs with faculty and peers.

Interestingly, more than eighty percent of the students believed themselves to be skilled or very skilled with Blackboard and other online tools and well prepared for the workplace. Satisfied students observed that blended courses facilitated frequent email between them and professors, faculty joined students in discussion boards, chat rooms and twitter. Moreover, online learning offered the potential for providing more flexible access to content and instruction from any place at any time. Many students mentioned that online interactions provided opportunities for continuous improvement of homework and papers. Some professors, students observed, were as active online as they were in the classroom, and they made a very positive impact on student engagement and learning.

E. Learning Effectiveness and Student Engagement

We asked students whether information and learning technologies affect engagement with course materials. Contrary to expectations, the majority seemed to think they did not. Roughly 37 percent agreed or strongly agreed that technology increased engagement. In contrast, forty-one percent remained neutral (undecided?) and twenty-one percent strongly disagreed and disagreed, that using technology increased engagement. In a research study done by Myers she noted that faculty and students often differ in academic goals and paying attention to student preferences creates richer learning environments. For example, she found, students emphasized career preparation, scientific reasoning, personal development, arts and cultural appreciation. Faculty, on the other hand, often placed significantly more importance on critical thinking and mastery of discipline content [14]. The significant number of undecided students in this study requires more understanding. It suggests that among other factors, faculty may have to face additional challenges to recreate the desired face-to-face methods with online technologies. Student goals for understanding course materials through faculty presentations, guidance, conversations may not be well enough developed with online tools. It makes one pause to consider what intervening factors prevail—

how effectively, how much and where online methods are used. Perhaps, for certain disciplines, a greater amount of face-to-face methods will be the preferred primary modality for some time to come until these issues are understood.

VIII. EVALUATION OF A BLENDED LEARNING COURSE

A. Nature of the Blended Course

The second survey had two components. The first looked at course evaluations for this faculty member teaching a blended course over a three year period. The course, Problem Solving with Computers, builds data analysis skills for real world problems by integrating software applications, statistics, and research methods as organizing principles. Students determine what resources are needed, assume responsibility for research, access materials online and obtain instructions and handouts using CMS. They integrate information from varied disciplines and work closely in teams using Google docs and its project management software. Small group collaborative work is central to problem-solving assignments. Using the blended learning model described in Section VII (B) is extremely useful. The pedagogy integrates seemingly opposite approaches, such as face to face and online experiences, formal lectures and informal experimentation and guided and independent learning. Satisfaction depends on teacher led directed instructions, reliance on self-direction, digital resources and close connections with peers.

B. Student Satisfaction and Effectiveness of a Blended Course

Student evaluations of the blended course Problem Solving with Computers shows that those students who enrolled for this elective course responded very positively to the course, the effectiveness of the pedagogy, the level of challenge course materials offered and gains in knowledge[Table 3]. Class size is capped at 21, and only a few students completed online evaluations in 2008, thus the results for 2008 are not very reliable. However, the majority of students completed evaluations in 2009-2010, and their evaluations show continued satisfaction with learning in a blended modality. In this class the instructor focused on building on what students know (e.g., how Facebook can be used for an online survey), engaging students in discussions of real world problems (e.g., how Excel is used to estimate the disappearance of wetlands and forests), how large national surveys and polls (Pew, the census, and the Gallup) are conducted. The effectiveness of combining challenging face-to-face discussions with online self-learning components and skills remains a significant challenge in this course.

C. Learner Participation and Interactions in a Blended Course

The greatest strength of the blended course was the level of interactions that combining face-to-face methods with online tools permitted (Table 4). Students were particularly engaged in using Google Docs (spreadsheets, word, and project management templates), online surveys and polls (Google forms), and a wiki. The course was designed to integrate what was demonstrated in class with follow up assignments done online both independently and in groups. The challenges of group work for busy students are formidable and tools for collaboration were introduced within the first month. In addition, the instructor offered both face-to-face and online office hours. Access to the instructor was a primary goal since many students lacked confidence in using statistics, math and computer software. Class time was carefully planned to allow the first half hour for questions, comments and reflections on problem solving 'adventures.' Students in the class, mostly juniors and seniors, were highly motivated, and skilled in time management and self-efficacy, which led to higher levels of satisfaction, for both instructor and student. As the comments in the next section will show, convenience and challenge were the highest student preferences.

		2008					2009					2010				
	Question Text	N	Str Agree	Agree	Uncert	Disagree	N	Str Agree	Agree	Uncert	Disagree	N	Str Agree	Agree	Uncert	Disagree
Satisfaction with course	Overall, the course was a positive experience	10	70%	30%	0%	0%	18	27%	50%	0%	22%	15	20%	68%	4%	8%
Effectiveness of pedagogy	Effectively communicated the content of the course	10	60%	40%	0%	0%	18	22%	44%	11%	22%	14	25%	58%	8%	8%
Level of Challenge	Course challenged my abilities	10	70%	30%	0%	0%	18	33%	61%	0%	5%	15	12%	72%	0%	16%
Gain in knowledge	Expanded my knowledge of the subject	10	70%	30%	0%	0%	18	38%	50%	11%	0%	15	28%	64%	0%	8%

Table 3. Student Satisfaction and Effectiveness in the Blended Class

		2008					2009					2010				
	Question Text	N	Str Agree	Agree	Uncert	Disagree	N	Str Agree	Agree	Uncert	Disagree	N	Str Agree	Agree	Uncert	Disagree
Learner Participation	Encouraged class participation	10	90%	10%	0%	0%	18	50%	44%	5%	0%	15	32%	60%	8%	0%
Interactions with Faculty	Encouraged students to ask questions	10	90%	10%	0%	0%	18	50%	50%	0%	0%	15	44%	52%	0%	4%
Access to Instructor	Instructor available outside of class	10	90%	10%	0%	0%	18	55%	33%	11%	0%	15	20%	64%	16%	0%
Interactions with students	Encouraged expression of differing viewpoints	10	80%	20%	0%	0%	18	44%	38%	0%	5%	15	16%	44%	20%	0%

Table 4. Participation and Interaction in the Blended Class

D. Student Responses to Learning in a Blended Environment: Results of the Qualitative Survey

Below we present the results of student responses to the second survey. In this part of the study students in three classes taught by this instructor were asked to respond to questions about the level of satisfaction with blended methods, the effectiveness of blending, and asked to rank perceptions about the benefits of blending. Students were also asked how the blended methods used, could be improved.

1. Students beliefs about blended courses: appropriate for some, but not all disciplines

Fifty-seven percent of those answering this survey liked blended formats while forty-two percent of the students said they preferred primarily face-to-face methods. As the comments below show, not all students are whole-hearted and enthusiastic supporters of computer mediated learning for all courses in the college. Student's comments below indicate a range of viewpoints. For example,

> "I think that learning online gives us great practice for the real world and helps us to work in all kinds of work environments."
> "This way of teaching and learning only benefits students because the pace of learning for many students is accommodated."
> "Material relating to computer sciences is complicated at times and the face-to-face method allowed for greater depth of knowledge and understanding. Walking through the material with a professor allows for greater understanding of its application."
> "Completely turning to online format for all classes would be unproductive for people who learn better in a lecture environment with a live individual to bounce questions off of. Also, I believe that learning face-to-face with a teacher is more conducive to the development of ideas and creativity."

> "I don't know how much I'd actually learn (in a blended format). I learned about using computer applications in this course, but if it was used in say, English, I would probably not understand the bigger idea."

2. Student perceptions about the benefits of blended learning

Students were asked about the benefits of on-line learning. They responded,

> "I prefer the blended course because I still ask my questions, but I can also get experience working on my own. I would not have said that before this course, but I feel like I learned a great deal by having to work on my own online."
>
> "I am a visual learner so I like to see things done as an example. I do not think I could figure out how to use Excel on my own, for example. But seeing it projected on the screen and doing it as a class was very helpful."
>
> Students commented that when face-to-face and online methods are combined, they are able to maintain effective interactions with professors without the restrictions of fixed office hours.
>
> "No, I wouldn't be concerned (about more blended courses) as long as there was still the face-to-face interaction with the professor. I think it does help because face-to-face allows you to create a connection with your professor or a teacher-student relationship in which you feel as though they genuinely are making an effort to get to know your learning style."

Business students emphasized that blending facilitated greater interactions with peers, a great benefit for successful teamwork.

> "The best part of blending was the ability to do group and team work, read student postings and ask each other questions."
>
> "Blended work worked well and made me take the initiative to learn on my own as well as in class."

Some students responded that blended courses demand, "more time than lecture courses and writing thoughtful responses to questions online, required "double" the amount of time." Some students felt that blending was not desirable because professors posted "unrealistic" amounts of reading, but spent very little time in class discussing online work.

> "I think it would be better if we used the blended method but had less homework. Group work is very helpful in this class so maybe having less homework but more group assignments would be better."
>
> "I feel as though I learned more because I personally had to figure out things on my own and I used cognitive learning. There was a lot of work assigned; maybe just getting rid of a few problem sets will help. Such as, instead of giving 3 problems from each chapter maybe just give 2."

3. Did blending affect learning outcomes?

More males than females agreed or strongly agreed that blended environments improved learning. Female students (the majority in three classes) were positive about benefits but not all were sure whether learning improved as much as convenience. For example, a male student responded,

"I think that learning in the online format allowed for greater trial and error. What we learned in class through face-to-face meetings was applied to our work online and that translated into real-life individualized learning."

A female student responded to the same question,

> "Yes, it was effective to combine online and face-to-face methods. It gave us a chance to work in a group and independently as well, in class and outside class."

We asked students to rank how blended environments improved learning effectiveness. Both male and

female rankings were identical and agreed that blended methods improved learning in the following ways. 1) Being able to ask questions in the face-to-face class. 2) Makes it easier to learn how to solve problems on your own, 3) and teachers can explain instructions better when two modes prevail.

> "Students are more comfortable learning on their own and at their own pace rather than being in a class where everyone is expected to go at the same rate."
>
> "If you are a fast learner, you do not have to wait for those who are not. You can go at your faster pace and learn more, faster. I preferred the blended format because I felt that I knew much of the material learned in class, and could do it faster on my own, than the pace we went in the class."

We asked students if their instructors had prepared them well for online learning. Students majoring in education and psychology responded positively; their instructors had provided them sufficient training to manage blended environments well.

> "The blended model is most commonly used in my General Psychology course. My teacher does an excellent job of integrating face-to-face teaching with online work, as well as debates, guest lectures, and class discussions."
>
> "I don't think I would be concerned if classes became blended as long as it was very structured and organized."

Some students observed that blending improves many aspects of learning--imposes more self-direction, reflection, greater independence, and more skillful time management. Juniors and seniors stated that learning online independently is significantly different and leads to impressive learning outcomes. They believe that learning online is more rigorous—both teachers and students need to have very clear objectives, high academic self-efficacy, manage time well, expect high returns for time invested, and have technology skills.

Finally, we asked how the blended course could be improved. Students ranked suggestions as follows: no change is needed (24%), clearer instructions (21%), do more work in class (16%), do more work online with shorter class meetings (10%), use more multimedia in teaching (7%), provide more interactions with the teacher (5%), more clarity on due dates (4%), and I don't know (13%). In sum, the blended methods used by this instructor increased student satisfaction, but the significance of the face to face component remained strong in all evaluations. The challenge then is how to recreate the benefits of the face to face experiences in an online environment.

IX. SUMMARY

Our goal was to provide empirical evidence of blended learning at a smaller institution of higher education in the U.S. Using surveys and student evaluations we showed that online and blended and pedagogies have made significant inroads and students at smaller schools are not very different from those at larger institution in terms of preferences for learning with technology. There are skeptics even among Millennial students—some students noted that the mix of face-to-face and use of technology was interesting and challenging and kept them engaged. Others observed that a teacher's presence is more important. Given so much variation in learning preferences, faculty at this small college, know that teaching with technology is inevitable but creating blended courses and programs remains very challenging. They are very cognizant of the need of the college to remain competitive and increase access to more students and to their own needs to balance the extreme demands on their time. Students indicate that not all courses lend themselves to teaching with technology. At the same time, there is recognition, across the institution, that not all courses require the same level of face-to-face interactions that are common at small liberal arts and sciences colleges.

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XI. REFERENCES

1. **Fain, P.** Is Less More at Small Colleges? *The Chronicle of Higher Education* (September 2005).
2. United States Department of Education, *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies,* Washington, D.C.: Office of Planning, Evaluation, and Policy Development, 2010.
3. **Salaway, G., Caruso, J.B., & Nelson, M.R.** The ECAR Study of Undergraduate Students and Information Technology. *Educause Research Study* 8 (2008). http://www.educause.edu/ECAR/TheECARStudyofUndergraduateStu/163283 (accessed November 30, 2009).
4. **Twigg, C.** Redefining Community: Small Colleges in the Information Age. The Pew Symposium on Learning and Technology (October 9-10, 2001). http://www.eric.ed.gov/PDFS/ED470334.pdf (accessed November 30, 2009).
5. National Survey of Student Engagement. Using NSSE to Enhance Student Engagement and Success: Lessons from the Field. Assessment Institute. (November 5, 2007). http://cpr.iub.edu/uploads/Assessment Institute 2007 NSSE JK GDK rev handouts.pdf (accessed November 30, 2009).
6. **Garrison, D.R., & Vaughan, N.D.,** *Blended Learning in Higher Education,* San Francisco: Jossey-Bass Wiley Imprint, 2008.
7. **Allen, E., Seaman, J., & Garrett, R.,** *Blending In: The Extent and Promise of Blended Education in the United States,* Needham, MA: Sloan-C, 2007. http://sloanconsortium.org/publications/survey/pdf/Blending_In.pdf
8. **Bonk, C., & Graham, C.,** *Handbook of Blended Learning: Global Perspectives, Local Designs,* San Francisco: Pfeiffer Publishing, 2005.
9. **Dziuban, C., Hartman, J., & Moskal, P.** Blended Learning. Educause Applied Research. March 30, 2004. http://www.educasue.edu/ecar (accessed November 30, 2004).
10. **Bourne, J., & Moore, J.C.,** *Elements of Quality Online Education: Into the Mainstream*, Needham, MA: Sloan Center for Online Education, 2004.
11. **Picciano, A.** Blending with Purpose: The Multimodal Model. *Journal of the Research Center* for *Educational Technology* 5(1): 4-14 (2009).
12. **Cardine, S.** Teaching Tube: Is Education Ready for YouTube? *Converge* (Spring 2008). http://media.centerdigitaled.com/Converge_Mag/pdfs/issues/ConvergeSpring.pdf (accessed November 30, 2010).
13. **Ellison, N.** Reshaping Campus Communication and Community Through Social Network Sites. Educause Center for Applied Research ECAR. 2008. http://www.educause.edu/ecar (accessed November 30, 2009).
14. **Myers, C.B.,** Divergence in Learning Goal Priorities Between College Students and Their Faculty: Implications for Teaching and Learning. *College Teaching* 56: 1 (Winter 2008).