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BLENDED LEARNING: UNDERSTANDING THE MIDDLE GROUND BETWEEN TRADITIONAL CLASSROOM AND FULLY ONLINE INSTRUCTION

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ABSTRACT

Blended learning is any combined use of electronic learning tools that supplement but do not replace face-to-face learning. This article is about how two researchers are trying to comfortably and logically place blended learning somewhere in the middle of two extremes—traditional classroom at one end and fully online distance learning at the other end. Twenty-two faculty and 38 students at the State University of New York Institute of Technology (SUNYIT) responded to a survey on perceptions held about blended learning. Responses from faculty revealed enrollment as a major factor in the increased use of this course design; quality of assignments and course grades that are as good or better; and courses that are producing improved writing and discussions. While the design is easy to use, faculty reported more work on their part and some loss of traditional classroom dynamics. Students reported flexibility, convenience, and independence as advantages, along with confusion, reduced social interaction, and more work as disadvantages. However, there appears to be a net economic gain for students as tuition and financial aid remain unchanged while expenditure in time and travel are reduced. Course management technology and course design recommendations are provided for faculty consideration. The boundaries between traditional classroom instruction and fully online distance learning are blurring. As course design moves more toward a fully online look-alike, expectations for a smoothly operating course will be higher for both faculty and students.

INTRODUCTION

This exploratory research is a result of an untenured professor designing for the first time a course using the blended learning format defined as some combination of traditional classroom and computer-based instruction. After discussion with several seasoned professors, it became apparent that "if you have seen *one* blended course—you have seen *one* blended course." The variation in both course design and usage of course management technology among interviewed faculty gave rise to a literature search and a survey of both faculty and students in the School of Management and the School of Nursing and Health Systems, State University of New York Institute of Technology (SUNYIT), Utica, New York.

This article first denotes the research questions acting as a basis for a survey of a sampling of faculty and students engaged in the execution of blended learning. A brief background of the concepts behind blended learning is provided as a context for evaluating the results of this study. The research method is described in terms of the number and scope of faculty and students participating.

Blended learning literature is used to substantiate the findings of the study and includes such topics as the characteristics of blended learning courses, typical uses of the traditional classroom, instructional material placed on line, perceived advantages and disadvantages to faculty, faculty perception of student reactions, student responses to blended learning and researcher recommendations for making the best use of both worlds—classroom and computer-based teaching and learning.

The article concludes with recommendations and questions to ponder as professors strive to figure out where blended learning courses fit into the array of choices in instructional design.

RESEARCH QUESTIONS

How is faculty using course management technology to reach a balance between traditional classroom and fully on-line courses? How do class participation requirements, such as class attendance, change as instructional material and student requirements move from the classroom toward a computer-based venue? What is driving the move to blended learning managed through a course management tool? Is it enrollment, competition, economics, other factors? Are there observed differences in the quality of assignments posted by students or in student test results in blended learning courses compared to traditional classroom or fully on-line courses? How do students rate blended learning as a method of mechanical (technology) delivery of instructional material or as a contextual (content) method of instruction? To what extent do students perceive delivery of blended learning through a course management tool as aiding or hindering their learning experience? What do students perceive as advantages and disadvantages of blended learning?

BACKGROUND

Corporate training and development literature introduced the terms "blended learning," "flexible learning," and "distributed learning" and defines these terms as courses being comprised of any combined use of electronic learning tools that supplement but do not replace face-to-face learning [1]. Sparrow introduces the concept of "integrated learning" as any mix of delivery media that integrates online media with traditional instructional approaches [2], while Gee and Farb discuss the concept of "e-learning" as instructional content or learning experiences delivered or enabled by electronic techniques [3].

Russell et al. defines hybrid learning as an educational delivery model that combines face-to-face classroom instruction with computer-based learning [4]. It is not a new concept—just a new term [1]. The earliest example of hybrid learning is when the first teacher assigned the first homework to students [5]. The presence of these several synonyms for some combination of classroom and computer-based instruction introduces confusion in understanding the wide variance in how blended learning courses can be designed and delivered.

According to Russell et al., "Web-enhanced learning" can be something as simple as posting a course syllabus on a faculty member's Website [4]. Duhaney notes that these various forms of blended learning embody the following basic assumptions when using technology and traditional face-to-face instruction to facilitate teaching and learning [1]. A combination of pedagogical approaches is used to produce optimal learning outcomes; a mixture of modes of delivery is used to reach the educational goals of the teacher and the learning outcomes of the students; course design may be any combination of instructional technology and instructor-led teaching tools and there is mixture of learning and doing. Walsh calls the learning and doing approach in the corporate world a 3-D Training Solution—learn (knowledge), practice (demonstrate skills) and do (try out new skills) [6].

Blended learning is growing in demand and popularity. About 77% of U.S. corporations use blended learning, which accounts for 15.5% of training and development modalities in industry; it is projected to double by the end of 2006 [7]. In higher education, Sener cites a 2001 survey conducted by Green in which 21% of all college courses delivered blended learning through the use of course management tools [8]. He also notes that the demand and popularity originate in the need to accommodate learners who seek "in-person" versus a fully online learning experience while desiring maximum flexibility and convenience. Demand and popularity are also rooted in the need to be competitive for enrollment with other educational institutions [4], the economic climate to keep people in the workplace instead of the classroom [2], and as a replacement or alternative to fully online learning [1].

RESEARCH METHOD

The survey enclosed in Appendix A was distributed to all 36 faculty in the School of Nursing and Health Systems and the School of Management at SUNYIT in December 2004 and again to non-respondents in March 2005. Five responses (all tenured) from the 11 full time faculty members in the School of Nursing and Health Systems represent 14 blended courses and 240 students based on an average class size of 20. Seventeen responses (6 of whom are tenured) of the 25 full time faculty members in the School of Management represent 26 blended courses and 410 students based on an average class size of 16 students. Therefore, the combined 22 survey responses (11 tenured) from 36 faculty members in two schools represent 40 courses and first-hand knowledge of the performance of approximately 650 students in blended learning courses.

The survey enclosed in Appendix B was distributed to a sample of 54 students in four blended learning courses taught by the researchers within the School of Management in December 2004 and March 2005. Two courses were cross-listed for graduates and undergraduates and two were purely graduate or undergraduate. The survey was delivered online in two courses and on paper and in class for two courses. The response rate for those distributed on paper and in the classroom was 26 (86%) and the response rate for those posted electronically was 12 (50%). A total of 38 students shared their perceptions of blended learning. Seven of the students were graduates and the remaining 31 were undergraduates. To compensate for the small student sample size, the faculty survey sought faculty perceptions of how students are reacting to blended learning.

The unit of analysis in this preliminary investigation is the design of blended learning courses with attention on the types of instructional material delivered through instructional technology and the classroom as well as the response of both faculty and students to such delivery. Analysis is qualitative and descriptive.

FACULTY SURVEY FINDINGS

Distribution of Blended Learning Course Material by Technical Delivery Modality

Blended Learning Light is equivalent to the Web-enhanced instruction described by Russell et al. [4]. As shown in Table 1, three of the 22 responding faculty use the "light" approach in which a course management tool is used to post course assignments, course instructions, slides, and mini-lectures. One of the three uses the space to organize group projects related to course material. Within the use of this modality, the traditional classroom is still the major instructional delivery mechanism. The electronic postings are viewed as a course enhancement.

Table 1. Distribution of Blended Learning Course Material by Technical Delivery Modality

Course material	Blended Learning Light (3)[a]	Blended Learning (13)[a]	Blended Learning as Fully Online Look-alike (6)[a]
Assignments	1	13	1
Instructions	2	10	6
Slides	1	8	5
Mini-lectures	1	8	5
Tests		10	6
Discussions	1	11	6
Other	2	1	

[a]Number of 22 responding faculty using each modality to distribute course material.

At the other extreme of traditional classroom teaching and learning, the State University of New York (SUNY) has for several years supported a fully online asynchronous distance learning format known as the SUNY Learning Network (SLN). By design, the traditional classroom is replaced by computer-based instruction for distance learners.

All of the 22 faculty members in this study have experience with the SLN course design and technology. Therefore, 6 of the 22 have chosen to design their blended learning courses using the course management technology as SLN Look-alikes (noted in this article as Blended Learning as Fully Online Look-alike). Table 1 displays the instructional material delivered by the six faculty survey responders. However, since blended learning courses at SUNYIT are made up of both on-campus and distance learners, all six survey responders make classroom meetings available to blended learning students in this "look-alike" approach as a supplement to the fully online environment. At this point readers can begin to discern the confusion surrounding the actual design of blended learning courses.

According to Duhaney, education is best accomplished face-to-face and blended learning is changing the distance-learning model by integrating the advantages of face-to-face classroom with the positive characteristics of distance learning [1]. Sparrow points out that the appeal of blended learning is the modality mix that capitalizes on the strengths of each [2]. The use of course management technology for blended learning is an ideal example of this evolving phenomenon. In the middle of the continuum between traditional classroom teaching and learning, the course management technology is the holding place for instructor-led

delivery of some but not all educational materials and orchestration of some but not all student interaction within the course. Table 1 captures three variations in blended learning course design and delivery. Blended Learning Light on the left, Blended Learning as Fully Online Look-alike, on the right, with a compromise approach in the middle noted simply as Blended Learning. These three approaches are congruent with the "any combination of instructional materials" noted by Russell et al. [4], Sparrow [2], Walsh [6], Duhaney [1], and Oakes and Green [5].

When the distribution of instructional materials in Table 1 is compared to the literature, the opportunities for blended learning course design are many. Russell et al. note the use of blended learning (in their words, hybrid learning) course technology to conduct threaded discussions, complete and post assignments, grade student work and provide feedback, allow students to view and critique the work of peers, and access required reading material electronically. Walsh adds to the list of opportunities mini-lectures, surveys, pre/post tests, course handouts, instructions, tips and hints [6]. Other possibilities from Duhaney include video and audio streaming, conferencing by phone, collaborative group work, and a place for casual student communication [1]. Oakes and Green further suggest the ability to tap into help from either the instructor or fellow students [5]. Lastly, Gee and Farb include interaction that is live (synchronous) or at a time convenient to the learner (asynchronous) [3]. Any combination of these modalities may be integrated into traditional classroom instruction.

Impact on Classroom Attendance Requirement and Course Enrollment

Table 2 demonstrates the impact blended learning using course management technology is having on classroom attendance requirements.

In the category of "No Change," 13 faculty respondents reported requiring traditional classroom attendance. Four reported giving students the option to

Table 2. Number of Faculty Reporting Blended Learning Course Attendance Requirements

Attendance requirement	Blended Learning Light	Blended Learning	Blended Learning as Fully Online Look-alike	Total
No change	3	8	2	13
Given option		3	1	4
Certain minimum # classes		2	2	4
Certain students			1	1

attend class. Three of the four faculty hold class for anyone who attends. One of the four holds a special tutoring session by conference call every other Saturday morning for any students who wish extra help. Four faculty reported some minimum amount of classroom attendance such as a lab every other week, required attendance when guest speakers address the class, or adjusted attendance hours in the classroom in proportion to the amount of work performed online. Certain students are designated for more frequent attendance (such as every other class) when a particular level of grade indicates the student needs face-to-face guidance or certain students are not familiar with the field of study represented by the course.

Blended learning courses impact enrollment through the ability of SUNYIT to accommodate in a single course design both distance learners and those students who desire more in-person instruction. When distance-learning students participate in either the Blended Learning or the Blended Learning as Fully Online Look-alike version of a course, attendance is generally waived. Table 3 represents the impact blended learning using course management technology is having on enrollment at SUNYIT.

Nine faculty reported *minimal* change in course enrollment especially if the course is a required part of the curriculum, the course is needed to graduate, or when students are enrolled before they are aware the course is available in the blended learning format. Three others reported *somewhat* of an increase, with one noting that the use of the blended learning approach in elective courses had just recently begun. Therefore, it is deemed too early to measure the impact on enrollment in some courses. Another six faculty noted that they are *not aware of any changes* in enrollment. Of the four faculty who reported that enrollment has been *greatly* influenced, one noted that distance learning is an apparent preference and the blended learning approach affords an opportunity to still "go to school from afar" even when the course is available through a course management tool other than the fully online format.

Table 3. Number of Faculty Reporting Impact of Blended Learning on Enrollment

Enrollment impact	Blended Learning Light	Blended Learning	Blended Learning as Fully Online Look-alike	Total
Minimally	1	6	2	9
Somewhat	1	2		3
Greatly		2	2	4
Unknown	2	2	2	6

Impact of Blended Learning Courses on Quality of Assignments or Grades

Regarding the quality of assignments posted by students in blended learning courses, 19 (86%) of the responding faculty reported no change (interpreted as being as good as) while three reported an improvement. Observations from those three included: more depth of discussions; more effort poured into assignments; better organization of submitted assignments; more timely submission of assignments since discussions have documented start and end dates and writing assignments have specific due dates; more follow-up discussions after a classroom session; and more emphasis on the textbook when application of readings is an assignment or discussion criterion.

Regarding impact on results of testing or course grades, 20 (91%) of the responding faculty reported no change (interpreted as being as good as) and two of the responding faculty reported improvement in the results of testing or course grades. Those two attributed the difference to writing improvements when students are outside class with the benefit of spell checker, grammar checker, and assistance from a campus learning center for such services as proofreading. Another observation is that discussion grades are going up when a portion of the final course grade is placed on meeting a certain minimum set of discussion criteria.

Swan notes that the distribution of grades and achievement of learning outcomes in computer-based learning are equivalent or better than traditional classroom learning and instruction [9]. It appears the improved writing and improved participation in course discussions are two positive byproducts of blended learning course design, at least according to the findings of this study. In the absence of experience with fully online distance learning, a faculty member could easily deduct that these attributes are early signs of the superiority of blended learning over any other form of learning. However, the researchers in this study have experience with distance learning and hasten to note these attributes are not unique to blended learning courses. Herein lies another source of confusion when one attempts to distinguish blended learning from distance learning course design.

Potential and Actual Faculty Response to Blended Learning Courses

Russell et al. report on a pilot program among 13 volunteer, non-tenured faculty at Northwestern University that revealed faculty resistance to blended learning courses for diverse reasons [4]. Those cited include a resistance to teaching with technology in general, more preparation time per course, insufficient technical support on campus, slowed course development time due to the technology learning curve, inability to display the course in the classroom due to insufficient technology access, lack of training on how to use the Web to manage the course,

inadequate hardware in the professor's office, and disbelief that technology can improve student learning outcomes.

Based on the findings of Chaloux [10], some faculty opt out or are dissatisfied if they are forced to use teaching technology since online course development and teaching are more labor intensive than face-to-face teaching.

Faculty in this study responded positively and offered advantages summarized in the following categories constructed by the researchers: Ease of Use; Convenience; Access; and Quality. Examples of Ease of Use include familiar course design and navigation among those who are already oriented to the distance learning technology, SUNY Learning Network (SLN); ease in tracking the status of assignments and identifying students who are not posting work or participating in discussions; ease with which current events like a Wall Street Journal article can be brought to the attention of the whole class at once; and ease in collecting assignments and providing individualized feedback to each student.

The Convenience and Access advantages drew such responses as less travel to satellite academic sites, more contact with students between classes, more compliance with the course calendar, and more distance learners who would be blocked from a course if delivered only in the traditional classroom.

Responding faculty expressed Quality advantages such as consistency of course delivery, more timely submission of assignments when students know a learning module will close on a documented date, more consistent preparation and organization of a course, more consistent management of a course, combination of the best of both worlds (classroom and distance learning), assurance that students possess instructional materials disallowing any excuses, exposure of academic honesty violations when electronic submissions are compared across students, and a permanent record of student interaction with the professor, the course, and classmates. These consistencies are in keeping with Shea et al. [11], who point out that quality comes from consistency, and Oakes and Green [5], who note congruence when all parties possess the same basic information on course requirements at the same time.

Other faculty advantages of blended learning courses highlighted in the literature include Russell et al. [4], who note that such courses bring more attention to measuring learning outcomes, place more emphasis on the efficient use of classroom time, and build technology fluency. To these, Sparrow adds winning over the techno-phobic, rapid deployment and exchange of critical information, and customized feedback to students [2]. Gee and Farb note that blended learning courses maximize the transfer of knowledge, represent low risk when the whole course is laid out in learning modules early in the course period, and create a permanent record of all interchanges [3]. According to Shea et al. [11], blended learning courses optimize the relationship between self-study and face-to-face interaction.

Four of the 22 responding faculty specifically expressed no disadvantages at all associated with the blending learning courses they teach. The most cited

disadvantage (nine faculty survey respondents) is the fact that: blended learning courses create more work; that a professor essentially operates two sessions of the same course at the same time by having to prepare for a classroom meeting plus follow the computer-based version of the course; and takes more time to keep up (defined as monitoring and providing feedback online) and prepare for the classroom regardless of the low classroom attendance or the modified length of the class meeting time. Other disadvantages include: inconsistencies in classroom dynamics related to optional attendance policies that occur when few if any students attend class and the class mix is different each time the class meets; the perception of too much focus on the course design (very detailed instructions and guidance); technology problems that detract from course content and create delays such as late submission of assignments or late participation in discussions; and too little personal interchange with students that blocks the evolution of extemporaneous discussion.

Faculty Perception of the Impact of Blended Learning on Student Satisfaction

Representing 650 students in 40 blended learning courses, the faculty responding to the survey speculated on how students regard the learning experience. They noted student advantages such as flexibility expressed as reduced or eliminated travel to campus, ability to prepare work ahead of time, ability to follow up after a class for more assistance, and ability to work at one's own pace. They also noted ease of use and convenience expressed by students verbalizing preference for online courses, access to lecture notes or slides even if class attendance is required but missed, and reduced or eliminated notetaking. Faculty mentioned student satisfaction with the whole course being available 24 hours per day 7 days per week, and they noted that blended learning courses require the non-participative or non-vocal student to speak up more frequently.

The responding faculty also speculated on student dissatisfaction with blended learning courses. Their observations included the loss of personal social interaction and that some students prefer classroom instruction to computer assisted instruction. Not all students have adequate Web access from home. Exercises used in class to emphasize certain points are not available to those who do not attend class. Some students never seem sure of the requirements even though they are documented in the online version of course instructions. One student expressed to faculty that blended learning courses are more work without more learning when online assignments are added to classroom assignments. Other faculty referenced students who do not log onto the course often enough; who do not check their private folders or e-mails often enough; who fall behind and have difficulty catching up; visual learners who struggle; and auditory learners who get lost. Once again, these researchers hasten to note that the student advantages of flexibility and convenience versus the student disadvantages related to

access to the course online are not unique to blended learning since they also apply to distance learning. Herein lies another source of confusion when one attempts to distinguish blended learning from distance learning course design.

FINDINGS FROM THE STUDENT SURVEY

Surveyed students were asked to use a 5-point rating scale with 1 (low) and 5 (high) to evaluate blended learning as a *method of delivering* course materials (such as slides and handouts), as a *method of instruction* (such as mini-lectures, assignments, tests, discussions) and as a method that *adds to the learning experience*. Table 4 outlines the profile of students responding to the survey by the level of experience they have had with any of the three types of blended learning. The level of experience is defined as the number of blended learning courses taken up to and including the time of the survey. Seventeen (45%) of the responding students represent first time participants in blended learning courses; the remaining 21 (55%) had participated in two or more such courses.

The first thing notable in Table 4 is the wide range of rating scores at all levels of exposure to blended learning courses compared to the closeness of the mean scores. One could deduct from the rating score ranges in column 1 that students who love blended learning courses really love them and students who hate them really hate them. All mean scores across the columns are noted as being 3.43 and above. When the overall mean scores in column 6 (3.97, 3.76, and 3.68, respectively) are adjusted to represent only students with prior experience with blended learning courses, the mean score for each method measured remains at 3.43 and above. Therefore, perceptions of student responders in this study about the methods measured do not appear to change with the level of exposure to the learning method. Based on the sample size and composition, the researchers cannot show a difference in perceptions among graduate students, undergraduates, or first time participants in blended learning courses.

What Works for Students?

These researchers have summarized advantages of blended learning as perceived by students in four categories: Ease of Use, Independence, Advanced Learning, and Flexibility. In the Ease of Use category, students mentioned: familiarity with the format based on previous experience with distance learning; more timely submission of homework; perception that they are not missing anything of importance when they miss classroom meetings; easier to post an assignment compared to typing, printing, driving to campus and handing it in; ability to electronically verify assignments have been submitted; plenty of opportunity to interact with students and professor in class or online; ability to reference open modules at anytime; easy access to course requirements; electronic linkage to everyone in the course; and quicker responses from the professor.

Table 4. Student Ranking of Blended Learning Courses by Number of Courses Taken

Method Measured	Metrics	1 Score for First Timers	2 Score 2 Blended Learning Courses Taken	3 Score 3 Blended Learning Courses Taken	4 Score 4 Blended Learning Courses Taken	5 Score 4+ Blended Learning Courses Taken	6 Overall Score	7 Overall Score without First Timers
Delivery	Range	1-5	3-5	3-5	3-5	3-5	1-5	3-5
	Mean	4.29	4.00	4.00	4.60	3.86	3.97	3.71
Instruction	Range	1-5	3-5	3-5	4-5	2-5	1-5	3-5
	Mean	4.06	3.86	4.00	4.60	3.43	3.76	3.52
Adds to learning	Range	2-5	2-4	4-5	4-5	2-5	2-5	2-5
	Mean	4.00	3.57	4.50	4.40	3.57	3.68	3.43
Total students		17 (45%)	7	2	5	7	38	21 (55%)

In the Independence category, students noted: the ability to direct and control one's own research efforts; ability to pilot one's own learning process; less professor dictation on how to complete assignments; knowing assignments ahead of time; freedom of choice on classroom attendance; learning how self-motivated or self-disciplined one is, having extra help when studying for a test; and obtaining more computer experience.

The Advanced Learning category of advantages was represented in responses from students such as: practice in applying the readings to assignments; copious amounts of information available at one's fingertips to augment text and lectures; learning that is more action oriented than passive; the ability to express self more clearly when there is time to think about it and proofread a posting on a screen before submitting it to the class or professor; ability to view/review (as allowed by the professor) assignments posted by classmates; use of classroom meetings as a workshop to clarify and develop concepts; and the availability of mini-lectures to aid the understanding of required reading. One student commented that the experience helped him/her realize a personal preference to go to an actual lecture while another said he/she wished all courses were delivered in the blended learning format.

Flexibility was a popular response and was expressed as: working on the course anytime and anywhere the Web is available; working at one's own pace; and accommodation of things that intrude into busy lives such as sickness, family demands, work schedule, weather, personal activities, and distance from campus. These attributes contribute to student savings in terms of time and resource expenditures.

The literature offers a few more student advantages with blended learning. According to Russell et al. [4], students spend more time on task. Sparrow adds that these courses are learner-centered rather than teacher-centered, and more precisely diagnose learner needs rather than taking a blanket approach of one size intervention fits all students [2]. In terms of student costs, tuition is the same and financial aid is still available [12], at the same time there are savings in time and travel resulting in a net economic gain for the student.

What Does Not Work for Students?

Five of the 38 responding students specifically noted they have not experienced any disadvantages. For those who did identify disadvantages, the researchers have summarized the findings in four categories: Confusion, Social Interaction, Access, and More Work. In the Confusion category, students noted: unclear or incomplete instructions; some students not fulfilling their responsibilities (defined as poor participation in a student-led discussion thread when the student leader is dependent on contributions by classmates); not always being clear on when the professor has provided feedback; finding the learning module that is active; complexity of content creating difficulty in following related online

discussions; some course information posted in too many areas; and complex course calendars.

In the Social Interaction category, students noted: reduced camaraderie with peers; reduced face-to-face exposure with the professor, reduced class-to-teacher interaction and reduced number of team building activities. One student commented, "I just learn best when someone is telling me information face-to-face."

Related to the Access category, students perceive: a delay in answers to their questions; slow flow of discussions due to the time delay between responses in an asynchronous online environment; inability to reference materials when time bound modules are closed; difficulty in keeping up with so many discussions going on at once; limited access to the Web due to technical capability at home; slow screen loading when dial-up modality is used; and technical difficulty with attaching assignment files, navigating the system and achieving course entry when the computer or server is inoperative. One student noted the technology is difficult to learn and another noted the technology is intimidating.

In the More Work category, students noted: the large amount of instructional material to read, print and reference; the belief that students attending class should not have to enter discussions online; the feeling that one never gets a break from the course since it is "always on"; the perception that exams are harder; more assignments compared to the traditional classroom setting; consumption of more time to discuss a topic online than in the classroom; and too much time expended with discussion groups. One student commented that if he/she wanted to take a course online, he/she would have done so. Blended learning means one has to keep track of the course flow online as well as in the classroom. This is intensified when a student is registered for several courses at the same time and even more so when those other courses are either blended learning or fully online distance learning. Another student noted the additional expenditure of time and effort becoming familiar with how each individual professor designs each blended learning course each semester since the utilization of course management technology is so varied. Another suggested that blended learning courses should only apply to graduate students.

RECOMMENDED TECHNOLOGY ENHANCEMENTS TO FACILITATE TEACHING AND LEARNING

Faculty survey respondents suggested several enhancements to course management technology to facilitate teaching, including: more technical support of Macintosh users; addition of a spell checking and grammar checking capability; clearer instructions on navigating the system (especially for faculty not already familiar with similar distance learning technology); prompts to save work when working in the course on the Web rather than the computer hard drive; and more user-friendly editing of the course when working on the course via the Web.

One professor specifically requested more training on the use of multimedia online and help with copying and pasting tables so that they are displayed online just like they were entered. Another emphasized the importance of having personal, on-campus support with the technology in addition to online support. Faculty also suggested changes to facilitate student learning, including: quicker responses and more precise instructions to students from the helpdesk; addition of a grade book feature to keep students appraised of their grade status; and integration of audio and video into the course design.

COURSE DESIGN RECOMMENDATIONS

Faculty respondents to the survey in this study made suggestions for other faculty working with blended learning courses and course management technology as follows:

- As a general rule, students participating in a blended learning course for the first time should attend some minimum portion of classroom meetings. And, undergraduates should attend all classroom meetings until such time class participation or grades or a combination of these and other criteria warrant otherwise.
- Faculty should develop skills in fully online courses for distance learners before venturing into a blended learning course environment.
- Faculty should fully prepare the blended learning course at the beginning of the semester since building the course as the class progresses creates confusion for students. This recommendation is contrary to Duhaney [1], who suggests starting the course in the classroom and evolving the course gradually to arrive at the best of both worlds.
- Faculty should establish at the beginning of the semester a plan for when the professor will be available to students online—in other words, when and how frequently the professor will log onto the course.
- Faculty should vary the use of course management technology for blended learning for undergraduates compared to the scope of use for graduates. Example: syllabus and a place to post assignments for undergraduates versus group work, discussions and tests for graduates.
- Faculty should be just as specific with course requirements and instructions as with fully online distance learning courses.
- Faculty should use the blended learning course as an addition to but not as a replacement for classroom meetings.

According to Oakes and Green [5], as well as Chaloux [10], blended learning courses do not work if the right delivery method is not matched to learner needs and learner needs vary at different times. For example, some students need more time to “get up to speed” and some students need more detailed information. The question for faculty is how to assess learner needs and styles without

having prior experience with a student in former courses or without using a trial and error method in the early stages of a blended learning course. One solution could be the creation of exercises in the first module of a blended learning course (or a distance learning course for that matter) that represent the different requirements of the course and clearly demonstrate that the student has not taken advantage of an online orientation to course management technology. Accordingly, the University of Maryland uses screening criteria in the form of a self test to determine the level of online learning readiness of students. The criteria address the ability to concentrate, ability to understand and remember reading material, level of self discipline, knowledge of time management, reading skills, writing skills and technical skills [13].

Boundaries between different course delivery approaches are beginning to blur according to Russell et al. [4], as well as Sener and Humbert [13]. To this, Duhaney adds that it is easy to focus on the teaching tools rather than the design of the instruction [1]. Therefore, when a course is not successful, is it due to poor design or poor delivery technology? As a result of this blurring of approaches and as blended learning courses more and more resemble fully online distance learning courses (as in the Blended Learning Look-alike example in this study), the expectations of both faculty and students will be those of the most sophisticated, most clearly explained, most clearly displayed, most easily navigated and most thoroughly supported modality. These expectations could easily be exhibited in the enhanced quality of interaction between instructor and student as well as among students; flexibility, convenience and ease of use discussed earlier in this article; reliability and availability of technical help; and some sort of reward or recognition for faculty who undertake a bigger workload and a new learning curve.

Several authors suggests ways to use the classroom or address the class attendance requirement discussed in this study. Cerviere suggests starting the blended learning course in the classroom, using the classroom throughout the semester for developing soft skills such as role-playing, and using course management technology for updates and feedback to students [14]. Russell et al. [4], as well as Waddoups et al. [15], offer other alternatives such as replacing one or more face-to-face class within a designated period of time with online work; meeting in class several weeks at the beginning of the term, completing the middle portion of the course on line and reconvening in the classroom for several weeks at the end of the term, or meeting in class every few weeks at intervals during the term.

While the concept of blended learning is popular and growing, some sort of assessment should take place to justify the process. Mayadas et al. suggest a set of metrics for measuring the success of any technology assisted learning including graduation rates, student retention rates, student attrition rates, equivalent or better grades, and no different or higher learning outcomes when evaluated by both faculty and students [16].

Using the Northwestern University English Department as a model, Russell et al. suggests interested faculty should pilot a blended learning program, establish a committee on course delivery, develop a phased implementation, designate a core set of skills for faculty and establish criteria for success [4]. Examples include ease of use, a match between technology and values held by faculty, and a view of technology as a vehicle for new approaches rather than an aid to current teaching strategies.

Sharpe highlights teaching tactics that are "course killers" for any technology-based instruction [12]. They include: professors who are slow to respond to online inquiries of students; professors who are slow to grade assignments; students who do not help fellow students; and large class size. He suggests the ideal class size is 20 (as for classroom-based courses) and that student teams should be used if the size is 35 or more. He also warns that professors must be more aware of the student as an educated consumer. They know a good course when they see one.

The strongest recommendation from this study is a call for more consistency among faculty in the use of course management technology. It is time to grow past "making it up as we go along." For example, faculty within a program or school could agree on the same minimum set of requirements for electronically submitted writing assignments. The main idea in this challenge is that the current varied use of such technology frustrates students, as they are required to travel a steep learning curve for each blended learning course. A small amount of effort on the part of faculty would allow students to invest time in acquiring skills for navigating the course management technology that would carry over course-to-course.

Other example areas for common standards include: the proportion of instruction online (e.g., two-thirds in class and one-third online according to Russell et al. [4]); log in requirements (e.g., twice a week); attendance requirements; and use of a public message board format, shared reference area, course schedule, and private folders for secure and documented student communication. What will be considered quality discussion postings? Is a student who is actively engaged in class meetings exempt from participating in online discussions? Will the course be developed as the semester progresses or highly structured at the outset?

Here is the problem: A specific student complaint is the difficulty of finding the module that is active. Undergraduates, new to any type of technology-assisted learning, post assignments everywhere. Imagine this: a student is taking multiple blended learning courses in a term. Each professor presents each course using his/her own particular course design and style. The student may have to post an assignment in widely varying ways and places across the courses. Therefore, consistent coordination among faculty about where things are posted would help students consistently move around the course management technology.

CONCLUSION

It is clear that delivering a blended learning course through course management technology increases the workload for faculty. It is indeed possible that two courses are created from one course, meaning that two sessions of the same course must be managed. Therefore, cost in terms of more effort is expended. However, blended learning can offer other highly valued faculty benefits such as flexibility (e.g., teach from an off campus location).

What does the student gain from blended learning? One major theme of this article is more careful consideration of the student's perspective, especially students new to any computer-based learning. Is it possible to overuse course management technology? Is it possible to over-customize blended learning courses resulting in a hodgepodge of course designs? Figure 1 demonstrates the question that remains unanswered. Where does blended learning reside in the middle ground between the two extremes of traditional classroom instruction and fully online distance learning?

There is the story of a child who is given a hammer and immediately wants to use the hammer on everything in sight. Faculty has been given a variation of the fully online distance learning technology to manage blended learning courses. Like the child with the hammer, the first faculty reaction can easily be application of this course management technology to everything possible. However, it is only a matter of time until the professor realizes he/she is spending a larger portion of each day in front of the computer screen. One then begins to more carefully select which courses should be delivered using such technology and which assignments should be allocated to which courses. The point is: rather than applying course management technology across all elements of the blended learning course, a better approach is to ask "How does the technology improve the learning process for the student?"

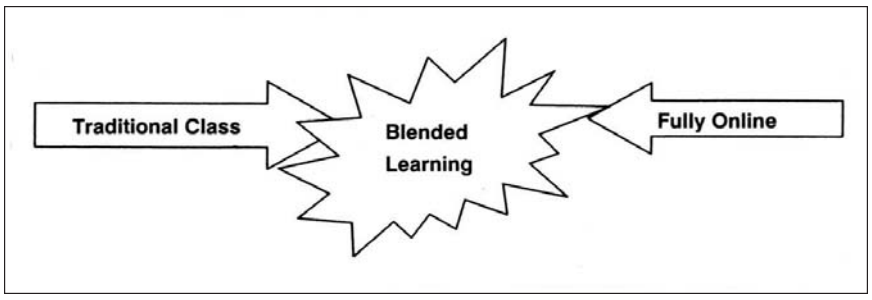

Figure 1. Blended learning somewhere in the middle of traditional classroom learning and fully online distance learning.

A benefit of course management technology in blended learning that should not be overlooked is the organization and documentation of course materials and student work. For example, when an accrediting body or external review team arrives on campus, examination of a course syllabus or examples of student work is easily accommodated from the secure electronic files.

While this article recommends matching student needs with the amount of material and style of delivery in blended learning courses, it is naïve to ignore the fact that *enrollment rules*. This is especially true for highly specialized programs with a student audience scattered over a wide geographic area, even several states. Meanwhile, there are local learners (like those who live on campus), different learning styles (auditory and visual learners) and inexperienced learners (freshmen, students with little to no knowledge of the field of study and first time users of computer-based learning) who must be accommodated. If the number of fully online distance learners and/or the number of on-campus or inexperienced learners are too low to offer different sessions of the same course at the same time, a blended learning course design utilizing course management technology is an excellent way to accommodate such a diverse group in a given term. This complex situation brings into focus all the advantages, disadvantages, and recommendations reviewed in this article.

As a closing note, anyone familiar with the delivery of instructional material through a fully online distance learning format will readily identify with most, if not all, of the findings of this research. There is variation in how faculty represented in this research use course management technology in delivering blended learning. Likewise, there are varied reactions among students to the instructional design of blended learning. Until there is a more coordinated approach to the development and evaluation of blended learning courses within a program of instruction, the original observation in the beginning of this article still stands: If you have seen *one* blended learning course, you have seen *one* blended learning course.

APPENDIX A
Faculty Survey: Evaluating CourseSpace

Please use the back of the survey page on which a question appears for additional space in providing your responses to the following questions regarding CourseSpace, the course management tool for hybrid courses.

Thank You, Lisa Berardino and Jan Welker

1. How do you use CourseSpace? (Check all that apply.)

___ 1. CS Light
___ 2. CourseSpace
___ 3. SLN-look-alike
___ 4. Other: (please specify) _____
_____

2. For each method checked above, identify the materials you place on CourseSpace. (Check all that apply.)

CS Light	CourseSpace	SLN Look-alike	Other
_Assignments	_Assignments	_Assignments	_Assignments
_Instructions	_Instructions	_Instructions	_Instructions
_Slides	_Slides	_Slides	_Slides
_Minilectures	_Minilectures	_Minilectures	_Minilectures
_Tests	_Tests	_Tests	_Tests
_Discussions	_Discussions	_Discussions	_Discussions
_Other (describe)	_Other (describe)	_Other (describe)	_Other (describe)
_____	_____	_____	_____

3. How do your attendance requirements change with the use of CourseSpace?
__No change from regular course (without CourseSpace)
__Students given option to attend class with CourseSpace
__Certain minimum attendance requirements are made; if so, how does this work?
_____
__Certain students are required to attend class; if so, how does this work?
_____

4. To what extent has CourseSpace contributed to course enrollment? (Check one): __*minimally*; __*somewhat*; __*greatly*. If you answer "somewhat" or "greatly," note the rationale for your answer.
_____

5. Do you observe any differences in the quality of assignments submitted via CourseSpace versus traditional classroom? If yes, identify the differences.

6. Do you observe any differences in the results of testing or grades attained by students using CourseSpace versus the traditional classroom? If yes, identify the differences.

7. What do you view as the advantages of CourseSpace to you as faculty?

8. What do you view as the disadvantages of CourseSpace to you as faculty?

9. What do you view as the advantages of CourseSpace to students?

10. What do you view as the disadvantages of CourseSpace to students?

11. What change(s) do you suggest be made to the technology of CourseSpace to facilitate your teaching?

12. What change(s) do you suggest be made to the technology of CourseSpace to facilitate student learning?

13. What suggestion(s) would you make to fellow faculty on how to use CourseSpace to facilitate teaching or student learning?

We would like to be able to contact you at a later time for follow up or more detail.
Name_____
School and Dept: _____ HIM; _____ SOM; _____ Nursing
Average class size when you have used CourseSpace _____
Your Course(s) using CourseSpace: _____, _____,
_____, _____, _____

Please return to Jan Welker.
Room 1247. Phone: 792-7432, welkerj@sunyit.edu
School of Management, SUNYIT

APPENDIX B
Student Survey: Effectiveness of CourseSpace

Please take a few minutes to help us evaluate the effectiveness of CourseSpace, the course management technology for hybrid courses like this one. We are not assessing course content or the instructor. This survey is about the technology of CourseSpace as an alternative to the traditional classroom or the fully online distance learning format supported by SLN.

Please use the back of the page on which a question appears for additional writing space.

Thank you, Lisa Berardino, PhD and Jan Welker, PhD

On a scale of 1 (low) to 5 (high), rate CourseSpace as a method for **delivering** course materials (slides, handouts) to you when compared to traditional classroom or SLN.

(Low) 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 (High)

On a scale of 1 (low) to 5 (high), rate CourseSpace as a method of **instruction** (mini-lectures, assignments, tests, discussions) to you when compared to traditional classroom or SLN.

(Low) 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 (High)

On a scale of 1 (low) to 5 (high), rate the extent to which CourseSpace adds to your **learning experience** when compared to traditional classroom or SLN.

(Low) 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 (High)

To support your ratings above, please provide the following information:

Identify two things about CourseSpace that you find **advantageous** (2 things you like about CourseSpace).

1.

2.

In those courses for which CourseSpace worked for you, list reasons **why** it worked.

Identify two things about CourseSpace that you find **troublesome** (2 things you dislike about CourseSpace).

1.

2.

In those courses for which CourseSpace did NOT work for you, list reasons **why** it did not work.

How many courses have you taken that used CourseSpace? (Check one response.)
__This is the first time using CourseSpace; __2 courses; __ 3 courses;
__ 4 courses; __ more than 4 courses.

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