A Study Of Blended Learning At A Metropolitan Research University

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A STUDY OF BLENDED LEARNING AT A METROPOLITAN RESEARCH UNIVERSITY

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
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ABSTRACT

The goal of this research was to better understand blended learning at the University of Central Florida (UCF). The investigator examined blended learning from the institutional, faculty, and student perspectives in an attempt to capture the complexities of this learning environment.

For the institutional perspective, models emerged that were critical to the development of UCF’s initiative and ongoing support of both fully online and blended courses. The individual faculty perspective outlined unique characteristics of one blended course, HFT4932 - Exploring Wines of the World. The professor explained his/her choices and reasons for an instructional model as well as why the blended format was selected. The student perspective indexed student attitudes toward blended classes at UCF. Students continued to report high overall satisfaction with blended courses as well as high levels of quality interaction among students and with faculty. However, there continued to be a downward trend in satisfaction levels with younger generations of students. Students still reported convenience and flexibility as their primary reasons for taking blended courses. Many students viewed the blended format as a way to become active participants in their learning thereby developing new learning skills. Infrequently, technology difficulties were reported. Challenges for students were time management and poor course organization.
Web-based instructional delivery is still relatively new with a growing need for models that provide guidelines and strategies for instructors. The investigator suggests the possibility that this study serve as a model for a blended learning assessment for other institutions.
ACKNOWLEDGMENTS

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CHAPTER ONE: INTRODUCTION

Background and Significance

Blended learning is a recent online innovation appearing in books and scientific journals, at professional conferences, in the business culture, and on college and university campuses throughout the world. Blended learning is the convergence of traditional face-to-face and distributed learning environments that emphasizes computer-based technologies (Graham & Allen, in press; Graham, Allen, & Ure, in press). The 2002 survey by the American Society for Training and Development (ASTD) identified blended learning as one of the top ten trends in the knowledge industry (Finn, 2002). According to the survey, “the ability to repurpose content for various delivery formats will become critical, not only from a content development standpoint, but as a way to meet the learning needs of a diverse set of learners” (Finn, 2002, Trend #4 section). As an example, professional organizations are using blended learning to keep their members up to date while reducing travel expenses, time away from family, and lost workplace resources (Rooney, 2003).

Another important factor in the blended learning movement is its incorporation into the academy. Dziuban, Hartman, & Moskal (2004, p. 2) report that most efforts toward online learning have “focused primarily on off-campus student populations.” Blended learning, however, is a movement toward mainstream students on campus.
Brigham Young University (BYU) is an example where online courses are delivered to constituencies off campus while at the same time online technologies are "blending" into the traditional classroom (Reay, 2001; Waddoups & Howell, 2002). This blurring of the lines between on campus, face-to-face courses and online or distributed learning is often referred to as ‘hybridization’ of the university (Cookson, 2002, as cited in Graham, Allen, & Ure, in press). While proclaiming a vision for his university, Spanier (as cited in Young, 2002, Faculty Perspectives section, ¶4), president of Pennsylvania State University, called “the convergence of online and resident instruction ‘the single-greatest unrecognized trend in higher education today.’”

In the private, business based colleges, online courses have significantly raised the profit margins (Farrell, 2004). For example, Herman (as quoted in Farrell, 2004), an equities analyst at Legg Mason, said Career Education Corporation has a 16% average operating margin for its institutions. However, its online division has a 30% margin in a parallel development. Sober (quoted in Farrell, 2004, Blended Approach section, ¶ 7), vice president for investor relations at Argosy University, identified blended learning as “a huge growth opportunity.” In a parallel development, many brick-and mortar campuses are encouraging their students to adopt a “blended” approach by incorporating online classes into their learning program thereby expanding the institutional infrastructure, increasing high quality educational opportunities while widening the potential pool of students (Farrell, 2004).

The Sloan Consortium's 2003 survey of asynchronous learning networks (ALN) in higher education indicated that “nearly 85% of public institutions and 55% of privates...are engaged in blended learning” (Sloan-C, 2004, Institutional Strategies, ¶2).
Sloan considers the phenomenon so important that it held a workshop in April 2004 to examine the critical elements of blended learning. According to Bourne (as cited in Young, 2002, ¶6), professor at Franklin W. Olin College of Engineering and editor of the Journal of Asynchronous Learning Networks, “within five years, you'll see a very significant number of classes that are available in a hybrid fashion [another term for blended learning]...somewhere in the 80-90-percent range.”

Statement of Purpose

Although the blended learning concept is being widely embraced, finding a consensus definition has become difficult. For the most part, journal articles feature anecdotal accounts of the faculty and student experience with blended learning. There is a critical need to identify the components of blended learning to build guidelines and strategies for institutions, faculty, and students embarking on this instructional modality. Studying one institution’s successful blended learning initiative is a way to facilitate this process.

The University of Central Florida (UCF) has been developing and delivering blended courses since 1997. As a result of this initiative, UCF has been recognized for its outstanding contribution to distributed learning with awards such as the 2005 Educause Teaching and Learning, 2003 Sloan Consortium Excellence in Online Teaching and Learning Program, 2000 United States Distance Learning Association Excellence in Distributed Learning, and the American Productivity and Quality Center and the State Higher Education Executive Officers (APQC-SHEEO) 1998 Faculty Development Award for Teaching with Technology. Using the UCF model as a prototype, this study proposes to identify the critical elements of blended learning at the University of Central
Florida from the institutional, faculty, and student perspectives. Hopefully, this study will add to the foundation being built by the Sloan Consortium’s study of blended learning and initiatives of other institutions.

Current Status of UCF’s Blended Course Initiative

The number of blended courses has grown significantly since the initial eight courses offered at UCF in 1997. As of the 2004-2005 academic year (summer, fall, spring), there were 542 sections of blended courses with 16,697 students registered. Figure 1 shows the growth in number of blended course sections and Figure 2 shows the growth in student registrations. Prior to 2000, section and student registration data for blended and face-to-face courses using UCF’s course management program (WebCT) are merged.
Figure 1. Growth of UCF blended course sections from 2000-2001 to 2004-2005 academic years

The Research Initiative for Teaching Effectiveness (RITE) provides continuous research of the online environment at UCF. For purposes of measuring learning effectiveness, RITE has declassified grades into a binary format of success or non-success (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004). Success equates to an A, B, or C grade. Non-success is any other designation. Figure 3 shows student success in three delivery modalities, face-to-face, blended, and fully online, for the period spring 2001 through spring 2003. Success
rates in blended courses were equal to or higher than the other two modalities.

Figure 3. Student success rates by modality and semester from spring 2001 to spring 2003

Another aspect of learner success is withdrawal rates from courses (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004). Figure 4 shows the withdrawal rates by modality from spring 2001 through spring 2003. Withdrawal rates in blended courses fall below the rates for fully online courses and are comparable to face-to-face courses.
Student satisfaction has been measured in two ways by RITE. First, in a 2002 survey, online students were asked to rate their satisfaction with blended learning courses (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005). Figure 5 shows 85% of students were very satisfied or satisfied with their blended courses. Positive student perceptions of blended learning were convenience, reduced logistic demands, increased learning flexibility, and technology enhanced learning, characterized as reduced opportunity costs for education (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban & Moskal, 2005; Hartman, Moskal, & Dziuban, 2005). Less positive perceptions were reduced face-to-face time, technology problems, reduced instructor assistance, overwhelming, and increased workload, increased opportunity costs for education.
The second measure of student satisfaction used the university instrument for evaluating teaching effectiveness. The university survey is distributed to students at the end of every term resulting in an accumulation of over a million student responses (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004). A decision tree based on the elements of the university survey was created to analyze the results. If a faculty member received high ratings on “The instructor facilitated my learning” and “The instructor was able to communicate ideas and information effectively,” the probability of receiving an overall “Excellent” rating was .96, irrespective of course level, college, semester, and ratings on any other items. Table 1 shows the faculty overall “Excellent” ratings by course modality, both unadjusted and adjusted for the decision tree. The findings suggest student satisfaction is independent of course modality.
Table 1
2000-2002 Faculty Overall “Excellent” Ratings by Course Modality Unadjusted and Adjusted for the Decision Tree Rule

<table>
<thead>
<tr>
<th>Modality</th>
<th>(N)</th>
<th>Unadjusted</th>
<th>(N)</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully online</td>
<td>6,847</td>
<td>46.9%</td>
<td>5,055</td>
<td>95.9%</td>
</tr>
<tr>
<td>Blended</td>
<td>10,830</td>
<td>47.2%</td>
<td>7,128</td>
<td>96.1%</td>
</tr>
<tr>
<td>Face-to-face</td>
<td>207,266</td>
<td>42.8%</td>
<td>137,407</td>
<td>95.5%</td>
</tr>
</tbody>
</table>


Professional literature emphasizes the need to redesign courses for the blended environment (King, 2002; Sommer as cited in Murphy, 2002-2003; University of Wisconsin, 2005; Waddoups & Howell, 2002). IDL6543 is UCF’s faculty development course that helps faculty redesign their courses and is critical to the online initiative (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Hartman, 2002; Truman-Davis, Futch, Thompson, & Yonekura, 2000). All faculty teaching an online course, fully online or blended, are required to complete IDL6543. The course covers an eight week period and models a blended environment. To date almost 500 faculty have completed IDL6543.

Every two years, RITE conducts a survey of online faculty with the last survey occurring in 2002. Since 1996, faculty have consistently indicated they are very satisfied with their online experience (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004). Table
2 below shows faculty satisfaction with online courses and Table 3 shows their willingness to teach another online course.

Table 2
Faculty Satisfaction with Online Courses

<table>
<thead>
<tr>
<th>Modality</th>
<th>Fully Online (n=55)</th>
<th>Blended (n=43)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>48%</td>
<td>43%</td>
</tr>
<tr>
<td>Satisfied</td>
<td>39%</td>
<td>45%</td>
</tr>
<tr>
<td>Neutral</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Unsatisfied7</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>Very unsatisfied</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 3
Faculty Willingness to Teach another Online Course

<table>
<thead>
<tr>
<th>Modality</th>
<th>Fully Online (n=71)</th>
<th>Blended (n=53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely</td>
<td>67%</td>
<td>81%</td>
</tr>
<tr>
<td>Probably</td>
<td>15%</td>
<td>13%</td>
</tr>
<tr>
<td>Neutral</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Probably not</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>Definitely not</td>
<td>6%</td>
<td>4%</td>
</tr>
</tbody>
</table>


Also, UCF faculty perceive that it takes more time to develop and deliver blended courses than face-to-face courses (Dziuban & Moskal, 2005). Ninety five percent (n=43) of faculty believe it takes longer to develop a blended course as compared to a comparable face-to-face course. Eighty one percent (n=42) perceive blended courses require more time for weekly administration activities. Even though online courses are more work, faculty believe the extra time is worth the effort because there is more interaction of higher quality in blended courses. Eighty five percent (n=40) report more interaction and 67% (n=43) report better interaction.

Definitions

For purposes of this study, the following definitions will be used:
- Baby Boomers: birth cohort born between 1946 and 1964

- Blended learning or blended learning environments: the convergence of two learning environments, traditional face-to-face and distributed learning environments that emphasize computer-based technologies (Graham & Allen, in press; Graham, Allen, & Ure, in press), characterized by a reduction in the number of hours of face-to-face meetings (reduced seat time) (Dziuban, Hartman, & Moskal, 2004; Garnham & Kaleta, 2002; Graham & Allen, in press; Graham, Allen, & Ure, in press) emphasizing blending at the course level. (Dziuban, et al., 2004; Graham & Allen, in press; Graham, Allen, & Ure, in press).

- Computer-based or online technologies - technologies available through the use of computers via the Internet and course management systems (WebCT, Blackboard, Angel, Desire-to-Learn, etc.).

- Distributed learning environments: a learning environment where participants do not comprise a physical cohort and use computer-based technologies to access instruction and communication with others (Graham & Allen, in press).

- Generation: a birth cohort who shares common experiences during the formative years.

- Generation X: birth cohort born between 1965 and 1976

- Hard technologies: computer equipment, software, networks, etc. (Graham & Allen, in press)

- Hybrid courses: another name for blended learning environments
• Matures: birth cohort born between 1902 and 1945, also referred to as the veterans, silent generation, and depression generation
• Millennials: birth cohort born between 1977 and 1994, also called net generation, generation Y, nexters, echo boomers, new learners, Internet generations, and generation why
• Soft technologies: instructional innovations, methods, strategies, etc. (Graham & Allen, in press).

Limitations

This study is limited to the University of Central Florida (UCF), its goals, values and strategic initiatives. Hopefully, the results of this study will add to the growing literature on blended learning to build a foundation for other institutions, faculty and students who might embark on this instructional modality. However, this study is idiosyncratic to UCF. Also, only one course and one faculty member were used for the faculty case study perspective. Further study of faculty, students, and blended courses at the University of Central Florida as well as other institutions are needed to build comprehensive and valid blended learning models.

Methodology

This study seeks to understand the blended learning phenomenon at the University of Central Florida. Blended learning was examined from the institutional, faculty and student perspectives in an attempt to capture the complexities of these learning environments. The study relied on various techniques to gather data including
interviews, observations, surveys, analyzing documents and qualitative data collected on online courses at the University of Central Florida.

In the main, this study focused itself on the method of triangulation developed by Lincoln and Guba (1985). Blended learning was examined in a case study of a single course—(hft4932, Exploring Wines of the World)—examining its design, implementation, and cyclic development from the faculty developer perspective. In addition, blended learning is viewed through the perspective of students obtained through the online administration of a survey protocol developed by the investigator. Finally, this study assessed blended learning at UCF by examining the institutional database.

Figure 6. Research design
CHAPTER TWO: LITERATURE REVIEW

Background

In educational settings today, the terms blended learning and hybrid courses are used interchangeably, although UCF’s nomenclature is mixed mode (M) courses. Historically, higher education has used the term hybrid courses to describe the combination of face-to-face and distance delivery (Graham & Allen, in press; Graham, Allen, & Ure, in press; Osguthorpe & Graham, 2003). Interestingly, however, the term blended learning began in the corporate training environment, appearing widely in training literature (Graham & Allen, in press; Graham, Allen, & Ure, 2003, in press). The term “blended learning” has, only recently, started to appear in academic circles (Graham, 2005; Graham & Allen, in press; Graham, Allen, & Ure, 2003, in press; Osguthorpe & Graham, 2003).

A comparison of the meanings for each term provides a perspective as to why the ‘blended learning’ terminology might be preferred. The Oxford Modern English Dictionary (Thompson, 1996, p. 486) and Oxford Encyclopedic Dictionary (Pearsall & Trumble, 1996, p. 694) both define hybrid as a “thing composed of incongruous elements of mixed character; derived from incongruous elements or unlike sources.” Blend is defined as “mix together, mingle; pass imperceptibly into each other; harmonize; go well together” (Pearsall & Trumble, 1996, p. 51; Thompson, 1996, p. 97). While both terms describe the merging of face-to-face and online elements, the “harmonious” and
“imperceptible” aspects of the definition for blend describe the ideal of how we perceive these two potentially disparate environments (i.e., face-to-face and online) interact together.

Educators have been preoccupied with integrating technology into the classroom for decades (Dziuban, Hartman, Moskal, 2004). One might wonder, what is driving the recent interest in blended learning? King (2002) believes we are embracing rapid changes in Internet technologies that, in turn, demand that blended learning becomes an integral component of education. Buckley (2002) and Barr and Tagg (1995) see emphasis on student centered learning paradigms, new technologies (...Internet...personal computers), and new theories such as brain-based learning and social constructivism as coalescing to create new models of teaching and learning. Wernet, Olliges, and Delicath (2000) confirm that there is new interest in educational outcomes and methods for delivering education. The online learning environment seems to be the nexus for development of these new models (Dziuban, et al., 2004; Waddoups & Howell, 2002; Wernet, et al., 2000) encouraged by the wide-spread adoption of course management systems (Buckley, 2002; Murphy, 2002-2003).

Definition of Blended Learning

Even though the concept of blended learning is gaining widespread acceptance, a generally acceptable common definition has not emerged. To further confound matters, there are three issues or aspects to the definition. The first issue deals with the level where blending occurs. One body of literature in this area discusses blending at an institutional and program levels. For example, Farrell (2004) discusses the need for
institutions encouraging students to take a ‘blended’ approach by including both online and face-to-face courses in their program of study. The University of Phoenix (2002, ¶1) advertises “earn your...degree any way you want to—on campus, online, or in certain areas using a combination of both.” A second body of literature emphasizes blending at a course level where there is a combination of face-to-face classroom and online learning activities in each course (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Garnham & Kaleta, 2002; Graham & Allen, in press; Graham, Allen & Ure, 2003, in press; King, 2002; Leh, 2002; Marsh, McFadden, & Price, 2003; Sands, 2002; Utts, Sommer, Acredolo, Maher, & Matthews, 2003; Voos, 2003). The contention here is that transformation in teaching and learning occurs at the course level hence a preference to use a course level definition (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, & Moskal, 2004; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Graham, Allen, & Ure, 2003, in press).

There are also numerous definitions of blended learning at the course level. Graham, Allen, and Ure (2003; Graham, 2005), have analyzed these definitions and synthesized them into three categories: (1) instructional modalities, (2) instructional methods, and (3) face-to-face instruction and computer-mediated instruction.

The instructional modalities category defines blended learning as a combination of different modes or delivery media. Examples of this definition category are:

- “[Blended learning is] a learning program where more than one delivery mode is being used with the objective of optimizing the learning outcome and cost of the program” (Singh & Reed, 2001, What is Blended Learning section, ¶1),
• “...blended learning model uses a structured combination of instructional media...can include on-line instruction, mentoring/instructor-led support, and various sources of information and practice from text and electronic media” (Thomson, 2003, Executive Summary section, ¶5),

• “Blended learning means the combination of a wide range of learning media (instructor lead, web based courseware, simulations, job aids, webinars, documents) into a total training program” (Bersin & Associates, 2003, as cited in Graham, Allen & Ure, 2003, Appendix Table I, Instructional modalities, ¶2),

• “Blended learning solutions deliver a comprehensive learning experience using various methods (e.g., instructor-led training, CD-ROM, or eLearning)” (Julian & Boone, n.d., Appendix: Definitions),

• “The term blended learning is used to describe a solution that combines several different delivery methods, such as collaboration software, Web-based courses, EPSS, and knowledge management practices” (Valiathan, 2002, ¶1).

The instructional methods category defines blended learning as a combination of different instructional methods or strategies:

• “[Blended learning] combine[s] various pedagogical approaches (e.g., constructivism, behaviorism, cognitivism) to produce an optimal learning outcome with or without instructional technology” (Driscoll, 2002, as cited in Graham, Allen & Ure, 2003, Appendix Table I, Instructional methods, ¶2),
• “Blended learning is the use of two or more distinct methods of training” (Rossett, 2002, as cited in Graham, Allen & Ure, 2003, Appendix Table I, Instructional methods, ¶1),

• “…training delivered by a combination of methods” (House, as cited in Graham, Allen & Ure, 2003, Appendix Table I, Instructional methods, ¶3)

The problem with both of these categories is they are too broad and can be used to describe almost any instructional environment (Dziuban, Hartman, & Moskal, 2004; Graham, 2005; Graham, Allen and Ure, 2003, in press). In addition, they are vulnerable to the criticism that they are “an old idea dressed up in new clothes” (Clark, 2003, as cited in Graham & Allen, in press, p. 3). Clark (1983) argues it is not the introduction of a new medium that impacts learning but rather curriculum reform.

The third definition category identified by Graham, Allen, and Ure (2003; Graham, 2005; Graham & Allen, in press) is face-to-face instruction and computer-mediated instruction and is the most common type of definition found for blended learning. Examples of this definition are:

• “Blended learning refers to events that combine aspects of online and face-to-face instruction” (Rooney, 2003, ¶2)

• “Blended learning should be viewed as a pedagogical approach that combines the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment” (Dziuban, Hartman, & Moskal, 2004, p. 3)

• “Hybridity is the order of the day, as teachers combine the distributed teaching and learning of distance education with the comfortable interaction
of the classroom in an effort to achieve a synthesis of the two.” (Sands, 2002, ¶1)

- “Blended learning combines the best attributes of electronic and traditional classroom experiences to present and reinforce learning” (Anderson, 2001, p. 12)

- “Hybrid or blended models of teaching that replace some in-person meetings with virtual sessions (Young, 2002, ¶5)...hybrid courses offer some of the convenience of all-online courses without the complete loss of face-to-face contact.” (Young, 2002, Faculty Perspectives section, ¶1)

- “…term ‘blended learning’ refers to all combinations of FTF [face-to-face] learning with technology-based learning: traditional education can be enriched with the use of technology and learning with technology can profit from FTF meetings” (Kerres & DeWitt, 2003, p. 101)

According to Graham (2005; Graham, Allen, & Ure, in press), the third definition category represents the convergence of two archetypal learning environments: traditional face-to-face and distributed learning environments that emphasize computer-based technologies. They emphasized that “‘learning’ is not the element being blended, but the two ‘learning environments’...to create a blended learning environment” (Graham, Allen, & Ure, 2003, p. 7). In addition, computer-based technologies have a central role in the learning environment (Graham, 2005). Computer-based technologies include both Internet-based resources and non-Internet modalities such as personal digital assistants (PDAs) and compact discs (CD-ROMs) but exclude paper-based correspondence
instruction, TV, audio cassette, or video tape lectures distributed through the mail (Graham, et al., 2003).

A third aspect of the blended learning definition is the amount of time spent in the classroom. Several definitions for blended learning include a significant reduction in face-to-face class time (reduced seat time) that is replaced with online learning activities (Dziuban, Hartman and Moskal, 2004; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Garnham and Kaleta, 2002; Leh, 2002; University of Wisconsin, 2005; Voos, 2003). There is "no magic blend for all learning contexts" (Graham, Allen and Ure, in press). However, the proportions may be conceptualized as a continuum from 100% face-to-face to 100% online/computer-mediated instruction. Brown (2001) suggests the ‘optimal mix’ will be between 90% face-to-face and 10% computer-mediated instruction or 10% face-to-face and 90% computer-mediated instruction. From these discussions, one might reasonably infer that blended learning is the most contextually sensitive technology based instructional modality.

Why Blend?

Osguthorpe and Graham (2003) identified six reasons why institutions and faculty would see added value in creating blended learning environments: (1) pedagogical richness, (2) access to knowledge, (3) social interaction, (4) personal agency, (5) cost effectiveness, and (6) ease of revision. These reasons are best understood when grounded in the benefits and challenges of blended learning environments.
Benefits

The literature converges on several value-added components of blend learning. The benefits have been grouped into four categories: (1) more effective pedagogy, (2) improved outcomes, (3) convenience, flexibility, and access (reduced opportunity cost), and (4) cost effectiveness.

More Effective Pedagogy

One of the most commonly cited benefits of blended learning is the opportunity to improve teaching and learning strategies (Aycock, Garnham, & Kaleta, 2002; Bauer, 2001; Dabbaugh, 2002; Dzuiban, Hartman, & Moskal, 2004; Garnham & Kaleta, 2002; Garrison, Kanuka, & Hawes, 2004; Graham, 2005; Graham & Allen, in press; Graham, Allen, & Ure, 2003, in press; Johnson, 2002; King, 2002; King & Hildreth, 2001; Leh, 2002; Levine & Wake, 2000; Martyn, 2003; McCray, 2000; Murphy, 2002-2003; Robison, 2004; Sands, 2002; Spilka, 2002; Story & DiElisi, 2003; University of Wisconsin, 2005; Voos, 2003; Willett, 2002). Presently, both face-to-face and online education courses focus on transmission models rather than interactive strategies. According to the 2001 U. S. Department of Education report (as cited in Graham, 2005; Graham & Allen, in press; Graham, Allen, & Ure, 2003, in press), face-to-face environments still focus primarily on a ‘transmission’ model with 83% of higher education faculty still using lecture. Many distance education courses put large amounts of information online that students must learn mostly on their own (Waddoups & Howell, 2002). Face-to-face environments must also deal with time, size, and location constraints (as cited in Graham, Allen, & Ure, 2003, in press). Blended learning is a “pedagogical
approach that combines the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment.” (Dziuban, Hartman, & Moskal, 2004, p. 3). Because pedagogical strategies may be drawn from both the face-to-face and online environment, blended learning provides the largest set of instructional methods and learning situations to meet the needs of disciplines, courses, and students (Voos, 2003) and allows the instructor to maximize the advantages of each environment (Aycock, Garnham, & Kaleta, 2002; Dziuban, Hartman, & Moskal, 2004; Levine & Wake, 2000; Murphy, 2002-2003; Osguthorpe & Graham, 2003; Riffel & Sibley, 2003).

Pedagogical benefits most frequently cited in the literature for blended learning environments are:

- increasing interaction between student-student, student-faculty, and student-content,
- accomplishing learning objectives more successfully,
- transforming from teacher-centered to learner-centered focus in which students become active learners,
- encouraging real world activities and authentic assessment,
- integrating formative and summative assessment mechanisms for students and instructors,
- balancing independent learning with human interaction,
- motivating students to discipline themselves in an online environment.

Interaction is one of the most frequently discussed strategies of blended learning and is an example where the best of both learning environments may be exploited. The
face-to-face classroom builds the social interactions between students and with faculty while the online environment provides a forum for extended communication beyond the classroom time frame (Dzuiban, Hartman, & Moskal, 2004; Garrison, Kanuka, & Hawes, 2004; Hartman, 2002). Most studies indicate both student to student and student to faculty interaction significantly increases in blended courses (Aycock, Garnham, & Kaleta, 2002; Dabbagh, 2002; Dzuiban, Hartman, & Moskal, 2004; Garnham & Kaleta, 2002; Haytko, 2001; Johnson, 2002; King, 2002; King & Hildreth, 2001; Leh, 2002; McCray, 2000; University of Wisconsin, 2005). Online discussions allow students to contribute, build shared ideas, reflect, and build an online community (Bauer, 2001; Dabbagh, 2002; Garrison, Kanuka, & Hawes, 2004; King, 2002; Leh, 2002; Martyn, 2003; McCray, 2000; Sands, 2002; Willett, 2002). They may also be used to facilitate group processes, collaboration, peer-to-peer review, and debates (Bauer, 2001; Dabbagh, 2002, Story & DiElsi, 2003). By extending the discussion beyond the classroom, students have an opportunity to reflect, produce more thoughtful responses, benefit from other responses, and were more likely to participate (Bauer, 2001; Hartman, 2002; King, 2002; Robison, 2004; Spilka, 2002). King (2002, p. 237) reported online discussions produced “critical thinking, dynamic interactive dialogue, and substantial peer-to-peer interaction…depth of insight and response that is many times not possible in the face-to-face classroom because of time constraints.” Another important advantage of online communication is the ability to bring in outside experts and resources (Bauer, 2001; Dziuban, Hartman, & Moskal, 2004) and connect students in different classes and institutions (Willett, 2002).
Faculty report students are more active in blended courses resulting in more communication between faculty and students (Aycock, Garnham, & Kaleta, 2002; Garnham & Kaleta, 2002; King & Hildreth, 2001; Riffell & Sibley, 2003) and more willingness to communicate via electronic mediums (Beisser & Steinbronn, 2002; Johnson, 2002). Faculty also used online resources to build relationships with their students, stay connected, provide feedback, and create continuity in communication (Aycock, Garnham, & Kaleta, 2002; Beisser & Steinbonn, 2002; Johnson, 2002; Laws, Howell, & Lindsay, 2003; Martyn, 2003; Robison, 2004; University of Wisconsin, 2005; Willett, 2002; Wingard, 2004).

The blended learning format provides a more flexible use of instructional time to achieve goals and objectives more successfully (Aycock, Garnham, & Kaleta, 2002; Garnham & Kaleta, 2002; Johnson, 2002; Riffell & Sibley, 2003; Robison, 2004; University of Wisconsin, 2005). In some instances, content is covered online allowing classroom time to be spent on more active and authentic activities (Aycock, Garnham, & Kaleta, 2002; Bonk, Olson, Wisher, & Orvis, 2002; McCray, 2000; Riffell & Sibley, 2003), such as hands on time to classify artifacts (Garnham & Kaleta, 2002) and complex scenarios based on real-world business systems (McCray, 2000). Online content also allows students unlimited access, ability to fill in gaps in their background knowledge, skip familiar material, spend more time on new or difficult material, or individualize their instruction (Dabbagh, 2002; Johnson, 2002; Murphy, 2002-2003; Robison, 2004; Schwartzman & Tuttle, 2002; Strambi & Bouvet, 2003; Wingard, 2004).

In other instances, simulations are used to animate constructs (Boyle, Bradley, Chalk, Jones, & Pickard, 2003; Cameron, 2003). In one instance, a simulation was
created for computer networking that allowed students to experiment with different configurations (Cameron, 2003). Students reported spending more time on task, thereby, increasing their motivation and mastery of the course content (Brown, 2001; Cameron, 2003). Other universities created virtual labs to encourage discovery learning, improve consistency, and provide immediate feedback (Murphy, 2002-2003; Waddoups & Howell, 2002). One course used the online environment to simulate a ‘real world’ writing environment (Spilka, 2002) resulting in critical thinking, problem solving, flexibility to sustain writing projects, and a higher quality of writing. The computer can also provide ways to make textbooks and content interactive (Murphy, 2002-2003; Utts, Sommer, Acredolo, Maher, & Matthews, 2003), employ new mediums to convey content such as audio and video (Schwartzman & Tuttle, 2002), and give learners more control over their instructional paths (Robison, 2004; Strambi & Bouvet, 2003). Web sites with professional information, simulations, and the latest information from experts are another way to expand and enrich course content (Bauer, 2001; Beisser & Steinbronn, 2002; Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; King & Hildreth, 2001; McCray, 2000; Wingard, 2004).

Online components are also a way to motivate students to stay up to date with material such as timed quizzes that provide immediate feedback (Bauer, 2001; McCray, 2000), reminder dates (Beisser & Steinbronn, 2002), relevant material, prompt feedback, flexibility, goal-driven activities, and interaction (Bonk, Olson, Wisher, & Orvis, 2002; King & Hildreth, 2001). Kerres and DeWitt (2003) also found students who attend face-to-face classes are more likely to complete the course.
**Improved Outcomes**

Several faculty and investigators report enhanced student learning in blended formats. Specifically, students are better prepared for class (Bauer, 2001; Cameron, 2003), write more effective and longer papers (Benbunan-Fich & Hiltz, 1999; Garnham & Kaleta, 2002; Murphy, 2002-2003; Spilka, 2002; University of Wisconsin, 2005), perform better on exams (Garnham & Kaleta, 2002; O’Toole & Absalom, 2003; University of Wisconsin, 2005), produce higher quality projects (Benbunan-Fich & Hiltz, 1999; Cameron, 2003; Garnham & Kaleta, 2002; McCray, 2000; University of Wisconsin, 2005), have deeper and more meaningful discussions on course material (Garnham & Kaleta, 2002; King, 2002; McCray, 2000; Murphy, 2002-2003; University of Wisconsin, 2005), and demonstrate a better understanding and deeper exploration of concepts (Bauer, 2001; Cameron, 2003). A study by Thompson Learning showed increased accuracy and faster performance of tasks in groups taught in a blended environment (Martyn, 2003).

Many investigators report improved or equivalent success rates in blended courses as compared to traditional or fully online courses. Boyle, Bradley, Chalk, Jones, and Pickard (2003) reported improved pass rates and positive student evaluations. O’Toole and Absalom (2003) reported improved performance on quizzes. Brown (2001) reported higher success rates in the blended format while Dowling, Godfrey, and Gyles (2003) reported a positive impact on student final marks. Dziuban, Hartman, Moskal, Sorg, and Truman (2004; Dzuiban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, & Moskal, 2004) report success rates in blended courses equal to or higher than face-to-face or fully online courses for all ethnicities. Johnson (2002), King and Hildreth (2001), and
Utts, Sommer, Acredolo, Maher, and Matthews (2003), on the other hand, reported identical or no significant different in success rates between blended courses and other formats; however, they had greater flexibility for managing the delivery of course content in the blended format. When comparing overall retention rates to other modes (face-to-face, fully online), blended courses were found to be generally equivalent to their face-to-face counterparts (Bonk, Olson, Wisher, & Orvis, 2002; Cameron, 2003; Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, & Moskal, 2004; Laws, Howell, & Lindsay, 2003).

In some studies (Bauer, 2001; Boyle, Bradley, Chalk, Jones, and Pickard, 2003; Leh, 2002), students reported improved learning in the blended environment because they had access to a larger range of materials via the Internet. Students in Riffell and Sibley’s (2003) study attributed their success to regular face-to-face interaction, online materials that provided feedback, availability of faculty online, and structured due dates.

King (2002) sees blended learning environments as a vehicle for establishing collaborative learning communities that go beyond the duration of a course and contribute to life long learning.

Faculty can explore ....development of bridges between theory and practice throughout their courses. This potential holds particular promise for continuing professional education, practica and field-based learning because, if professional development could be facilitated well through hybrid [blended] courses, we may be able to transport learning closer to the context in which it is needed...creating new knowledge and the transfer of learning (King, 2002, p. 242).
Convenience, Flexibility, and Increased Access (Reduced Opportunity Cost)

Overwhelmingly, students report the convenience of time flexibility as the most popular feature of blended courses and faculty like the flexibility as well (Aycock, Garnham, & Kaleta, 2002; Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dzuiban, Hartman, Moskal, Sorg, & Truman, 2004; Garnham & Kaleta, 2002; Hopper, 2003; King, 2002; King & Hildreth, 2001; Leh, 2002; Murphy, 2002-2003; Robison, 2004; Rovai & Jordan, 2004; Spilka, 2002; University of Wisconsin, 2005; Waddoups & Howell, 2002). Wernet, Olliges, and Delicath (2000) state much of the enrollment increases in higher education are due to adult learners. Oblinger (2003) concurs that trends in enrollment show more students are part-time, over age twenty-five, and a larger proportion are women, i.e., non-traditional students. These non-traditional students frequently have work and family obligations in addition to continuing their education. Blended learning gives these students the flexibility and convenience to choose the best time and place for learning rather than commuting and finding a parking space (Garnham & Kaleta, 2002; Leh, 2002, Robison, 2004). In fact, flexibility and convenience frequently outweighs any technology problems (Aycock, Granham, & Kaleta, 2002) and may be the determining factor in whether some students complete a degree program (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005). Both traditional and non-traditional students like the convenience of managing their personal and academic schedules (Dzuiban, Hartman, Moskal, Sorg, & Truman, 2004; King & Hildreth, 2001). In general, students report blended learning is more congruent with their lifesyles. Hartman, Moskal, and Dzuiban (2005) have reframed these elements as “reduced opportunity costs” for students that help them achieve their educational goals.
While one of the key factors in the growth of distributed learning is access to courses without time and place constraints (Bonk, Olson, Wisher, & Orvis, 2002) learners also benefit from the social interaction of the face-to-face classroom and value being with adults who share common interests (Kavenik & Robinson, 2003; Murphy, 2002-2003; Willett, 2002). Face-to-face classroom time can be used to build not only social relationships and a sense of community, but also to encourage and motivate students, provide feedback, address concerns and frustrations, and improve interaction (Dzuiban, Hartman, Juge, Moskal, & Sorg, 2005; Hopper, 2003; Kerres & DeWitt, 2003; Leh, 2002; Martyn, 2003; Murphy, 2002-2003; O’Toole & Absalom, 2003; Riffell & Sibley, 2003; Rovai & Jordan, 2004; Wernet, Olliges, & Delicath, 2000; Willett, 2002; Wingard, 2004). Reduced seat time in blended learning courses provides the socialization and interaction of the face-to-face classroom while providing the convenience and flexibility by reducing the time and place constraints (Garnham & Kaleta, 2002; King, 2002; Leh, 2002; University of Wisconsin, 2005; Willett, 2002).

Osguthorpe and Graham (2003; Finn, 2002) also add personal agency or learner control as a reason students chose blended learning. Blended learning environments give them more choices about how and where they will learn. As mentioned in the More Effective Pedagogy section, personal agency is a way to increase student motivation. A motivation model to consider is Clark’s (1998, p. 42; Dzuiban, Moskal, & Hartman, 2005) CANE model (commitment and necessary effort). The model is based on three multiplicative components to determine commitment or motivation: task assessment/personal agency (Can I do this? What are the barriers?), emotion (Do I feel
like doing this?), and values (Will this do me any good? Am I interested? Is it important to me?). If any one of these components is low, motivation is diminished.

Cost Effectiveness

From an institutional perspective, cost effectiveness is a desired outcome of blended learning. The Pew Charitable Trusts sponsored a three-year grant program through the Center for Academic Transformation (2005) to explore ways of achieving cost reduction and enhancing learning by using technology. The grant program focused on large enrollment introductory courses. To achieve cost savings, several of the redesigned courses used blended learning environments including reduced seat-time (Graham, Allen, & Ure, 2003; Twigg, 2003). Per Twigg (as quoted in Marsh, McFadden, & Price, 2003), most of the cost savings involved changes in personnel time and student/instructor ratios. The University of California has also targeted technology to improve learning and reduce cost in introductory courses (Matthews, 2002-2003; Murphy, 2002-2003). In a psychology research methods course, the University of California replaced a face-to-face lab with a virtual lab reducing the cost of personnel and materials while improving content and providing immediate feedback to students (Murphy, 2002-2003). Marsh, McFadden, and Price (2003) identified four ways technology might be used to improve learning while simultaneously reducing costs:

- Course management programs reduce or eliminate time spent on nonacademic tasks such as recording, calculating, and storing grades; photocopying; providing and making changes to content; and making announcements.
- Automated assessment of exams, quizzes, and assignments.
• Online tutorials that result in less preparation time and provide automated feedback to students.

• Shared resources that reduced duplication of effort among faculty.

Another financial incentive of blended learning is the need for less infrastructure (Farrell, 2004; Murphy, 2002-2003). According to Matthews (as cited in Murphy, 2002-2003), co-director and chair of the Mellon Project Advisory Board and Faculty Director, blended learning environments are a potential way to increase the number of students without expanding facilities. Scheduling two blended courses in one classroom slot can yield a 50 to 67 percent savings in space (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Hartman, 2002).

Unfortunately, faculty do not always reduce seat time in patterns conducive to sharing classroom space (Aycock, Garnham, & Kaleta, 2002; Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dziuban, Hartman, & Moskal 2004). Reduced-seat time patterns can range from eliminating one class meeting a week, to meeting for several weeks and then not meeting, or eliminating time at the end of longer evening classes (Garnham & Kaleta, 2002). Dziuban, Hartman, and Moskal (2004) also identified reduced campus traffic and parking spaces as potential ways to reduce institutional budgets.

Challenges

Well designed blended learning environments provide many benefits to institutions, faculty and students. However, with any emerging initiative, there are challenges to be overcome: (1) finding the right blend, (2) increased time demands, (3) technical difficulties, and (4) institutional barriers.
Finding the Right Blend

A major challenge is finding the right mix in a blended learning environment that will leverage the advantages of asynchronous learning while maintaining quality interaction in the face-to-face classroom (Kerres & DeWitt, 2003; Martyn, 2003; Reay, 2001). There is no standard approach to a blended environment because faculty design courses to fit their teaching styles and content (Aycock, Garnham, & Kaleta, 2002). However, a first step toward developing a successful blended course requires understanding the strengths and weaknesses of various strategies and media, how students will approach and use them, how they will impact management of a course, and how they can be leverage in either the face-to-face or online environment (Aycock, Garnham, & Kaleta, 2002; Garnham & Kaleta, 2002; Martyn, 2003; Murphy, 2002-2003; Osguthorpe & Graham, 2003; Reay, 2001). The objective, of course, is to utilize the strengths of each environment to enhance learning, frequently referred to as ‘the best of both worlds’ (Aycock, Garnham, & Kaleta, 2002; Dziuban, Hartman, & Moskal, 2004; Levine & Wake, 2000; Murphy, 2002-2003; Osguthorpe & Graham, 2003; Riffel & Sibley, 2003).

An important aspect of finding the right mix is redesigning the course (King, 2002; Sommer as cited in Murphy, 2002-2003; University of Wisconsin, 2005; Waddoups & Howell, 2002) so online learning modules must dove-tail with the face-to-face components (Aycock, Garnham, & Kaleta, 2002; Dabbagh, 2002; King, 2002; Sands, 2002; University of Wisconsin, 2005). Instructional designers at the University of Central Florida find faculty initially want to redesign only the online portion of their
blended course (Research Initiative for Teaching Effectiveness, 2003). The result is what they term as ‘stove piping’ (Research Initiative for Teaching Effectiveness, 2003); a course that has two distinct elements that don’t necessarily connect. Other integration problems are similar activities in face-to-face and online environments and adding online elements without reducing face-to-face activities resulting in too much work for one course (Aycock, Garnham, & Kaleta, 2002; Dabbagh, 2002; Research Initiative for Teaching Effectiveness, 2003). Integration between the two environments is critical because students must see the relevancy of activities and rationale for a blended environment (Aycock, Garnham, & Kaleta, 2002; Matthews, 2002-2003; Reay, 2001; University of Wisconsin, 2005). They must understand the structure of the course, how activities relate, and how technology will help the process (Stein, 2004; Wernet, Olliges, & Delicath, 2000). To meet the integration challenge, the following steps are suggested to redesign the entire course (Kerres & DeWitt, 2003; Sands, 2002; Willett, 2002).

- First, identify the instructional outcome of the course and how students will demonstrate mastery.
- Identify the incremental steps to achieve the outcome and objectives for each step.
- Identify course activities and assignments that facilitate students’ achieving course objectives. Here, think about the tasks student must complete rather than the method of deliver.
- Determine the proper modality, face-to-face or online, for each activity or assignment. Plan how to connect online activities with face-to-face classroom time.
By following these steps, faculty may achieve the "right mix" so that learning in both environments is integrated.

Brigham Young University has found the blended experience leads to increased attention to the ‘instructional design of courses’ (Waddoups & Howell, 2002). Focus at the “course level produces greater attention to curriculum design within departments...[because they] must specify the course objectives and the best methods for teaching the course...[that then] leads to departments questioning and refining the design of their curriculum” (Waddoups & Howell, 2002, Course and Curriculum Design, ¶ 1).

*Increased Time Demand*

Frequently, developers, both faculty and instructional designers, have disproportionate experience in either the face-to-face or online environment (Aycock, Garnham, & Kaleta, 2002; Garnham & Kaleta, 2002; Graham & Allen, in press; Graham, Allen, & Ure, 2003, in press; Willett, 2002). In addition, many faculty are generally hired for their content expertise rather than teaching and curriculum skills (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Hartman, 2002; Laws, Howell, & Lindsay, 2003). These factors make course redesign for the blended environment time consuming (Aycock, et al., 2002; Dzuiban, Hartman, & Moskal, 2004; Garnham & Kaleta, 2002; McCray, 2000; Riffell & Sibley, 2003; Rossett, Douglis, & Frazee, 2003; University of Wisconsin, 2005; Willett, 2002). A faculty development program to help faculty work through the redesign process and learn new skills for the online environment is highly recommended (Aycock, et al., 2002; Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dzuiban, Hartman, & Moskal, 2004; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004;
This program should include access to instructional designers, best practice models, and collaboration with experienced blended learning faculty. It should also include online pedagogy to facilitate interaction, manage student expectations and online issues, as well as help faculty acquire the technical skills they need (Aycock, et al., 2002; Garnham & Kaleta, 2002; Laws, et al., 2003; McCray, 2000; University of Wisconsin, 2005). Some existing faculty development programs model a blended course so faculty experience being students (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dzuiban, Hartman, Moskal, Sorg, & Truman, 2004; University of Wisconsin, 2005). These programs frequently lead faculty to shift their pedagogical philosophy, develop reflective practice, and become facilitative which impacts all their courses (Aycock, et al., 2002; Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Dzuiban, Hartman, & Moskal, 2004; Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; McCray, 2000; University of Wisconsin, 2005).

Many faculty report an increase in the time required to deliver a blended course (Dabbagh, 2002; Johnson, 2002; McCray, 2000; Willett, 2002). The increase in time is attributed to the need to interact not only in the face-to-face setting but also online, interaction is spread out over a longer period, and students are more engaged and seek more assistance (Dabbagh, 2002; Graham & Allen, in press; Graham, Allen, & Ure, 2003, in press; Johnson, 2002; Martyn, 2003; Sands, 2002; Willett, 2002). Other faculty report a large time commitment for the redesign but the time demand for delivery is essentially the same as a traditional face-to-face course (Riffell & Sibley, 2003; Utts, Sommer, Acredolo, Maher, & Matthews, 2003).
Technical Difficulties

In order to work and benefit from blended learning environments, students must feel comfortable with the technology (Dziuban, Hartman, & Moskal, 2004; Hartman, 2002; Haytko, 2001; Levine & Wake, 2000; Martyn, 2003; Berge & Cho, as cited in Sands, 2002; Utts, Sommer, Acredolo, Maher, Matthews, 2003). Interestingly, a study on self-regulator learning variables found Internet self-efficacy was not a predictor of academic success in blended courses (Lynch & Dembo, 2004). University of Wisconsin (Aycock, Garnham, Kaleta, 2002) concur finding technology was not as big a barrier for students as expected and most problems occurred at the beginning of the course. Leh (2002), however, found students with low technology skills felt anxious and pressured. Other studies found students were less computer literate than expected; they were proficient at surfing the Internet for entertainment but not for course work (Haytko, 2001; Levine & Wake, 2000). In two studies, students rated themselves as having intermediate computer skills and/or unprepared for an online course (Beisser & Steinbronn, 2002; Haytko, 2001).

In order to overcome technology challenges, students need technical support to increase their comfort level (Dziuban, Hartman, & Moskal, 2004; Graham, Allen, & Ure, 2003; Hartman, 2002; Berge & Cho, as cited in Sands, 2002). Overwhelmingly, an orientation session was suggested at the beginning of a course or before the first online session to acquaint students with the technology tools utilized in a course (Aycock, Garnham, & Kaleta, 2002; Bonk, Olson, Wisher, & Orvis, 2002; Garnham & Kaleta, 2002; Hartman, 2002; Leh, 2002; Martyn, 2003; Stein, 2004; Wernet, Olliges, &
Delicath, 2000; Willett, 2002). Another suggestion was to teach technology skills in the context of a task (Sands, 2002; Willett, 2002). For example, if electronic discussions will be used, create an initial discussion as a ‘ice-breaker’ exercise. Frequently asked questions list, troubleshooting suggestions, and complete and clear ‘how to’ instruction were also suggested (Aycock, Garnham, & Kaleta, 2002; Beisser & Steinbronn, 2002; Dabbagh, 2002; Kavenik & Robinson, 2003). Levine and Wake (2000) suggest the ideal would be Web literacy standards that are also used as a prerequisite to blended courses. On a positive note, some students felt they improved their technology skills as a result of taking a blended course and these skills would carry over to the workplace (Aycock, Garnham, & Kaleta, 2002; Beisser & Steinbronn, 2002).

The question of digital divide, whether all students have the same access to technology, becomes an issue in blended courses. Willett (2002) found as many as 20% of her students used computers at schools and public libraries to access their course. Frequently, these students encountered firewalls that prevented them from accessing certain aspects of the course.

Faculty must also feel comfortable with the technology and able to support their students to successfully deliver blended courses. An aptitude for technology increases the likelihood of a positive blended learning experience (Robison, 2004). Faculty should gain some technology skills through an initial faculty development course when they redesign their course. In addition, support from instructional designers and other support staff will help faculty through the first term the course is taught in a blended environment (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Hartman, 2002; Robison, 2004; Voos, 2003). Faculty should be encouraged to attend additional faculty development as
they become more comfortable with the management of their online course (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Hartman, 2002).

Additional technology issues involve the institutional infrastructure and world events. Initially, Willett (2002) experienced inadequate bandwidth at her university that created problems for everyone. King's (2002) course experienced the impact of worldwide events including the World Trade Center tragedy, power outages, earthquakes, computer viruses, and worms.

Institutional Barriers

Another barrier to blended learning is leadership and support from institutional administration. (Dziuban, Hartman, & Moskal, 2004; Graham & Allen, in press; Graham, Allen, & Ure, 2003; Berge & Cho, as cited in Sands, 2002). Administration must provide institutional policy such as a uniform definition of blended learning (Robison, 2004), how it fits within the institutional goals (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Hartman, 2002; Haytko, 2001), legal issues such as copyright and intellectual property (Hartman, 2002; Berge & Cho, as cited in Sands, 2002), and evaluation of programs (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Hartman, 2002; Berge & Cho, as cited in Sands, 2002). The institution must also make a financial commitment to provide the infrastructure and technical support for both students and faculty (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004; Hartman, 2002; Berge & Cho as cited in Sands, 2002; Willett, 2002). Support also includes openly endorsing blended learning to both faculty and students (Robison, 2004).
Leadership and support must also be provided at the college and department level to address the changing roles in the blended environment. Participation in blended learning needs to be included in the compensation, tenure, and promotion policies (Hartman, 2002; Laws, Howell, & Lindsay, 2003; Berge & Cho, as cited in Sands, 2002). Goals for blended learning programs should be aligned with evaluation and reward systems (Laws, Howell, & Lindsay, 2003; Berge & Cho, as cited in Sands, 2002). Deans and chairs must openly endorse blended learning and be cognizant of any increased time demands (Laws, Howell, & Lindsay, 2003; Robison, 2004). If leadership support is not available, faculty may be reluctant to adopt blended learning models (Hartman, Dziuban, & Moskal, 1999).

Student Perspective

Who are our students today? What are their characteristics and how do they view blended learning?

Generational Characteristics

Generation is a term used to describe a birth cohort who shared common experiences during their formative years. Their place in history and shared experiences creates a collective identity used to describe the group. Generally, a generation covers a 20 to 22 year period or the time required to reach adulthood (Lowery, 2001; Wendover, 2004). Today, there are four generations living in the United States: Matures, Baby boomers, Generation X, and Millennials. All four generations are represented in colleges and universities today.
The Matures, also known as ‘the Veterans,’ ‘Silent Generation,’ and ‘Depression Generation,’ span the period of 1902 to 1945 (Hatfield, 2002; Oblinger, 2003). They survived the Great Depression, World War II, Korean Conflict, Roosevelt’s new deal, and the cold war (Hatfield, 2002; Oblinger, 2003; Wendover, 2004). If they didn’t directly experience these events, they heard the stories and these stories impacted their lives. Matures grew up in extended families and heard a consistent message of values from their family and media of their time. Technical advances during their formative years included the Hoover Dam, interstate highway system (Hatfield, 2002), trans-Atlantic radio signals, stereo phonographs, and electronic computers (Dziuban, Moskal, & Hartman, 2005). Matures endured hard times and believed in lifetime employment. Themes of this generation included loyalty, sacrifice for the common good, hard work, there are good and bad people, and respect for authority (Hatfield, 2002; Wendover, 2004).

Baby boomers were the children of the Matures and were born between 1946 and 1964. Boomers are the largest generation (Hatfield, 2002) and their numbers have made a huge impact on all aspects of our society (Dziuban, Moskal, & Hartman, 2005). They experienced the transition to suburbia where the extended family was replaced by the nuclear family of mom, dad, and children; and family values were compared to those of the neighbors (Wendover, 2004). During their formative years, Baby Boomers experienced the tremendous economic expansion following World War II leaving them with a sense of well-being and optimism (Wendover, 2004). They also experienced the space race, Vietnam, divorce, consumer debt, Cuban missile crisis, and Kennedy and King assassinations. Boomers spent their early adult years exploring sex, drugs, rock-n-
roll, civil rights movements, and other causes. As they took on more responsibility, they returned to the values of their roots to become workaholics (Hatfield, 2002; Wendover, 2004). Their values revolve around hope, prosperity, helping others, and achieving world peace (Wendover, 2004). Technology markers during their generation include PLATO, fax machine, BASIC computer language, and minicomputer.

Generation X was born between 1965 and 1976. Forty percent of the Gen-Xers come from divorced family (Wendover, 2004). They are referred to as the latchkey kids because they had to fend for themselves from the age of 12 while their parent(s) worked (Dziuban, Moskal, & Hartman, 2005; Hatfield, 2002; Wendover, 2004). As a result, they are very independent and self-reliant. As a cohort, they experienced corporate downsizing/layoffs, U.S. stock market crash, excessive inflation, recessions, drugs, AIDS, Watergate, Roe vs. Roe, fall of the Berlin Wall, protesters killed in Tiananmen Square, Chernobyl nuclear accident, and Challenger space shuttle explosion (Dziuban, Moskal, & Hartman, 2005; Oblinger, 2003; Wendover, 2004). All the institutions they believed in failed, leaving them with a very cautious and economically conservative attitude (Cetron & Cetron, 2003/2004; Wendover, 2004). They see job security as a myth so they work to live (Dziuban, Moskal, & Hartman, 2005). They have very little corporate loyalty and would rather own a business than be a top executive (Cetron & Cetron, 2003/2004). They are skeptical and mistrustful of any established organization (Dziuban, Moskal, & Hartman, 2005). However, they thrive on challenge, opportunity, and training (Cetron & Cetron, 2003/2004). Generation X was the first to feel a major impact from technology. During their formative years, the following technology was
developed: Windows keyboard mouse, UNIX operating system, Intel’s microprocessor chips, C programming language, foundation for Microsoft, and Apple computers.

The Millennials were born from 1977 to 1994. They are also referred to as GenerationY, Nexters, Echo Boomers, Net Generation (Net Gens), new learners, Internet Generation, and Generation Why (Dziuban, Moskal, & Hartman, 2005; Hatfield, 2002). They are a diverse generation with one out of three being a minority and one out of four from a single parent home (Wendover, 2004). They grew up during a period of economic expansion, meteoric rise in stock prices, cell phones, pagers, and the Internet (Dziuban, Moskal, & Hartman, 2005; Wendover, 2004). They have unprecedented access to world events but get their information through the filter of television or the unfiltered Web sites on the Internet (Dziuban, Moskal, & Hartman, 2005). Strauss (Lowery, 2001) identifies seven attributes for the Millennials: conventional, confident, special, sheltered, pressured, achieving, and team oriented. Millennials have been sheltered and protected by their parents more than any living generation and viewed as special and unique. They get along with their parents, rely on them, and share their attitudes and values. However, Millennials feel more pressure, more stress, and competition for grades. They are serious students but prefer to work as teams rather than individuals, are creative and like being challenged (Lowery, 2001). Their strengths include multitasking, goal orientation, positive attitudes, and collaborative style (Oblinger, 2003). However, they exhibit a lack of basic skills, critical thinking, and initiative (Dziuban, Moskal, & Hartman, 2005; Wendover, 2004). They are able to navigate complicated technology quickly and are fascinated by new technology (Dziuban, Moskal, & Hartman, 2005; Oblinger, 2003). Technology markers for their generation are: PC introduced, Internet established, CD
sound systems, initial version of Windows operating system, introduction of Macintosh computers, HTML (hypertext markup language), and the first e-commerce Web sites.

Students Today

According to Horn, Peter, and Rooney (2002), the majority of undergraduate students today are under age 24 (57%). However, one in four undergraduate students is 30 or older (26%) bringing the average age to 26. These statistics would indicate the current student body is composed of Baby Boomers, Generation X, and Millennials. Regarding technology, 84% of undergraduate students enter college already owning a computer and 90% say they access the Internet at least once a day (Educause, 2005).

In a survey of students at the University of Central Florida, Hartman, Moskal, and Dzuiban (2005) identified learning characteristics of the Baby Boomer, Generation X, and Millennial students in online classes. They found all three groups liked the convenience, flexibility, and self-paced style of online courses. Boomers equated online interaction to one-on-one attention, Gen-X like the constant availability, and Millennials enjoyed communities among peers. On a less positive note, Boomers missed the face-to-face interaction, Gen-Xers wanted to ‘get to the point’ and reported substantial, pointless interaction in class, and Millennials were disappointed with the lag time for responses, especially from faculty. Millennials felt the interaction mechanisms in the online course were “less adequate than their personal technologies” (Hartman, et al., 2005, p. 6.9). Boomers reported that online courses enhanced their technology skills and modified their roles to include technology in their learning. Gen-X reported improved time management skills and Millennials had a heightened sense of responsibility and
motivation. Hartman, et al., (2005) believe blended learning provides an opportunity to bridge the generations. It provides the face-to-face interactions, convenience, and flexibility desired by Boomers, independence preferred by Gen-X, and interaction and community for Millennials.

Oblinger (2003) believes interactive, experiential, and authentic learning are needed to meet the expectations of students raised on the Internet. For example, online labs would provide students with an opportunity to experiment without the cost and safety concerns of physical labs. MIT developed WebLab that allows electrical engineering students to test applications in an online lab 24 hours a day. Brigham Young University (Waddoups & Howell, 2002) has ChemLab that encourages problem solving and exploration. University of Virginia (Oblinger, 2003) has a Web site on the Civil War that allows students to draw their own conclusions based on original records from two counties representing each side of the conflict. Simulations and educational games in the online environment provide other ways to engage learners.

**Student Attitudes**

Research on student attitudes toward blended learning includes reflective accounts of students experiences, survey data, focus groups, and interviews. The results from these studies fall into five themes: satisfaction, convenience/flexibility, interaction, time management/psychological maturity, and technology.
Satisfaction

Overwhelmingly, students reported they like blended learning environments, would take another blended course, and would recommend blended courses to other students. (Aycock, Granham, & Kaleta, 2002; King & Hildreth, 2001; Leh; 2002; Martyn, 2003; Riffell & Sibley, 2003; Rovai & Jordan, 2004; University of Wisconsin, 2005; Young, 2002). Students felt they learned the course content as well as or better in the blended format than the traditional face-to-face environment (King & Hildreth, 2001; Leh, 2002; Martyn, 2003) and online courses were no easier than traditional courses (King & Hildreth, 2001). Some students reported that Internet resources helped their learning (King & Hildreth, 2001) while others stated Internet-based technologies helped them understand the concepts better (Bauer, 2001). Students in Riffell and Sibley’s (2003) study reported online homework helped them learn the materials and prepare for tests. In Rovai and Jordan’s (2004) study, students liked the authentic nature of their assignments because they were relevant to work.

Haytko (2001), on the other hand, reported students did not like the blended learning environment. Negative comments from students in the blended course focused on workload, technology problems, and lack of “interpersonal interaction with the faculty member” (Haytko, 2001, p.36). The university in this study was a small, private school in an urban setting with a reputation of close faculty/student interaction. Haytko (2001) felt the university culture stressing personal interaction conflicted with the reduced face-to-face class time in the blended format. Priluck (2004) also reported negative responses from students. Students in the blended course reported lower overall satisfaction, skill development, team building, and social interaction in the blended course. However,
Priluck (2004) also reported that the blended course was not redesigned for the blended format which could account for negative reception from students.

**Convenience and Flexibility**

The ability to choose the best time and environment to learn, work around professional and personal commitments, and manage academic schedules fits the lifestyles of many students (Aycock, Garnham, & Kaleta, 2002; Dziuban, Hartman, & Moskal, 2004; King & Hildreth, 2001; Leh, 2002; Martyn, 2003; University of Wisconsin, 2005; Young, 2002). According to one student, “I like the flexibility in that I can work on the course work when it fits into my schedule. With working, taking care of a family and going to school, I don't always have the freedom to be to a class at a particular time” (Aycock, Garnham, & Kaleta, 2002, Lesson #7, ¶ 1). According to Aycock, Garnham, & Kaleta (2002), time flexibility is so important to students it outweighs any technology difficulties they may encounter. From another student perspective, “I lose interest in a classroom setting, but meeting 50/50 is nice – it helps keep me in check and also gives me freedom” (Young, 2002, p. A33) might indicate blended learning improves student motivation and helps with time management.

**Interaction**

Aycock, Garnham, and Kaleta (2002) report student engagement and interactivity increases in the blended format. For example, one study reports that 66% of students felt the quality of student-instructor interaction was higher in their blended course than compared to a traditional lecture format and 27% felt the quality of student-instructor
interaction was the same (Riffell & Sibley, 2003). King and Hildreth (2001) confirmed student perception of higher student-instructor interaction and added that students felt they could ask questions in a non-threatening manner.

Students also reported greater student-student interaction. From anecdotal student responses, Story and DiElsi (2003) reported an increased sense of community and peer support. Dabbagh (2002) reported that all students had an opportunity to express their point of view. Students stated:

“IT was a pleasure to receive feedback as quickly as we did, most often in the same day or less. It allowed for a smooth progress toward learning the material” (Martyn, 2003, p. 21).

“I really enjoy the discussion board format. It’s really a great way to see how concepts can be applied at work!” (Martyn, 2003, p. 21)

“I had three times the feedback on my work. Comments were very insightful” (Beisser & Steinbronn, 2002, p. 195).

“In three years of graduate school, I have never had an opportunity to read someone’s research, thus being able to learn from someone else’s thinking and writing” (Beisser & Steinbronn, 2002, p. 195).

Leh (2002), on the other hand, reported students missed the face-to-face communication and personal contact. Utts, Sommer, Acredolo, Maher, and Matthews (2003) found students wanted more interaction.
Time Management and Psychological Maturity

Students reported self-motivation, organization, and time management as skills required to succeed in blended courses (Aycock, Garnham, & Kaleta, 2002; Riffell & Sibley, 2003; University of Wisconsin, 2005). According to a student at Sinclair Community College, “If I took an online class [100% online], I'd probably do poorly and stress myself out by procrastinating” (Young, 2002, A Mixture is Best section, ¶ 6). Many students noted the blended environment required they become more active participants in their learning rather than passively receiving information from a lecture (Dziuban, Hartmart, & Moskal, 2004; University of Wisconsin, 2005).

Also, students didn’t always grasp the idea that fewer class meetings meant more work away from the classroom (Aycock, Garnham, & Kaleta, 2002; Haytko, 2001; University of Wisconsin, 2005). As a result, students felt blended courses were more work than traditional courses (Utts, Sommer, Acredolo, Maher, and Matthews, 2003).

Technology

Students felt they acquired useful computer skills from blended courses that would transfer to the workplace (Aycock, Garnham, & Kaleta, 2002; King & Hildreth, 2001; University of Wisconsin, 2005). One student stated, “I am a computer dinosaur. This course helped increase my skills and decrease my anxieties” (Beisser & Steinbronn, 2002, p. 195). However, other students reported they felt pressured and anxious if they lacked technology skills (Haytko, 2001; Leh, 2002).
Summary

Buckley (2002), Barr, and Tagg (1995) noted a paradigm shift in higher education leading to new models of teaching and learning. The studies reported indicate blended learning has the potential to play an integral role in this shift. However, to fully implement blended learning environments, all parties, at all level of the institution, need to be aware of the benefits and challenges, be willing to address these issues, and embrace the inherent changes.
CHAPTER THREE: RESEARCH METHODS

The primary purpose of this research study was to examine the phenomenon of blended learning at a large metropolitan university. In the genre of case studies, this research study was bounded by restricting the study to one university and collecting data from multiple sources, such as interviews, observations, surveys, electronic documents, and institutional databases. Both quantitative and qualitative methods were used in the study as discussed below.

Setting

The population of this study was the University of Central Florida (UCF), a large metropolitan university in Florida. The university was chartered in 1963 and classes began in October 1968. UCF is one of eleven public universities in Florida and is classified as a “level 6 institution” by the Southern Association of Colleges and Schools (SACS), a “four-year II” institution by Southern Regional Education Board (SREB), and a “doctoral/research university-intensive” institution by the Carnegie Foundation (University of Central Florida, 2005-a).

The university is comprised of a large campus in a metropolitan area with 21 regional campuses and centers. As of spring 2005, there were 41,042 students enrolled at the university with 83% (N=34,083) identified as undergraduates and 17% (N=6,959) as
graduate students (University of Central Florida, 2005-b). Minority students represent 29% (N=11,764) of the student population. The university has on-campus and affiliated housing for approximately 8,000 students. Therefore, the majority of students commute from the surrounding communities.

Research Design

Table 4 below shows the three design elements of this study. The first element was a case study of HFT4932, Exploring Wines of the World, a blended learning course. The HFT4932 case study included interviews with the professor, observations of the face-to-face class, artifacts from the classroom, review of the online content and activities, and a survey of the HFT4932 students (spring 2004 term, N=54). This element was designed to provide an in depth look at a blended course from a faculty perspective. The second element was a survey of all students enrolled in blended courses from summer 2004 through fall 2005 terms (N=14,794). This survey should not be confused with the survey of HFT4932 students in element one. The survey was administered in spring 2005 and designed to measure student attitudes toward blended courses. This element provided the student perspective of blended learning. The third element was institutional data collected by the Research Initiative for Teaching and Learning (RITE). Every two years, RITE surveys students and faculty regarding UCF’s online initiative with the most recent surveys occurring in 2002. RITE’s institutional survey data was used to validate the findings of this study. The three elements converged to create a comprehensive description of blended learning at UCF.
Table 4
Elements of the Research Design

<table>
<thead>
<tr>
<th>Case Study of HFT4932</th>
<th>Spring 2005 Student Survey</th>
<th>Institutional Database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online content and activities</td>
<td>Survey of blended students -Summer 2004 through fall 05 blended courses</td>
<td>RITE 2002 student survey -Success -Retention</td>
</tr>
<tr>
<td>Observations of face-to-face class</td>
<td>-Sent to all students (N=14,794)</td>
<td>-Satisfaction -Strategies for success -Interaction</td>
</tr>
<tr>
<td>Artifacts from classroom</td>
<td>Interviews with professor -Measured attitudes toward blended courses</td>
<td>RITE 2002 faculty survey -Satisfaction -Strategies for success -Willingness to teach online</td>
</tr>
<tr>
<td>HFT4932 survey (N=54)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HFT4932 Case Study - Faculty Perspective

Participants

The instructor and students in HFT4932, Exploring Wines of the World, participated in the study to provide an in-depth perspective of a blended learning course. The process of selecting a course started with a list of all blended courses taught during the spring 2004 term. One faculty member on the list stood out as an individual who transitioned from an administrative position back to classroom instruction. As an administrator, this individual was instrumental in initiating and supporting UCF’s online program and, therefore, had a unique perspective for the study. He/she agreed to participate in the study. The course was HFT4932, Exploring Wines of the World.

HFT4932, Exploring Wines of the World, is a three credit hour, upper level undergraduate course offered by the Rosen College of Hospitality Management. The
prerequisites for the course are completion of HFT1000 - Introduction to Hospitality and Tourism Industry, HFT3261 - Restaurant Management and students must be 21 years of age. As of spring 2004, the course was taught on the Rosen College of Hospitality Management campus that is approximately 50 miles from the Orlando campus. Only hospitality management students may register in the course. Data from three terms of HFT4932 were used in the case study. Table 5 provides the term, number of students registered each term, and the campus where the course was taught.

Table 5
Number of Students in HFT4932 by Term

<table>
<thead>
<tr>
<th>Term</th>
<th>Number of Students Registered</th>
<th>Location Taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2003</td>
<td>40</td>
<td>Orlando campus</td>
</tr>
<tr>
<td>Spring 2004</td>
<td>54</td>
<td>Hospitality campus</td>
</tr>
<tr>
<td>Fall 2004</td>
<td>35</td>
<td>Hospitality campus</td>
</tr>
</tbody>
</table>

Data Collection

An initial pilot study was conducted in spring 2004 and additional observations were conducted in fall 2004 (see syllabi in Appendix B). The course was not delivered during the summer 2004 term. Historical data from fall 2003 (see syllabus in Appendix B) was used as a comparison to spring 2004 and fall 2004. Table 6 outlines the types of data collected for each term.
Table 6  
Data Collected from HFT4932 by Term

<table>
<thead>
<tr>
<th>Term</th>
<th>Data Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2003</td>
<td>Online content and activities</td>
</tr>
<tr>
<td></td>
<td>Student grades</td>
</tr>
<tr>
<td>Spring 2004</td>
<td>Online content and activities</td>
</tr>
<tr>
<td></td>
<td>Student grades</td>
</tr>
<tr>
<td></td>
<td>Four observations of face-to-face classes</td>
</tr>
<tr>
<td></td>
<td>Artifacts from classroom</td>
</tr>
<tr>
<td></td>
<td>Two interviews with professor</td>
</tr>
<tr>
<td></td>
<td>E-mail survey of HFT4932 students</td>
</tr>
<tr>
<td>Fall 2004</td>
<td>Online content and activities</td>
</tr>
<tr>
<td></td>
<td>Student grades</td>
</tr>
<tr>
<td></td>
<td>Three observations of face-to-face classes</td>
</tr>
<tr>
<td></td>
<td>Artifacts from classroom</td>
</tr>
<tr>
<td></td>
<td>Discussions with professor on how the class was progressing</td>
</tr>
<tr>
<td>Spring 2005</td>
<td>E-mail communication with professor for clarifications</td>
</tr>
</tbody>
</table>

In preparation for the face-to-face classroom observations, the online portion of the course was reviewed to familiarize the researcher with the course structure. The first observation occurred on March 17, 2004, at which time the researcher was introduced to the students. Notes were taken during each observation. These notes were expanded within 72 hours of each observation to capture as much of the classroom proceedings as possible. The expanded notes were derived from the observation notes and the researcher’s memory of the class session. During this period, the researcher also recorded personal experiences in a diary. The diary was intended as a cross reference in case personal experience might have influenced the researcher’s perception of events.
The online portion of the course was reviewed as the digital equivalent of classroom observations. Prior to the first observations in spring 2004, copies of the fall 2003 and spring 2004 online content were obtained from the faculty member for review (WebCT allows the creation of a course backup, an electronic snap shot of the course that may be viewed at a later date). Online content for both terms was printed and organized in manuals. Each tab in the manuals represented a module of content or activity in the course including discussion postings, listings of assignments, and quiz submissions. Documentation of the two terms was reviewed in detail to determine the similarities and differences. For example, the syllabi for each term were laid side by side and reviewed section by section. During the review process, notes were made on the pages as well as a summary of the results. The summary provided a picture of the changes that occurred in the online portion of the course between the two terms. Also, a list of assignments and grades was created from the syllabi and each assignment was cross referenced in the online content. A summary of assignments and how students were assessed resulted from this review.

Prior to the fall 2004 term, the online content was reviewed. The spring 2004 and fall 2004 online content was almost identical; therefore, the fall 2004 content was not printed. Instead, the printed content for spring 2004 was compared to the electronic copy of fall 2004 and notes were made in the spring 2004 documents to identify any changes made for fall 2004. Lastly, the final grades for all three terms were downloaded to obtain frequency distributions. These distributions were compared between the three terms.

On March 17th and 31st of 2004, unstructured interviews were conducted with the faculty member teaching the course. An unstructured format was used to allow the
faculty member to express his/her perspective without bias from the researcher. The researcher tried to interject questions only to elicit further details on the topics being discussed. The interviews were audiotaped and transcribed. To ensure accuracy, the transcript was reviewed while listening to the tape and then sent to the faculty member for a member check. Member checking is the process of submitting drafts for participant review (Stake, 1995, as cited in Creswell, 1998; Stake, 2000). Upon verification of accuracy, the audiotapes were erased as required by the Institutional Review Board.

A few questions occurred after reviewing the observation notes, interview transcripts, and literature review on blended courses. A semi-structured interview (see Appendix C) was conducted with the faculty member via e-mail during spring 2005 to resolve these questions. The first question was a clarification in the sequence of events because it was not clear when the instructor formally presented the wine tasting process students used for the course. The remaining questions revolved around why the professor selected the M format and what the format brought to the course.

Two weeks prior to the end of spring 2004 students in HFT4932 were surveyed (See Appendix D) by e-mail to obtain their opinions on the course. This survey will be referred to as the HFT4932 survey to differentiate it from the spring 2005 survey mentioned above as the third element of the research design. Questions on the HFT4932 survey elicited the students’ perceptions of the M format and whether the wine tastings improved their knowledge of wines. Only three out of 54 students responded to the survey. The low response rate is attributed to end of the term rush, no incentive to complete the survey, and mistrust that the responses would be confidential. Due to the low response rate and limited data obtained from the HFT4932 survey, it was not
repeated with the fall 2004 students. Upon reflection, the researcher believes a survey is not the appropriate method to elicit student feedback on a course. Instead, focus groups would be a better method because they allow follow up questions. Focus groups allow the researcher to collect in-depth data on all aspects of the course.

Qualitative Analysis

For case studies, Stake (1995, as cited in Creswell, 1998) advocates four forms of data analysis and interpretation. First, there is categorical aggregation where the researcher looks for instances or themes in the data. Second, direct interpretation is where the researcher looks for meaning in a single instance without looking for multiple instances. Both forms of analysis require a deconstruction and reconstruction of the data. The third form of analysis is to look for patterns and correspondence between categories or themes. The fourth form of analysis develops naturalistic generalizations.

To deconstruct and reconstruct the classroom observations, online reviews, and faculty interviews, the modified Stevick-Colaizzi-Keen method, “frequently utilized in phenomenological studies” (Creswell, 1998, p.147), was used to analyze the data. The steps in this process were:

1. Begin with a full description of researcher’s experience of the phenomenon.
2. Find statements in the faculty interviews and student comments that described their experience of blended learning and organize these statements into a list of non-repetitive, non-overlapping statements.
3. Group statements into “meaning units” or textual descriptions of the experience, what happened, including verbatim examples (Creswell, 1998, p. 150; Miles & Huberman, 1994).

4. Seek “all possible meanings and divergent perspectives, varying the frames of reference…, and constructing a description of how the phenomenon was experienced” (Creswell, 1998, p. 150) to create imaginative variation or structural description.

5. Construct an overall description of the meaning and essence of the blended learning experience.

The modified Stevick-Colaizzi-Keen method reduces the data into statements, categories, or themes.

Following the Stevick-Colaizzi-Keen method, the interview transcripts were reviewed and similar statements were categorized together. Each statement was treated with equal worth and the statements were organized into a list of non-repetitive, non-overlapping statements. Creswell (1998) refers to this process as the horizontalization of data. Next, the statements were organized into “meaning units” or themes. A word processing document was created for each group of statements and a temporary title was created. As the themes fully emerged, the titles were changed to match the theme. Care was taken to transfer the interview date with each statement. The following themes emerged from the groupings: definition, integration, objectives, face-to-face, online, mid-term and final exams, exercises, and final project. The face-to-face theme was further divided into lecture and wine tastings. Sub-categories for online included communication, content, study guide, practice quizzes, and quizzes. Next, the expanded
notes from the classroom observations and online reviews were integrated into the interview themes. Also, applicable notes from the literature review were added.

Bransford, Brown, and Cocking’s (2000) learning environments of learner centered, knowledge centered, assessment centered, and community centered were used to organize a description of the blended course. Anderson’s (2005) application of these learning centers to the online environment was used as well. Using the philosophical lenses of these centers, a description was crafted to impart the essence of HFT4932 from the faculty perspective. Ally’s (2005) educational theory as it applies to the online environment was included in the findings as another way to describe HFT4932. Student comments from the HFT4932 survey were used to validate the faculty’s description.

Verification

Member checking and triangulation were the two forms of verification used in the HFT4932 case study. The first verification step was to review the transcripts while listening to the audiotapes to ensure accuracy. Next, the transcripts were forwarded to the professor by e-mail for verification by member checking. The professor was asked to review the transcripts and notify the researcher if any discrepancies were discovered. A second member check occurred after the description of the blended course, HFT4932, was drafted. Again, a copy of the description was forwarded to the professor for comment. The professor did not make changes to either document.

Triangulation of information is another form of verification used in qualitative research. Triangulation is the process of “using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation” (Stake, 2000, p. 443).
Creswell (1998, p. 213) described triangulation as “searching for convergence of information.” For the description of HFT4932, the interview transcripts, classroom observations, classroom artifacts, review of the online course materials, and HFT4932 survey all provided a perspective of the course. For example, the professor felt the wine tastings helped students develop a descriptive language for the taste of wines and grounded their perceptions in a kinesthetic experience. This perspective was confirmed by the HFT4932 surveys when students commented the wine tastings improved their knowledge and the online exercises that initiated the tasting experience and a methodology for tasting wines.

Spring 2005 Student Survey – Student Perspective

Participants

In spring 2005, an online survey was used to gather student attitudes toward blended learning courses. This survey will be referred to as the spring 2005 survey to differentiate it from the survey conducted with the HFT4932 students. Participants in the spring 2005 survey were students registered in blended learning courses during five consecutive semesters from summer 2004 through fall 2005 (N=21,454 including duplicate students). Registration data were retrieved from the institutional database including the latest e-mail addresses provided by students. Students under age 18, duplicate students (registered in more than one blended course), and invalid e-mail addresses were removed from the list leaving a total of 14,794 students. E-mail messages were sent to the 14,794 students requesting their participation. Out of this number, 980 students completed the survey or 6.6%.
Data Collection

The spring 2005 survey (See Appendix E) was conducted to collect student attitudes toward blended courses. The survey data were collected through an online form. E-mails were sent to students the week after the 2005 spring break requesting participation in the survey. A follow-up e-mail was sent the next week to remind students to complete the survey. The e-mail messages followed the format recommend by Dillman (2000) for Internet surveys. Informed consent was provided on the first page of the survey, as approved by the Institutional Review Board, and completion of the survey constituted consent to participate. All student responses were anonymous and e-mail addresses were not captured. The survey was password protected to prevent unauthorized individuals from participating. Access instructions and password for the survey were provided in the e-mail messages.

Survey Instrument

Questions for the spring 2005 survey were drawn from institutional research conducted by the Research Initiative for Teaching Effectiveness (RITE) for online courses and issues found in the professional literature. The questions covered satisfaction, interaction, technical problems, activities and organization of course, strengths and challenges of the blended environment, and demographic data. The questions included both five-point Likert scale and open response questions. The survey was validated against previous institutional surveys conducted by RITE and followed the
format suggested by Dillman (2000) for Internet surveys. A copy of the survey is available in Appendix E.

Data Analysis

Likert scale questions in the spring 2005 survey were analyzed using three quantitative data analysis methods. First, SPSS was used to run frequency distributions on all the data. Second, the survey collected the age of each student. To identify students by generation, a new field was created in SPSS to categorize the data by generation. A generation is a birth cohort who shares common experiences during the formative years. The four generations used are identified in Table 7. Next, crosstabulations were run between the Likert scale questions and the generations field to determine generational responses to each question. Finally, Spearman’s correlation coefficient was used to identify possible relationships. Demographic data were used to identify the respondent’s academic level, gender, and age.

Table 7
Definition of Generations

<table>
<thead>
<tr>
<th>Generation</th>
<th>Year of Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matures</td>
<td>1902-1945</td>
</tr>
<tr>
<td>Baby Boomers</td>
<td>1946-1964</td>
</tr>
<tr>
<td>Generation X</td>
<td>1965-1976</td>
</tr>
<tr>
<td>Millennials</td>
<td>1977-1994</td>
</tr>
</tbody>
</table>
The modified Stevick-Colaizzi-Keen method used for the HFT4932 case study was applied to the open response questions in the spring 2005 survey. There were six open response questions (see Appendix E) in the student survey including comments about interaction, description of technical problems, activities and organization of course, and strengths and challenges of the blended environment. Themes reported in the literature review were not reviewed prior to analysis of the survey to avoid influencing the results. Student comments for each question were reviewed and similar statements were categorized together. Again, word processing documents were created for each group of statements and a temporary title was added. As the themes fully emerged, the titles were changed to match the theme. The statements were organized in each group in a non-repetitive, non-overlapping list. To avoid losing the essence of some statements, it was not possible to avoid repetition. For example, one student “enjoyed discussions” because they provided interaction with other students while another student “enjoyed discussions” as a way to actively engage in their learning process. Also, some statements applied to more than one theme. In the preceding example, both statements apply to the interaction theme; however, the second statement also applies to active learning.

To further clarify the Stevick-Colaizzi-Keen method used in this study, the following example shows how student comments were distilled. The example begins with a list of actual student comments from the survey and is followed by a summary statement. This example was chosen because of its simplicity and the brevity of comments. For this survey question, students were asked to describe the kinds of technology difficulties encountered in their blended course. The following comments all referenced grades:
• Grades showing up
• Grades not showing up
• Grades not appearing
• Problems viewing grades posted online.
• Not being able to view your grades
• Grades not available
• Grades on course material inaccessible
• Not being able to access grades
• Trouble accessing grades/assignments
• The site is not updated with grades
• Grading difficulties (things not showing up at all or correctly);
• Missing grades when the assignment was supposed to be automatically graded.
• Unable to see posted grades. later found out that they were actually not posted when they were originally supposed to be so no one else could see them either.
• My grade was not posted although the teacher had announced that the grades were up
• Some of my grades would appear in one account and the rest of my grades were on the other account.

These comments may be summarized in a single complaint of “problems viewing grades online.”
Once the statements were analyzed for each question, the themes for each question were compared. Duplicate themes were discovered between questions. Statements for the duplicate themes were aggregated and again analyzed to avoid repetition and overlap. Each theme was then aggregated with the quantitative survey results to create a verbal picture of student attitudes toward blended courses.

Verification

For the spring 2005 student survey, the quantitative data, qualitative data, institutional data from the Research Initiative for Teaching Effectiveness (RITE), and literature review were triangulated to verify the results. An example of this triangulation can be seen with the questions about interaction. Four questions on the survey measured the perceived quantity and quality of student-to-student and student-to-faculty interaction. The results of the spring 2005 survey were compared to the 2002 institutional student survey reported by Dzuiban, Hartman, Juge, Moskal, and Sorg (2005). Some qualitative data were also derived from the Dzuiban, et al., (2005) study. Additional qualitative data were obtained from studies reported in professional literature. Both the quantitative and qualitative data converge to create a description of student attitudes toward blended learning.

Institutional Data

Beginning with the online initiative in 1996, the Research Initiative for Teaching Effectiveness (RITE) (http://rite.ucf.edu) has provided continuous research of UCF’s online environments and populations. RITE’s research design is aligned with four of the
five Sloan quality pillars: learning, effectiveness, student satisfaction, access, and faculty satisfaction (Dzuiban, Hartman, Moskal, Sorg, & Truman, 2004). RITE regularly surveys students and faculty and tracks student demographics, success and withdrawal rates. Figure 7 shows the components of RITE’s evaluation model. Some of RITE’s research findings are reported in chapter one under “Current Status of UCF’s Blended Course Initiative.”

![Figure 7. Components of RITE’s online evaluation model.](image)

RITE’s research findings were used to verify the study’s results. The results were triangulated with both the HFT4932 case study and spring 2005 survey to validate the
findings and identify trends. RITE’s research findings are referred to as institutional survey, institutional study, or institutional data to differentiate them from the results of this study.

Finally, all three aspects of the study (HFT4932 case study, 2005 survey, and institutional data) were viewed as an aggregated. This final validation created a triangulation of all aspects of the study and allowed the researcher to identify common themes.

Summary

This study used both quantitative and qualitative data to create a description of blended learning at the University of Central Florida (UCF). The HFT4932 case study provides a faculty perspective of a blended course and the spring 2005 survey provides the student perspective. Also, institutional data from RITE was used to validate the findings of this study.
Voos (2003, p. 4) states the process of determining what occurs in the face-to-face and online environments “provides critical information about the discipline, content, teaching methods, learning processes, and the media and technologies available to support the most effective combination(s).” To identify these elements, the Sloan Consortium held a conference on blended learning and participants proposed the use of case studies to analyze blended courses. The outcomes of these cases studies may be used to identify issues and questions for further research.

In 2004, the Sloan-C conference on blended learning identified the following issues to be examined from the faculty perspective:

- motivation for adopting a blended environment
- pedagogical practices
- faculty satisfaction
- workload

Following is a case study of a blended course in wine appreciation at the large metropolitan university. The course is three credit hours with 50% delivered face-to-face and 50% online. This format translates in one meeting a week for 1.5 hours. Data for the study were obtained through interviews with the faculty member, observations of the
face-to-face and online course, artifacts from the classroom, student grades, and the HFT4932 survey of the students.

The professor chose the blended format because of its time flexibility for both faculty and students and its creative use of the face-to-face class time (e-mail message received May 11, 2005). Because the readings and theory could be delivered to students through the online environment, the face-to-face time could be used to discuss key theory issues and tie them to a wine tasting experience. If this course was delivered in the traditional format, more class meeting time would be devoted to covering content and taking quizzes rather than building the wine-tasting experience.

The first wine appreciation course was delivered in the fall 2003 semester and is a tale of what not to do in a blended course. A critical factor of any blended course is the integration of face-to-face and online content (Aycock, Garnham, and Kaleta, 2002; Dabbaugh, 2002; King, 2002; Sands, 2002; University of Wisconsin, 2005). In this instance, poor facilities and organization of the course resulted in a lack of integration between both the face-to-face sessions and online content. Students were unable to make important connections between the content and wine tasting experiences.

A new facility was being built at the Rosen College of Hospitality Management that included a room for wine tasting and lecture. Unfortunately, the new facility was not available for the first term of the wine appreciation class. As a result the lecture and wine tasting portions of the course were delivered in different rooms located in different buildings on UCF’s Orlando campus. Because it was too disruptive to deliver the lecture and then adjourn to another building for the wine tastings, the content in the face-to-face portion of the class alternated between a lecture one week and wine tastings the next
week. On wine tasting weeks, the weekly content was covered online rather than in a lecture. During the tastings, the professor would refer back to the content (lecture or online) but felt students had a hard time making the connections between the content and wine tastings (interview on March 17, 2004). The professor also felt students put less emphasis on the online content because they were thinking it was less important if not covered in the face-to-face lecture (interview on March 17, 2004). Reflecting on ways to improve, the professor began providing learning objectives for the week and assignment reminders at the beginning of each class lecture. The fragmentation of content, however, remained a problem.

The course was offered again during the spring 2004 and fall 2004 semesters in the new facility. Reflection on the first term led the professor to narrow the focus of the course objectives. Also, all content was put online and addressed in the face-to-face session. The face-to-face session included both lecture and wine tasting in the same class session, thereby, eliminating the fragmentation experienced in the first term. In addition, new features, such as study guides and self-tests, were added to the content to help students focus on important points and to self-assess their learning. In the words of the professor, “what works best is what I call an integrated, blended course…where the elements…support [each] other” (interview on March 17, 2004). The final grades from the three terms reflect improved student outcomes. The average final grade for fall 2003 was 67% (n=40), 82% (n=54) in spring 2004, and 85% (n=35) in fall 2004. Following is a description of the spring 2004 class. The changes instituted in spring 2004 were carried over into the fall 2004 class.
According to the professor (interview on March 17, 2004), the ultimate goal of the course is for a student to be able to identify wines from different regions of the world, describe the differences in the tastes of wines from those regions, and why the taste is different. This goal requires students to develop two types of knowledge: (1) kinesthetic knowledge and language for the tastes of wines and (2) content knowledge about wine regions and winemaking. The kinesthetic knowledge is addressed mostly in the face-to-face portion of the course while the content knowledge is covered both online (computer-mediated instruction) and face-to-face.

The face-to-face portion of the course has two elements: lecture and wine tasting. When students enter the classroom, a PowerPoint slide displays a reminder of assignments for the week, a feature added during the first term. The professor also briefly reviews these tasks at the beginning of the class and gives students an opportunity to ask questions or addresses concerns. Both aspects serve to keep students organized and on task. Next the professor uses PowerPoint slides to present the lecture, what he considers the highlights of the factual information on a particular region or wine (interview on March 17, 2004). Based on experience from the first term, the professor felt students needed help figuring out what was important in the content, and the lectures were designed to identify these elements for students (interview on March 31, 2004). Even though the professor calls this portion of the class a lecture, observation of the class revealed it is more of a discussion. Students with more advanced knowledge of wines frequently added comments and students felt free to interject questions. In some instances, the professor elicited information from the students by asking questions or probing for more details. A survey (HFT4932 survey) was distributed to students at the
end of the spring 2004 semester; only three of 54 students responded. Of those who did respond, one student commented, "I ...feel that the in-class lectures, being able to ask questions, and the tastings were extremely helpful in understanding wine and the processes that it takes to produce it."

Another important aspect of the lecture was the pronunciation of wines, regions, and winemaking terminology. “There are a lot of words that they [students] don't know how to pronounce when they see them” (interview on March 31, 2004). Even though the textbook has a pronunciation guide, hearing the pronunciation reinforces the student's knowledge.

The face-to-face format for the spring 2004 term started with a 45-minute lecture followed by 30 minutes of wine tasting. The format of tasting the wines during the same class as the lecture was designed to improved integration of factual knowledge with the kinesthetic experience. Upon reflection, however, the professor made a change in the format. Rather than "lecturing" on all the regions and wines covered that day and then tasting the wine, the lecture and wine tasting were mixed. For example, the lecture might start with a discussion of wines in Tuscany region of Italy and followed by tasting a wine from that region. Next, the lecture would proceed to Spain and tasting a wine from Spain. The professor felt the change in format would improve integration of the experience by providing the tasting experience immediately after a discussion of the content. A quote from an earlier interview clearly describes what happened in the new format. "I would say something abstract like Shiraz is a dark inky wine with medium tannins and maybe a little hint of spice...then I immediately go and open a bottle of it and you taste it and you taste the differences and see whether or not you agree" (interview on
March 17, 2004). This modification in the classroom format was continued in the fall 2004 term.

Wine tasting is the kinesthetic portion of the face-to-face class. Although there are a few kinesthetic activities online, the majority of the kinesthetic knowledge is built in the face-to-face class. The challenge here is to build a language and memory for the different tastes encountered with wines. Most people don't have a language to describe taste. "If you ask most people what red wine tastes like, they'll say it tastes like red wine. If you ask...what a steak tastes like, they'll say it tastes like steak. They don't have the language to tell you...the component flavors in steak, for example. It is the same thing for wine...their palates are not educated enough to say that tastes like blackberry...or it tastes like cherry...so we're trying to build a vocabulary" (interview on March 31, 2004).

For this course, the wine tasting experience begins with the second face-to-face class session. During the class, the professor walks through the wine tasting process used by professionals and students apply the process to wines tasted that day (e-mail message received May 11, 2005). The face-to-face session is followed by the second online content module. The human physiology of taste is explored including Web sites on tongue taste areas. Next, the students are sent to their textbooks to read a section on what to expect the first 60 seconds after swallowing the wine and terminology associated with tasting wines. Finally, the students encounter their first exercise in the online content where they are directed to smell cinnamon and vanilla and taste lemon, sugar, tea, and salt. All these items are commonly found at home or in the grocery store. The flavors are applied to different parts of the tongue, building on the physiology of taste, and help students identify their own taste sensitivities. Each exercise builds the first steps in the
ladder toward the kinesthetic knowledge of smell and taste. This exercise is one of the few times the kinesthetic experience is carried to the online environment.

The interaction between faculty and student, student to student, and student to content, in this instance the wine, collaboratively builds the “wine tasting” knowledge. The professor starts the process by asking what the students taste or suggesting "does it taste like this?" (interview on March 31, 2004). In some instances, the characteristics of the wine will lead to an expected taste and students must assess whether that taste is present, such as the Shiraz example above. Hearing the descriptions of tastes and smells from other students, the professor, and, sometimes, outside experts, is a social experience that helps build knowledge to describe the sensations experienced in the nose and palate (Vygotsky, 1978; Wenger, 2001). From the HFT4932 survey, one student commented, "tasting the wine and being able to hear the professor's descriptions of it while I was tasting was very helpful in my understanding of different varieties." Another student commented, "the wine tasting most definitely improves my knowledge of wine. The tangibility of the class subject and its difference in experience from person to person makes it imperative to have a hands on portion for this course where students...experience different...wine[s] for themselves."

The online portion of the course carries the majority of the content and theory. The professor was unable to find a textbook with the desired depth of content. Therefore, the professor wrote the online content to cover the material at the desired depth (interview on March 17, 2004). The content is a summary of information derived from a number of sources (interview on March 31, 2004). A textbook is used in the course and occasional readings are assigned. However, the text is usually referenced as a source for
additional information (interview on March 31, 2004). The online content also links to Web sites for more information such as maps of wine regions or a chateau. The general outline of materials follows the approach used in the textbook. It moves from white wines of the new world, white wines of the old world, red wines of the new world, red wine of the old world and dessert wines. As a result, wine regions of the world are covered in the first half of the term with white wines and reinforced during the second half with red and desert wines. Additional information online includes study guides for each online module. The study guides identify the main principles the professor wants students to know (interview on March 17, 2004) and are delivered in a question format much like questions at the end of a book chapter. Students must know the answers to the study guide questions.

Assessment in the course may be characterized as both formative and summative. The first form of assessment occurs in the first online module. Students are asked to complete a survey designed to profile their levels of technology expertise, knowledge of course expectations, and experience with wines. The survey may be compared to a pre-test to assess students’ existing wine knowledge. The rest of the survey is designed to identify students who need technology assistance and insure students are familiar with the course requirements; both of which are designed to identify problem areas or students with specific needs at the beginning of the course.

Formative evaluation takes place in several forms. The professor, of course, constantly observes students during the face-to-face environment to assess understanding of the content and makes adjustments as necessary. Students self-evaluate by comparing their perception of wines to those voiced by other students and the professor. Students
also have an opportunity to assess their content knowledge by taking practice quizzes provided online. These quizzes are self-grading and may be taken as frequently as desired.

Summative evaluation is provided in the form of weekly quizzes on content, midterm and final exams, and online exercises. Weekly quizzes are online and follow the same format as the practices quizzes. Originally the weekly quizzes were due the same day as the lecture and were intended to insure students had read the material. However, the professor discovered many students had questions they wanted to discuss before taking the quiz (interview on March 17, 2004). As a result, the quizzes are now “open until midnight, a week after the lecture” (interview on March 17, 2004). The midterm and final exams comprise 50% of the grade and cover the factual content of the course. Both exams are delivered in the face-to-face environment rather than online.

There are several exercises woven into the online content. Some, like the initial Student Profile Survey, don’t have points. However, there are five “web module exercises” that are each worth 5% of the grade. The first exercise is the physiology of taste, as previously discussed. The final exercise includes touring a local winery and discussing impressions. The other exercises include identifying group responsibilities for the final project, rating and discussing wines, and discussing a local winery.

There are two cumulative projects in the course. The first is an individual project for each student to write an in-depth paper on a specific chateau in the French wine region. The object here is to involve the student in researching information on wines and collect detailed, comprehensive information on one winery. Students are allowed to submit a draft of their paper for comments prior to the final version.
The second cumulative project is a winery simulation that is a group project. Each group of students must design a winery in the new world based on old world techniques. The instructions for the assignment are online providing consistent instructions for the project and a ready reference resource. Students may communicate with their group members via a private discussion group, e-mail, or face-to-face meetings. The professor finds that having students compare wines in the old world and recreate them in the new world takes them through the entire process of winemaking. By the time they are done, they understand the process really well and how most modern wine making is based on the French model (interview on March 31, 2004). The project requires a synthesis of what students have learned and application of that knowledge.

Why select a blended format? The professor stated, “The M (blended) model has the flexibility in time that appeals to me” (e-mail message received May 11, 2005). Theoretically, students complete the readings and exercises in advance leaving classroom time free for discussion of theory, wines, and wine tasting. The professor felt more time would be taken up with lecture and quizzes in a traditional classroom format (e-mail message received May 11, 2005). A group tour of wine shops or a winery might be added but would not be as effective as the wine tasting experience.

The professor likes the blended format and feels the course is improving each term. “I think the heavy workload…may be too hard for students…so I am looking at ways to make it more manageable” (e-mail message received May 11, 2005). The workload in a blended course “is greater for me and for the students, especially for the students” (e-mail message received May 11, 2005). One of the issues discussed in professional literature is a tendency to put more work in a blended course (Aycock,
Garnham, & Kaleta, 2002; Dabbagh, 2002; Research Initiative for Teaching Effectiveness, 2003).

The blended course described above is a variation of UCF’s institutional model based on computer-mediated communication. A typical course at UCF emphasizes asynchronous communication and uses the classroom for content and exercises. HFT4932 reverses this model by transmitting most of the content online and using the classroom as the primary place for communication. HFT4932 is a unique blend that allows the professor to incorporate wine tasting into the classroom to meet the needs of the students in the hospitality program.

Spring 2005 Student Survey - Student Perspective

Introduction

This section of the study moves into the results from the spring 2005 student survey and should not be confused with the HFT4932 survey reported in the above case study. The spring 2005 survey was designed to examine student attitudes toward blended learning. The study included twenty-three survey questions that were a mix between Likert scale questions and open responses. The Likert scale questions were analyzed with the SPSS statistical software package for Windows using crosstabulations and Spearman’s Correlation Coefficient. An alpha level of .05 was used for all analyses.

The survey also contained open response questions asking students to:

- comment about student-to-student and student-to-faculty interaction,
- describe technical problems,
- describe how their learning process changed in their blended course, and
- identify strengths and challenges experienced in their last blended course.

An analysis of the answers revealed themes of convenience and flexibility, interaction, time management, more work, course organization and relevancy, and active learning vs. independent study. The question about technical problems was analyzed separately for themes.

**Population**

The survey was distributed to 14,794 students registered in a blended course section from summer 2004 through fall 2005 semesters. Out of the 14,794 e-mail messages sent, 980 students completed the survey. The initial e-mail was sent on March 23, 2005, and a reminder e-mail was sent on March 27, 2005.

**Results**

Table 8 shows the percentage of distribution of responses by generations, with 30 missing, and showing the majority of responses were from Millennials (73%). The majority of Millenials represent undergraduates (82%) while the majority of Boomers (71%) and Generation X (67%) are graduate students. Seventy-five percent of the responses were from females and 25% from males.
Table 8
Percentage of students responding to the survey instrument and registrations

<table>
<thead>
<tr>
<th>Questionnaire Responses (n=950)</th>
<th>Student Registrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Matures</td>
<td>4</td>
</tr>
<tr>
<td>Boomers</td>
<td>131</td>
</tr>
<tr>
<td>Gen X</td>
<td>124</td>
</tr>
<tr>
<td>Millennials</td>
<td>695</td>
</tr>
</tbody>
</table>

The latest institutional survey of students occurred in 2002. For blended courses (n=487), the distributions of responses for the generations was 20% Boomers, 42% Generation X, and 38% for Millennials (Dziuban, Moskal, & Hartman, 2005). The current survey shows a dramatic increase in the number of Millennials responding.

**Satisfaction**

The frequency distribution (Table 9) of overall student satisfaction with the blended learning environment indicated 78% (n=738) were satisfied or very satisfied, 10% (n=93) were neutral, and 12% (n=114) were unsatisfied or very unsatisfied. A crosstabulation with generations indicated a decreasing rate of satisfaction with the Boomers being the most satisfied (81%) and Millennials the least satisfied (77%) as indicated in Table 9.
Table 9
Percentage of Overall Satisfaction within Generations

<table>
<thead>
<tr>
<th>Overall Satisfaction (n=945)</th>
<th>Boomers</th>
<th>Gen X</th>
<th>Millennials</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied and Satisfied</td>
<td>81%</td>
<td>80%</td>
<td>77%</td>
<td>78%</td>
</tr>
<tr>
<td>Neutral</td>
<td>6%</td>
<td>10%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Unsatisfied and Very unsatisfied</td>
<td>13%</td>
<td>10%</td>
<td>12%</td>
<td>12%</td>
</tr>
</tbody>
</table>

The latest institutional survey showed student satisfaction with blended course to be 85% very satisfied/satisfied, 11% neutral, and 4% unsatisfied/very unsatisfied indicating a downward trend in satisfaction (Dzuiban, Hartman, Juge, Moskal, & Sorg, 2005).

Technology

Students reported never (36%, n=337) or infrequently (53%, n=505) encountering technical difficulties in the online portion of their course. Only 2% (n=19) of respondents reported frequent technical difficulties. Students either resolved technical difficulties without seeking help (34%, n=335) or sought assistance from other students (32%, n=318) or faculty (44%, n=433). There is a significant negative correlation of - .214 (n=974, p=.01) between technical difficulties and overall satisfaction with blended courses indicating technical difficulties influenced satisfaction levels.

In addition to the Likert scale questions, an open-ended question was provided where students commented on the kinds of technical difficulties encountered. Student comments about technical problems primarily involved online quizzes or inability to access the course management program. Three categories of quiz problems were
identified: page freezing, access, and question errors. Representative student comments include “test froze or lost connect” and “answers…marked wrong when they were right.”

Students perceived many of their technical problems were due to the university network or course management system. There were several comments of “servers were down,” “system down for periods of time,” “course management system not working for a day,” and “course management system is overloaded with people and is very slow.” Some students acknowledge that the problems were at their end of the network with comments such as “my firewalls not allowing pages to open,” “home Internet connection was slow,” and “ISP dropping off line.” Also, two hurricanes interrupted the fall 2005 semester. “There were a lot of problems…due to the hurricanes” is representative of student comments.

Other technical difficulties reported included problems with broken links, downloading documents, problems with external software required for some courses, and grades not available online. A few students reported initial problems with logging into their course and some lamented the time required to learn how to use the course management system.

Convenience and Flexibility

Convenience and flexibility were the most frequently mentioned strengths of a blended course. Some comments were a succinct as “convenience!” and “less/traffic/parking/gas issues.” Other comments explained how travel time could be devoted to study and preferences for working at home. One student, who did not like the blended format, still identified travel savings as an advantage. For some students, the
blended format provided both convenience and face-to-face contact they desire as exemplified by the comment, “Time spent commuting to campus is reduced, but the opportunity for face-to-face class time and discussions was still available.” The final convenience addressed by students was the 24/7, anywhere, any time availability of content.

Other students focused on flexibility. The ability to work around other commitments and study at their convenience was a key strength — “convenience and the ability to work on assignments when time allows.” Some students lamented the need to attend class because it reduced their flexibility. One student commented, “A LITTLE bit more flexible to do work according to how it fit my schedule, but not as flexible as completely online courses.” Another student did not like blended courses and felt forced, by circumstances, to take them. This student stated, “If I were in good health and gas prices decreased, I would only take face-to-face classes.”

*Interaction Among Students*

Students were asked to rate the amount and quality of student-to-student interaction between a blended and traditional face-to-face course without Web enhancement. A frequency distribution for the amount of interaction among students (Table 10) revealed 59% (n=561) felt interaction increased or stayed the same and 41% (n=386) felt interaction decreased or somewhat decreased. A crosstabulation with generations indicated a decreasing perception of interaction between generations as indicated in Table 10. These percentages are down from the latest institutional survey
where 62% of students reported increased or no change in the amount of interaction among students (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005).

Table 10
Percentage for Quantity of Interaction with Other Students within Generations

<table>
<thead>
<tr>
<th>Quantity/Students (n=947)</th>
<th>Boomers</th>
<th>Gen X</th>
<th>Millennials</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased/Somewhat increased/No difference</td>
<td>63%</td>
<td>58%</td>
<td>59%</td>
<td>59%</td>
</tr>
<tr>
<td>Decreased/Somewhat decreased</td>
<td>37%</td>
<td>42%</td>
<td>41%</td>
<td>41%</td>
</tr>
</tbody>
</table>

A frequency distribution for the quality of interaction among students (Table 11) revealed 72% (n=680) felt the quality of interaction increased or did not change and 28% (n=268) felt the quality of interaction decreased or somewhat decreased. These percentages are slightly up from the latest institutional survey where 70% of students reported an increase or no change in the quality of interaction among students (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005). A crosstabulation with generations (Table 11) showed Gen X rated quality the highest (73%) and Boomers rated it the lowest (68%).
Table 11
Percentage for Quality of Interaction among Students within Generations

<table>
<thead>
<tr>
<th>Quality/Students (n=948)</th>
<th>Boomers</th>
<th>Gen X</th>
<th>Millennials</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased/Somewhat increased/No difference</td>
<td>68%</td>
<td>73%</td>
<td>72%</td>
<td>72%</td>
</tr>
<tr>
<td>Decreased/Somewhat decreased</td>
<td>32%</td>
<td>27%</td>
<td>28%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Respondents were also allowed to make comments about interaction in their blended courses. Following are comments from students on the quantity and quality of interaction among students. Students reported “more opportunities to be…involved,” “responded to more of my classmates’ opinions than in the normal face-to-face class,” and “much easier to communicate with the other students.” They felt online discussions were “way more interactive and beneficial than lecture discussion” and “we shared opinions and had conversations that would probably never take place in the classroom.” An excited student reported, “It was a very fascinating new way to interact with students and look forward to trying it again in the future.” Also, the blended format provided the added social dimension, “I love the fact that I got to put names with faces!”

Several students felt online discussions created a safe environment such as “online classes enable one to communicate freely” and “[it is] easier to express yourself…not so scared to be judged by your opinion.” Other students commented “…it seemed that participation was more even” and “I get a chance to speak to all issues” indicating online discussions encouraged more students to participate. Some students
commented that the online environment allowed them time to craft a meaningful response. For international students, “written communication works better than speaking and listening for me.” Other students commented, “I really enjoyed being able to sit down and write out a formulated response” and “…people get to fully think out their responses…[and] end up being more coherent and more insightful than some in class discussions.”

Some students felt there was no difference in the amount and quality of interaction between blended and traditional face-to-face courses. In some instances, there was a preference not to interact such as “I am not of the OVERLY SOCIAL VARIETY…the M format classes have not really changed the quality or amount of interaction with students or instructors.” Other students reported they communicated electronically regardless of the class format.

Comments from students who rated the amount and quality of interaction lower in the blended courses said “interaction with students is minimal” and “there tend to be more tangents and less relevant discussions in my experience.” Others felt discussions were “too forced and contrived” or “classmates put little effort into their online postings or responses.” Some students felt the volume of messages was excessive with “1000 messages to read” or just “boring.” For group projects, “it was very hard to keep in touch with multiple group members.” Finally, some students missed “building relationships” or the absence of “body language” posed problems.
Interaction Among Faculty and Students

Students were also asked to rate the amount and quality of faculty-to-student interaction between a blended and traditional face-to-face course without Web enhancement. A frequency distribution (Table 12) revealed 60% (n=563) felt the amount of interaction increased or did not change and 40% (n=382) felt interaction decreased or somewhat decreased. A crosstabulation with generations indicated a decreasing perception of interaction between generations as indicated in Table 12. Again, these percentages are down from the latest institutional survey where 66% of students reported an increase or no change in the amount of interaction (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005).

Table 12
Percentage for Quantity of Interaction among Faculty and Students within Generations

<table>
<thead>
<tr>
<th>Quantity/Faculty (n=945)</th>
<th>Boomers</th>
<th>Gen X</th>
<th>Millennials</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased/Somewhat increased/No difference</td>
<td>62%</td>
<td>60%</td>
<td>59%</td>
<td>60%</td>
</tr>
<tr>
<td>Decreased/Somewhat decreased</td>
<td>38%</td>
<td>40%</td>
<td>41%</td>
<td>40%</td>
</tr>
</tbody>
</table>

A frequency distribution (Table 13) on the quality of interaction among faculty and students in the blended environment as compared to a traditional face-to-face course revealed 75% (n=709) felt the quality of interaction increased or did not change and 25% (n=238) felt the quality of interaction decreased or somewhat decreased. In the latest institutional survey, 73% of students reported the increase or the same quality of
interaction indicating a slight increase in the current survey (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005). A crosstabulation with generations, as indicated in Table 13, show Gen X (77%) reported the highest perception of quality and Boomers (72%) reported the lowest.

Table 13
Percentage for Quality of Interaction among Faculty and Students within Generations

<table>
<thead>
<tr>
<th>Quality/Faculty (n=947)</th>
<th>Boomers</th>
<th>Gen X</th>
<th>Millennials</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased/Somewhat increased/No difference</td>
<td>72%</td>
<td>77%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Decreased/Somewhat decreased</td>
<td>28%</td>
<td>23%</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Following is a report of student comments regarding the quantity and quality of interaction among students and faculty. Those students who felt there was a high level of interaction between faculty and students commented the “instructor very accessible through e-mail and after class” and “communication overall was more frequent and feedback…was quicker.” Others felt the mode “encourages interaction” and “the professor made an obvious effort to be available.” Some students felt the instructor compensated for reduced meeting by providing more extensive replies or being more involved. Students who felt there was little difference in faculty-to-student interaction reported they communicated electronically regardless of the class format or “the quality of interaction…has not diminished. She goes out of her way to answer e-mails in between class times.”
Students, who felt the interaction among faculty and students was lower, reported “a serious lack of communication with the instructor” or “I received little to no feedback from the professor throughout the entire course.” Some students felt the face-to-face setting provided a “chance to become comfortable with the instructor” or “get a better sense of the professor.” A student felt answers in the face-to-face classroom were more valuable because “good answers” were shared with the whole class rather than one person. Other students disliked waiting for answers through discussions or e-mail.

**Time Management**

Several students mentioned time management as a key skill required to succeed in blended courses. General comments included “time management is a big thing,” “motivation to complete the assignments,” and “I found myself procrastinating horribly.” Other comments focused on managing time such as “it was a little hard for me to keep up with exam dates,” “my biggest challenge was actually being on top of everything” and “balancing course load with work and the home environment.” One comment focused on interruptions with “about half of the city's population showed up on my doorstep to visit.”

“It's easier to stay on track in a half online course” indicates the face-to-face portion of the blended course helped with time management. For another student, meeting every other week posed a challenge “to remember all that we talked about 2 weeks prior.” One student mastered the challenge by creating an electronic calendar and commented “the class actually ended up improving my personal responsibility!”
More Work

Students perceived blended courses to be more work. Comments included “there is more work in an online course,” “much more work than the hours missed in the classroom,” and “felt like if I was taking two classes, one online and one face-to-face.” One student said “the class was very labor intensive [because] I had to check many times a week to keep up with assignments.” One student commented “it was as though our time online was less significant and could thereby be over-assigned.”

Some students felt online assignments were “much more difficult” or the subject matter was extremely complex so the online component took “far longer than the hour of class it replaced.” Others students rated online assignments as busy work with comments like “a lot more busy work than I would have liked or expected” or “I have found very few of the assignments to be quality assignments.”

Course Organization and Relevancy

Several comments were made about organization and continuity between the face-to-face and online materials. Positive comments included “organization was great and the goals were clear,” “expectations were…clearly laid out,” and “having all the material and resources laid out for me online makes studying and completing assignments for the class so much less stressful.” One comment indicated organization “makes it easy to communicate and understand the online portions of class.” Other students indicated continuity helped such as “organized, on task, and congruent with face to face content,” “good organization of material, good continuity between online and in class material,” and “balanced the online and offline portions of the class rather well.”
Negative comments about organization and relevancy included “basically the organization, or lack thereof…to blend the requirements of both settings takes good organization,” “effectiveness of the course lies with its outline and its structure and how well the professor organizes both,” and “it felt like the class was chopped up.” One student commented “the in-class portion seemed like a waste of my time.”

Disorganization led to “having to look at too many locations to find information or assignments,” “vast quantities of wasted time spent surfing the various sections of the site,” and “it's difficult to find information because…it [was] in a different spot each week.” Another student “had …difficulty in navigating layered levels of the directory tree.” Also, details were “not attended to well” and “the course schedule still had 2003 dates which made the days scheduled three days off.”

Students preferred “the class to be completely planned out and all the assignments provided on day one. This way you know what is expected of you and by when.” Several comments were directed at confusing assignments and expectations such as “information was not presented in an easy to understand manner,” “directions were not always clear,” and “difficult to figure out exactly what was expected.” Confusion could be ameliorated through online discussions. One student commented, “I got to read input from other students about assignments on discussion boards.” Another student felt “one of the strengths experienced in my partially online courses was the fact that you could post any question in the discussion and almost immediately you'd get a response back whether it was from your professor or another student.”
Active Learning vs. Independent Study

There seemed to be a difference of opinions whether blended courses were a way to be actively involved in your own learning or being forced to learn on your own. On the active learning side, students liked “activities to gain knowledge of the subject, rather than just lectures and exams,” “access to certain professional websites…provided interesting articles and other research material specific to my major,” and “online book companion site that really helped with studying for tests…. [with] activities and flashcards and just a lot of helpful tools.” For one student, the discussions “forced me to do more research. I did not want to post a response unless I knew the topic well and could make a worthwhile contribution to the online discussion. I put much more work into my online session than I did preparing for face2face classes where you can often wing it.”

For the independent study perspective, students commented “basically, M mode…are 'learn on your own' classes,” “I've had to focus more…[on] reading textbooks… had to be my own teacher,” and “had to read more, to teach myself the material that wasn't touched in class.” For one student, organization of the course created the problem. “Online assignments were due the day we discussed the material in class which caused me to have to teach it all to myself and complete graded assignments without being able to ask questions before turning assignments in.”

To summarize, students continue to report high overall satisfaction with blended courses and high levels of quality interaction among students and with faculty. However, there continues to be a downward trend in satisfaction levels with younger generations of students. Students still report convenience and flexibility as their primary reason for taking blended courses. Many students viewed the blended format as a way to be active
participants in their learning and develop new skills. Infrequent technology difficulties were reported. Challenges for students were time management and poor course organization.
CHAPTER FIVE: CONCLUSION

The University of Central Florida’s (UCF) online program grew out of both top-down (institutional) and bottom-up (faculty) initiatives. The blended learning program is part of the institution’s strategic plan and bases itself on institutional goals that coincide with the mission of a metropolitan research university. UCF’s five goals reflect this philosophy (University of Central Florida, 2005-c).

- Offer the best undergraduate education available in Florida.
- Achieve international prominence in key programs of graduate study and research.
- Provide international focus to our curricula and research programs.
- Become more inclusive and diverse.
- Be America's leading partnership university.

Institutional data document that faculty and students are satisfied with blended courses. Faculty believe blended courses take more time to develop and deliver but they perceive the quantity and quality of interaction improves. Consistently students report high satisfaction levels, although there is a trend toward diminished satisfaction with younger generations. The success and withdrawal rates of students in blended courses are equal to or better than face-to-face or online courses.

The paradigm created by UCF began with a definition for blended courses that validated itself in professional journals. Robison (2004) argued that it is important to
embrace a definition created at the institutional level and then disseminate it to both faculty and students. UCF courses identified for online delivery are programmatic having been identified through campus-wide planning or because of their correspondence to one or more strategic goals of the university. According to professional literature, course redesign is one of the key factors in successful blended courses (King, 2002; Sommer as cited in Murphy, 2002-2003; University of Wisconsin, 2005; Waddoups & Howell, 2002). UCF instructors are paid a stipend to attend a course that facilitates transformation of their instructional approach. In addition, online faculty receive instructional design and course development support. Both faculty and students receive technical support through a combination of Web pages and Help Desks.

Although other institutions might scrutinize UCF’s online program with their initiatives paralleling the broad components, the ultimate models must conform to their institutional goals and culture. For example, private institutions are known for their low student-teacher ratios and the personal attention given to students. Reduced-seat time in a blended course might be viewed as interfering with this residential experience. The challenge for such institutions is to determine how to bring the benefits of a blended environment to their courses and still maintain their institution’s residential culture.

HFT4932 Case Study - Faculty Perspective

Bransford, Brown, and Cocking (2000) suggest that all learning environments should be learner centered, knowledge centered, assessment centered, and community centered. The UCF wine appreciation course (HFT4932) incorporates all four centers.
Immediately in the class, a learner centered environment is established with an initial survey. Not only is the content knowledge of students assessed, but their technology experience is as well. Anderson (2005) asserts the importance of probing the learners’ technology comfort and confidence if one is to teach online effectively. The HFT4932 course also provides resources to assist students with technical challenges such as practice exercises, links to resources including the university help desk, Web sites, and a discussion topic where students help each other.

In this course, the professor chose to deliver the bulk of the content via the online modality. The professor uses two advantages of the Internet. First, since a desirable textbook is not available, the professor created the content online to achieve the desired depth and inserts personal photographs from various wine regions. Second, the professor takes advantage of a unique ability of the Internet to provide links to additional information and resources thereby giving students the ability to explore for more information beyond the traditional confines of a course in a face-to-face format. Cognitive learning strategies are also evident in the course organization by sequencing the content to cover the white wines first and then the red wines. Dividing the wines by color allows students to build on existing knowledge of wine regions; a concept referred to as scaffolding (Gredler, 1997). Also, each online module begins with objectives that act as advance organizers to facilitate use of existing knowledge and help structure new knowledge. In addition, the online portion of the course provides a portion of the assessment center. Self tests encourage students to assess their knowledge before completing weekly quizzes.
The face-to-face portion of the class centers most of its emphasis on content discussion and concept grounding through organized wine tasting. Also, the face-to-face classroom delivers the majority of community and socialization aspects of the course. Although the wine tastings might be delivered via electronic discussions, the spontaneity of the face-to-face classroom seems most appropriate for ensuring that students are tasting wines with exactly the same characteristics.

The wine tasting experience relies heavily upon constructivist concepts. Each individual has a unique experience with the smell and taste of wine and must translate this experience into a verbal description. Creating this description in a social environment allows students to share their experiences, challenge, reflect, and formulate a montage from their perceptions. Wenger (2001) would describe this process as a community of learners supporting and challenging each other to build knowledge. Using Vygotsky's (1978) zone of proximal development theory, the professor acts as a model and guide to elicit a deeper understanding, thereby bridging new levels of understanding a wine’s smell and taste. Based on the comments from the survey of students in the course, they felt the face-to-face wine tasting was a necessary element and were uncomfortable learning the language of wine tasting on their own. The wine tasting also achieves what the professor terms as “my ultimate goal” (interview on March 17, 2004) — students being able to describe differences in the taste of two wines and articulate why they differ.

The assessment center includes weekly quizzes, mid-term and final exams, a paper, and wine simulation project. Weekly quizzes are multiple choice instruments designed to assess students’ knowledge of the content. Because the quizzes are online,
the students receive immediate feedback. The mid term and final exams are combinations of three elements (e-mail message on October 10, 2005). Approximately 80% of the questions are true/false and multiple choice. The remaining 20% of the items are short answer questions with 5% for two bonus questions based on tasting of two wines. Both exams are taken in class and students receive feedback via online grades.

The (individual) paper and wine simulation (group) projects require application of content requiring higher order learning strategies. The group project requires that students collaborate by creating an old style wine in a new world setting. Both projects allow students control over the content and environment of the project. They have the opportunity to submit drafts of both projects in order to facilitate feedback.

This course is a creative blend of the two learning environments. The course models delivery of content online while face-to-face sessions are used for the social construction of knowledge. HFT4932 is a unique blending opportunity allowing the professor to incorporate wine tasting into the classroom while providing the anytime, anywhere advantage of online learning.

The development of HFT4932 reveals a problem frequently encountered in blended learning. Rather than redesigning their course for a blended format, faculty frequently attempt to dissect their course and move parts to the online environment. Generally, the result is a disjointed course that feels more like two courses (Aycock, Garnham, & Kaleta, 2002; Dabbagh, 2002; King, 2002; Research Initiative for Teaching Effectiveness, 2003; Sands, 2002; University of Wisconsin, 2005). The face-to-face course ends up with missing sections that are not adequately filled by the online portion. The development of HFT4932 from fall 2003 through fall 2004 models this problem. In
HFT4932, the professor had never taught the course and, therefore, designed it for the blended environment from the beginning. However, inadequate facilities forced the separation of the lecture and wine tasting portions of the course. To further compound the problem, part of the content was covered in the face-to-face classroom and part online. In essence, students experienced three courses instead of one integrated unit in fall 2003 and had difficulties assimilating the information as reflected in the grades for that term (μ=67%, N=40). In spring 2004, the course moved to new classroom facilities allowing the lecture and wine tastings to occur in the same location. In addition, all content was moved to the online environment and only highlights were covered in the face-to-face classroom. Toward the end of spring 2004 and into fall 2004, integration of the face-to-face class was tightened by following the lecture for a wine region with a wine tasting before moving to the next region. The new course design resulted in a flow of information from the online content to the face-to-face lecture and wine tastings. Also, students were able to discuss a particular wine and then experience it for themselves, thereby, improving their assimilation of the concepts. Student grades clearly reflected an improved course design (μ=82%, N=54; μ=85%, N=35). The evolution of HFT4932 and subsequent improvement in grades clearly highlight the need for tight integration between the face-to-face and online environments. The resulting flow between the two environments is the desired outcome of a blended course.

Another problem with blended learning environment is too much work. The tendency is to add online content without making a commensurate reduction in face-to-face requirements (Aycock, Garnham, & Kaleta, 2002; Dabbagh, 2002; Research Initiative for Teaching Effectiveness, 2003). The result can be a blended course with
150% more work than the same face-to-face course. The professor for HFT4932 acknowledges the workload is too heavy and is working to make it more manageable (e-mail message received May 11, 2005).

Spring 2005 Student Survey - Student Perspective

The student survey showed an increase in the percentage of Millennials responding from 38% for the latest institutional survey in 2002 to 73% in the current survey. Since the oldest members of this generation are 28 (as of 2005), the increase in Millennial responses reflects the fact that this generation comprises the majority of undergraduate students. Institutional data also show the average student age at UCF is 26, again falling within the Millennial generation.

The overall satisfaction with blended courses is still very high at 78%. However, there is a decline with overall satisfaction falling from 85% in the latest institutional survey (Dzuiban, Hartman, Juge, Moskal, & Sorg, 2005). The data in this survey also reflect a decreasing satisfaction among generations as observed in the latest institutional survey (Dzuiban, et al., 2005). Since the majority of respondents in this survey were Millennials, the drop in overall satisfaction reflects their decreasing satisfaction with blended courses and possibly with their educational experience as a whole.

Similar to the findings at the University of Wisconsin (Aycock, Garnham, & Kaleta, 2002), 89% of the students reported infrequently or never having technical difficulties. They reported solving technical issues by themselves or seeking assistance from other students or faculty. The majority of technical issues involved access to the course management system or online quizzes, both of which would impact student
grades. The negative correlation between overall satisfaction and technical issues indicates satisfaction levels drop when technical problems increase, as might be expected. However, the correlation is not strong, probably due to the low levels of technical issues reported in the survey.

Since interaction in the classroom is considered one of the principles of good practice in undergraduate education (Chickering & Ehrmann, 1996; Chickering & Gamson, 1987), four questions were included in the survey to measure the quantity and quality of interaction among students and among students and faculty. Compared with the latest institutional survey of students, the amount of interaction between students was down three percentage points and down six percentage points for the amount of student and faculty interaction (Dzuiban, Hartman, Juge, Moskal, & Sorg, 2005). Consistently, the current survey shows a decreasing amount of perceived interaction across generations. The quality of interaction, however, showed an increase of two percentage points for both student-to-student and faculty-to-student interaction from the latest institutional survey (Dzuiban, et al., 2005). Interestingly, for both groups, Gen X rated quality the highest and Boomers rated it the lowest.

Convenience and flexibility, as reported in the literature review, appeared as the most frequently mentioned strength of blended learning. In general, students continue to value the mix of face-to-face classroom time to satisfy their socialization needs and the flexibility of completing a portion of their course work online.

Three themes appearing in the literature review also appeared in this survey. Students reported time management as a key skill needed in blended learning. In addition, they cited problems keeping up with assignments outside the classroom,
procrastination, and trouble balancing course work with other responsibilities. Coping mechanisms they used included developing a routine time to work on assignments and creating a calendar with due dates. Also, students perceived blended courses as requiring more work which was reported by Aycock, Garnham, and Kaleta (2002; Haytko, 2001; University of Wisconsin, 2005).

The third theme reported from the literature review was the need for students to be more active participants in their learning. Students in the survey mentioned two opposing perspectives. Some students considered active learning to be positive because it forced them to be more prepared, gave them access to additional information such as professional Web sites, and provided tools for learning. Other students perceived themselves in an independent study course, having to manage their own learning.

New student themes that appeared in this study were course organization and relevancy. Students felt course organization could either help or lack of it could hinder. Clear goals and expectations helped guide students and consistent organization facilitated finding materials. Excessive levels or sources for finding information increased difficulty and wasted time, inconsistent dates or information were frustrating, and inconsistent content and instructions proved frustrating. Relevancy and continuity between the face-to-face and online portions of the course were challenges reported in the literature review under finding the right blend. From the survey responses, some students felt the face-to-face portion was a waste of time due to repetition or being “too chopped up.” Other students commented on lack of continuity between the face-to-face and online components that contributed to disorganization of the course and difficulty understanding expectations. On the other hand, strong continuity contributed to the course organization.
Students particularly disliked courses that were being developed at the same time they were delivered. They wanted courses expectations laid out at the onset of the class.

Due to the large predominance of Millennials responding to this survey, the results tend to reflect their perspective on technology. Oblinger (2003) and Wendover (2004) describe Millennial behaviors as multi-tasking, continuous communication, engagement with multimedia, and proficient with technology. Constantly, they are connected via cell phones, PDAs (personal digital assistants), and computers. They use communication technologies as a form of socialization as well as interaction and carry much of their communication technology in their backpacks and on their persons. Millennials may be observed on campus talking on cell phones as they move between classes or sending text messages (even in class). At the computer, instant messaging allows them to stay in constant contact. Millennials view computers and other technology as a natural part of their environment rather than technological augmentation (Oblinger, 2003). Also, they exhibit a preference to learn new technology by exploration (Levi-Strauss, 1968, as cited in Hartman, Moskal, & Dzuiban, 2005) and use them in new ways.

Clearly, these behaviors are reflected in the results of the survey. Few technical problems, reflecting Millennial’s comfort with technology, were reported. Even when they encounter problems, Millennials prefer to solve them on their own or with the help of other students.

The literature review and survey indicate all the generations respond well to the convenience and flexibility of blended courses. However, text content in online courses, lectures in face-to-face classrooms, and individual activities may be too linear for these
multi-tasking Millennials as reflected by their lower satisfaction ratings. Oblinger (2003) suggests that the traditional classroom must move to experiential, interactive, and authentic learning to engage these students. She asks a provocative question: “Will linear content give way to simulations, games, and collaboration?” (p. 45).

The lower quantity of interaction is impacted by the Millennials. The extended format of asynchronous discussions, chat, and e-mail typically used in blended courses is inconsistent with the immediacy of communication Millennials experience daily. Hartman, Moskal, and Dziuban (2005) concur in their report that “the interaction mechanisms [in online courses]…were much less adequate than [Millennials’] personal technologies” (p. 6.9). Also, faculty don’t respond to e-mails with the same swiftness and frequency as Millennial experience with their social groups. Hence, Millennials perceive the amount of interaction in blended course to be lower. On the other hand, Baby Boomers are use to face-to-face communication in the classroom. They perceive the extended communication formats in a blended course as “value added” and extending classroom discussions.

There are several possible reasons why the quality of interaction increased. First, the rating was influenced by both Generation Xers and Millennials and reflects their comfort with electronic forms of communications. Baby Boomers on the other hand are much less comfortable in the online environment and lament the lack of face-to-face, one-on-one attention (Hartman, et al., 2005). Another possible reason for the increase is online faculty must routinely check their courses and e-mail to keep up. As a result, they probably respond faster than other faculty members. In addition, they are usually cognizant of asynchronous communication limitations and take time to compensate. At
UCF, faculty also post rules for communicating online that guide students to improve their communication strategies. Also, many UCF faculty create mechanisms in their blended courses to improve communication such as posting common questions and responses for everyone to see and opening discussion boards for students to help each other. Finally, the mere fact that communication continues between face-to-face class sessions could be construed as an increase in quality.

Hartman, Moskal, and Dziuban (2005) reported differences in the way generations approached online learning. Gen X reported improved time management skills and Millennials had a heightened sense of responsibility and motivation (active participants). Boomers reported increased technology skills and modified their learning strategies to incorporate these new skills. These approaches were reflected in the survey themes.

The desire for organization and relevancy may be attributed to all generations but for different reasons. Boomers’ preference for face-to-face interaction might lead them to encounter frustration when they are on their own trying to navigate an unorganized course. Gen Xers want to get to the point and move on rather than waste time finding something or completing “meaningless” assignments. Millennials are similar to Gen Xers in that they prefer immediacy and don’t necessarily sympathize with a lack of technical proficiency. Complaints about blended courses being more work or, for all intent and purposes, being independent study courses might be attributed to lack of maturity on the part of the student, poor course design, or a preference for a more teacher-directed learning style.
Higher education institutions may never be able to keep up with rapid changes in technology. However, Hartman, Moskal, and Dziuban (2005) suggest the real opportunity is to study how students conceptualize the use of their technology tools and create learning contexts from these ideas. Going back to Oblinger’s (2003) question, “Will linear content give way to simulations, games, and collaboration?” (p. 45), simulations and games may bring a higher level of interaction and technology to blended courses while also allowing instructors to better achieve learning outcomes. However, to provide these elements in large numbers, at sophistication levels students currently enjoy in video games, and contain costs will require collaboration between institutions, publishers, and the gaming industry.

Blended learning has the potential to meet the learning needs of the Millennials and bridge the generations (Dzuiban, Hartman, Juge, Moskal, & Sorg, 2005; Hartman, Moskal, & Dzuiban, 2005). This modality can provide the face-to-face contact desired by Boomers, independence for Gen Xers, and community and collaboration desired by Millennials.

Summary

From the HFT4932 case study and spring 2005 survey, some essential elements emerge for creating a blended learning course:

- Redesign – Any change in a course necessitates some redesign. However, because movement to the blended environment impacts all levels of the course, it is imperative to redesign the entire course. The steps outlined in
chapter two, under Challenges-Finding the Right Blend, serve as a guide for redesigning to a blended format.

- Goals and expectations – Students of all ages want to know the course expectations. Whether the desire is as simple as a list of required activities or detailed course objectives, it is important to clearly state the goals and expectations for the course as well as for each lesson or learning unit.

- Connect the classroom and online environments – Create a flow of activities between the face-to-face classroom and online environments. For example, create a sequence so online activities carry into the classroom (as demonstrated in HFT4932) or where classroom activities carryover to the online environment. Beware of duplicating activities in the two environments or creating more work than required in a traditional face-to-face course.

- Organization – Simplicity and consistency seem to be the keys to organization, especially in the online environment. When looking for content or assignments, students prefer everything is one place or, at least, an obvious organization structure. Students like to establish a pattern of organization in the first few weeks of class and follow the same pattern throughout the course. A course management system might make it difficult to follow this suggestion and still use a variety of its tools. Instead, try keeping detailed instructions for all assignments in one place and include instructions directing students to the appropriate tool (i.e. discussions, quizzes).

- Clarity – In the classroom, students can get immediate answers to questions or concerns. However, in the online environment, they must depend on
asynchronous communication and wait for an answer. Therefore, it is especially important to be clear and precise in online content. It is helpful to have a second individual, such as a student, read instructions for clarity. To avoid conflicting instructions and inaccurate information, avoid putting content, such as assignments and activities, in multiple places. Establish one place for detailed instructions. Also, consider keeping due dates in one place.

- Time management – Sands (2002) points out that students must learn new skills in the online environment. Activities may be distributed over an entire week rather than the night before class. Also, students must take more responsibility for their learning and time management. Help them by providing guidelines for how frequently they must participate in activities such as discussions and use the classroom setting to remind them of due dates. Also, use surveys to find out how much time students spend on assignments and make adjustments as indicated by the data.

Blended learning is a new concept and presents many opportunities for research. First, more work needs to be done to analyze how and why blended courses are constructed to develop learning models. These models should include a prototype with proposed learning strategies for the face-to-face and online environments, recommended uses, and strengths and weaknesses of these strategies. In many instances, strategies may be applicable to both environments. For example, discussions are appropriate in both the face-to-face and online environments. Face-to-face environments allows for the rapid generation of ideas and serendipitous discoveries (Mikulecky, 1998, as cited in Graham, Allen, & Ure, 2003). On the other hand, online environment allows more time for
reflection leading to in depth discussions (Benbunan-Fich & Hiltz, 1999) and allows 100% participation.

Also, the study of individual courses should include student surveys and focus sessions to get the student perspective for each course. One of the researcher’s frustrations in analyzing the survey results was the inability to tie student comments to a particular course. Why did some students love discussions while other students thought they were a waste of time? Were the different perceptions due to course design or student preferences? Through student comments, we can solicit their perceptions of the course, how it might be modified to meet their needs, and potentially identify new learning contexts. As suggested by Hartman, Moskal, and Dziuban (2005), studies need to be conducted on how Millennials and future generations conceptualize and use technology.
APPENDIX A: INSTITUTIONAL REVIEW BOARD LETTER
November 3, 2004

Linda Futch  
University of Central Florida  
Course Development and Web Services  
LR 108F  
Orlando, FL 32816-2810

Dear Ms. Futch:

With reference to your protocol entitled, “A Case Study of Mixed-media Courses at the University of Central Florida” I am enclosing for your records the approved, expedited document of the UCFIRB Form you had submitted to our office.

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur. Further, should there be a need to extend this protocol, a renewal form must be submitted for approval at least one month prior to the anniversary date of the most recent approval and is the responsibility of the investigator (UCF).

Should you have any questions, please do not hesitate to call me at 407-823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

Barbara Ward  
Barbara Ward, CIM  
IRB Coordinator

Copies: IRB File
APPENDIX B: HFT4932 SYLLABI
Course Objectives:

Upon completion of this course the student should be able to:

- Identify and define the terminology of wines and winemaking.
- Identify and describe the sensory qualities of wines.
- Identify and describe the major wine producing regions of the world.
- Successfully identify and pronounce the major varietal grape names.
- Demonstrate the ability to read various wine labels from around the world.
- Understand the effect of winemaking techniques on wine style.
- Understand the fermentation process.
- Understand the reasons for differences in wines.

Course Methodology:

All students have registered for a three credit hour course and have reserved time on Wednesdays from 10:30 am until 11:45am for course activities. The lectures will be held in the beer/wine lab from 10:30 am until approximately 11:15am, with online activities covering the content to be discussed in lecture. Web-based activities will provide coverage of approximately half of the course content and will be graded accordingly. Wine tastings will be conducted during lecture and will explore wines discussed in lecture.

Course Philosophy:
This course will bring together the following elements: information provided by the instructor in lecture, laboratory activities that include sensory evaluation (tasting) of wine, a group project to develop a winery simulation, library and web-based research, weekly online quiz and reading assignments from the texts and from reserve materials in the library and individual activities that include a research paper on an assigned topic.

Grading System:

There will be six elements that will come together for one overall grade in Exploring Wines of the World.

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm</td>
<td>200</td>
</tr>
<tr>
<td>Comprehensive Final</td>
<td>300</td>
</tr>
<tr>
<td>Web Module Exercises</td>
<td>50</td>
</tr>
<tr>
<td>Quizzes (11)</td>
<td>100</td>
</tr>
<tr>
<td>Group Winery Simulation</td>
<td>200</td>
</tr>
<tr>
<td>Individual Research Paper</td>
<td>150</td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

The plus and minus grading system will be used.

<table>
<thead>
<tr>
<th>Grade</th>
<th>My Equivalency</th>
<th>Grade Point Value</th>
<th>Grade</th>
<th>My Equivalency</th>
<th>Grade Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(95 -100)</td>
<td>4</td>
<td>C</td>
<td>(72 - 74)</td>
<td>2</td>
</tr>
<tr>
<td>A-</td>
<td>(89 - 94)</td>
<td>3.75</td>
<td>C-</td>
<td>(69 - 71)</td>
<td>1.75</td>
</tr>
<tr>
<td>B+</td>
<td>(85 - 88)</td>
<td>3.25</td>
<td>D+</td>
<td>(64 - 68)</td>
<td>1.25</td>
</tr>
<tr>
<td>B</td>
<td>(82 - 84)</td>
<td>3</td>
<td>D</td>
<td>(59 - 63)</td>
<td>1</td>
</tr>
<tr>
<td>B-</td>
<td>(79 - 81)</td>
<td>2.75</td>
<td>D-</td>
<td>(56 - 58)</td>
<td>0.75</td>
</tr>
<tr>
<td>C+</td>
<td>(75 - 78)</td>
<td>2.25</td>
<td>F</td>
<td>55 or less</td>
<td>0</td>
</tr>
</tbody>
</table>

Assignments:
All assignments and quizzes are due on the web site, by Wednesday evening of the following week by 11:45 pm. Late assignments will not be counted. Groups will be assigned for work on the web. Each group member will be graded based on their project participation and work products. **ADA:** Reasonable accommodations will be made upon request by the Instructor.

**Quizzes:** There will be eleven quizzes on either lecture material, sensory evaluation or module content, worth ten points each. These quizzes will be given on the web. The lowest quiz will be dropped. There will be no make-up exams or quizzes. Quizzes are open-book, but must be done individually.

**Midterm Exam:** There will be an in-class mid term exam worth 200 points.

**Final Exam:** A comprehensive final exam will be administered according to the final exam schedule, in class, and will be worth 300 points.

**Web Module Exercises:** There will be five web-based module exercises worth ten points each.

**Group Winery Simulation:** Each group will choose a specific target wine to simulate. The instructor, in a web posting in the module section after module 4, will provide the details of the project requirements. Simulations are due on the web by the 13th week of the class. This project is worth 200 points. Groups will determine if all members of their group participated enough to share the full grade. If not they may recommend a percentage reduction in grade of non-contributing members by a majority vote. The instructor will examine any grade reductions.

**Individual Research Paper (term paper):** Each student will select a topic from a list of topics posted in the guidelines for research papers at the end of module 4 on the web.

---

**Wine Tasting Requirement:**

All students who participate in the wine tasting exercises must be 21 years of age or older.

---

**Academic Dishonesty Policy:**

No form of academic dishonesty will be tolerated in this class. Cases of academic dishonesty of any type will be dealt with in accordance with IIIA 1, 2, 3, 4, 5 and IIIB 1,

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Course Syllabus

Course Objectives:

Upon completion of this course the student should be able to:

- Identify and define the terminology of wines and winemaking.
- Identify and describe the sensory qualities of wines.
- Identify and describe the major wine producing regions of the world.
- Successfully identify and pronounce the major varietal grape names.
- Demonstrate the ability to read various wine labels from around the world.
- Understand the effect of winemaking techniques on wine style.
- Understand the fermentation process.
- Understand the reasons for differences in wines.

Course Methodology:

All students have registered for a three credit hour course and have reserved time on Wednesdays from 10:30 am until 11:45am for course activities. The lectures will be held in the beer/wine lab from 10:30 am until approximately 11:15am, with online activities covering the content to be discussed in lecture. Web-based activities will provide coverage of approximately half of the course content and will be graded accordingly. Wine tastings will be conducted after lecture and will explore wines discussed in lecture.

Course Philosophy:

This course will bring together the following elements: information provided by the instructor in lecture, laboratory activities that include sensory evaluation (tasting) of
wine, a group project to develop a winery simulation, library and web-based research, weekly online quiz and reading assignments from the texts and from reserve materials in the library and individual activities that include a research paper on an assigned topic.

**Grading System:**

There will be six elements that will come together for one overall grade in *Exploring Wines of the World*.

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm</td>
<td>200</td>
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<tr>
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<tr>
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<tr>
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<td>150</td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

The plus and minus grading system will be used.

<table>
<thead>
<tr>
<th>Grade</th>
<th>My Equivalency</th>
<th>Grade Point Value</th>
<th>Grade</th>
<th>My Equivalency</th>
<th>Grade Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(96 -100)</td>
<td>4</td>
<td>C</td>
<td>(73 - 75)</td>
<td>2</td>
</tr>
<tr>
<td>A-</td>
<td>(90 - 95)</td>
<td>3.75</td>
<td>C-</td>
<td>(70 - 72)</td>
<td>1.75</td>
</tr>
<tr>
<td>B+</td>
<td>(86 - 89)</td>
<td>3.25</td>
<td>D+</td>
<td>(66 - 69)</td>
<td>1.25</td>
</tr>
<tr>
<td>B</td>
<td>(83 - 85)</td>
<td>3</td>
<td>D</td>
<td>(65 - 70)</td>
<td>1</td>
</tr>
<tr>
<td>B-</td>
<td>(80 - 82)</td>
<td>2.75</td>
<td>D-</td>
<td>(60 - 64)</td>
<td>0.75</td>
</tr>
<tr>
<td>C+</td>
<td>(76 - 79)</td>
<td>2.25</td>
<td>F</td>
<td>Boo-hiss</td>
<td>0</td>
</tr>
</tbody>
</table>

**Assignments:**

120
All assignments and quizzes are due on the web site, by Friday evening of each week by eleven pm. Late assignments will not be counted. Groups will be assigned for work on the web. Each group member will be graded based on their project participation and work products. ADA: Reasonable accommodations will be made upon request by the Instructor.

*Quizzes:* There will be eleven quizzes on either lecture material, sensory evaluation or module content, worth ten points each. These quizzes will be given on the web. The lowest quiz will be dropped. There will be no make-up exams or quizzes.

*Midterm Exam:* There will be an in-class mid term exam worth 200 points.

*Final Exam:* A comprehensive final exam will be administered according to the final exam schedule, in class, and will be worth 300 points.

*Web Module Exercises:* There will be five web-based module exercises worth ten points each.

*Group Winery Simulation:* Each group will choose a specific wine type, variety, region and style. The instructor, in a web posting in the module section after module 4, will provide the details of the project requirements. Simulations are due on the web by the 13th week of the class. This project is worth 200 points. Groups will determine if all members of their group participated enough to share the full grade. If not they may recommend a percentage reduction in grade of non-contributing members by a majority vote. The instructor will examine any grade reductions.

*Individual Research Paper (term paper):* Each student will select a topic from a list of topics posted by the instructor in the third week of class. The guidelines for research papers are posted in the module section on the web after module 4.

*Bonus work:* From time to time the instructor will suggest possible bonus projects that all students are eligible to conduct.

---

**Wine Tasting Requirement:**

All students who participate in the wine tasting exercises must be 21 years of age or older.

---

**Academic Dishonesty Policy:**
No form of academic dishonesty will be tolerated in this class. Cases of academic dishonesty of any type will be dealt with in accordance with IIIA 1, 2, 3, 4, 5 and IIIB 1, 2, 3, 4, 5 Page 21, The Golden Rule, 1984-85. Refer to http://www.goldenrule.sdes.ucf.edu/.

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FALL 2003

hft4932a - Exploring Wines of the World

Course Syllabus

Course Objectives:

Upon completion of this course the student should be able to:

- Identify and define the terminology of wines.
- Identify the glassware used in wine service.
- Identify and describe the sensory qualities of wines.
- Identify and describe the major wine producing regions of the world.
- Successfully identify and pronounce the major varietal grape names.
- Demonstrate the ability to read various wine labels from around the world.
- Discuss the importance correct wine storage and service.
- Understand the chemical factors affecting wine quality.
- Understand the fermentation process.

Course Methodology:

All students have registered for a three credit hour course and have reserved time on Mondays from 9am until 11:45am for course activities. The syllabus will indicate either a lecture session or a laboratory session for each week. The lectures will be held in CL 1 Room 309 from 9am until approximately 10:15am, with online activities covering the content introduced in lecture. When laboratories are scheduled, the class will meet from 9am until 10:15am in BA, Room 135. Note that regardless of the instructional delivery mode, students will only be required to meet for one hour and fifteen minutes each week in a face to face setting (lecture or laboratory). Web-based activities will provide coverage of approximately half of the course content and will be graded accordingly.

Course Philosophy:
This course will bring together the following elements: information provided by the instructor in lecture, laboratory activities that include sensory evaluation (tasting) of wine, group activities in the laboratory and online, library and web-based research, practice quiz and reading assignments from the texts and from reserve materials in the library, and individual activities that include developing a simulation of a winery and a research paper on an assigned topic.

Grading System:

There will be six elements that will come together for one overall grade in Exploring Wines of the World.

<table>
<thead>
<tr>
<th>Examinations:</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Mid-term</td>
<td>200</td>
</tr>
<tr>
<td>- Final</td>
<td>200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Web-based Activities:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Web Module Exercises</td>
<td>50</td>
</tr>
<tr>
<td>- Quiz</td>
<td>50</td>
</tr>
<tr>
<td>- Participation</td>
<td>50</td>
</tr>
<tr>
<td>- Group Winery Simulation</td>
<td>200</td>
</tr>
<tr>
<td>- Individual Research Paper</td>
<td>150</td>
</tr>
</tbody>
</table>

TOTALS: 900

Please look over this carefully. It is the new plus and minus grading system. I have provided the equivalency for your complete understanding.

<table>
<thead>
<tr>
<th>Grade</th>
<th>My Equivalency</th>
<th>Grade Point Value</th>
<th>Grade</th>
<th>My Equivalency</th>
<th>Grade Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(96 -100)</td>
<td>4</td>
<td>C</td>
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<td>2</td>
</tr>
<tr>
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<tr>
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<td>1.25</td>
</tr>
<tr>
<td>B</td>
<td>(83 - 85)</td>
<td>3</td>
<td>D</td>
<td>(65 - 70)</td>
<td>1</td>
</tr>
</tbody>
</table>
Assignments:

All assignments are due on the web site, by Thursday evening of each week at eleven pm. Late assignments will not be counted. Groups will be assigned for work on the web and in the laboratory. Each group will be graded based on their discussion participation and work products. **ADA:** Reasonable accommodations will be made upon request by the Instructor.

**Quizzes:** There will be five quizzes on either lecture material or on sensory evaluation or tasting, worth ten points each. These quizzes will be given on the web.

**Midterm Exam:** There will be an in-class mid term exam worth 200 points.

**Final Exam:** The final exam will be administered according to the final exam schedule, in class.

**Web Module Exercises:** There will be five web-based module exercises worth ten points each.

**Group Participation:** Participation in group discussions will be worth five points for each of the eleven Modules, the lowest grade will be dropped for a total of fifty points.

**Group Winery Simulation:** Each group will choose a specific wine type, variety, region and style. The instructor, in a web posting, will provide the details of the project requirements. Simulations are due on the web by the 13th week of the class. This project is worth 200 points. Groups will determine if all members of their group participated enough to share the full grade. If not they may recommend a percentage reduction in grade of non-contributing members by a majority vote. The instructor will examine any grade reductions.

**Individual Research Paper (term paper):** Each student will select a topic from a list of topics posted by the instructor in the third week of class. The guidelines for research papers will be provided at this time.

**Bonus work:** From time to time the instructor will suggest possible bonus projects that all students are eligible to conduct.

---

**Wine Tasting Requirement:**
All students who participate in the wine tasting exercises must be 21 years of age or older. All students will be required to take a breathalyzer test after each wine tasting session. This breathalyzer test will be provided for you. The results of the daily tests will be private and part of each student's log of wine tastings to learn about their sensitivity to alcohol consumed.

**Recommended Purchase:**

Wine Aroma Wheel (Detailed information needed)

**Academic Dishonesty Policy:**

No form of academic dishonesty will be tolerated in this class. Cases of academic dishonesty of any type will be dealt with in accordance with IIIA 1, 2, 3, 4, 5 and IIIB 1, 2, 3, 4, 5 Page 21, The Golden Rule, 1984-85. Refer to http://www.goldenrule.sdes.ucf.edu/.

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APPENDIX C: INTERVIEW QUESTIONS SENT TO HFT4932 FACULTY MEMBER

- SPRING 2005
1. In our first interview, you mentioned taking students through the process of evaluating and tasting wines. I am assuming these instructions occur face-to-face since I did not see them in the online modules. Are these instructions in the first or second face-to-face session? Before or after students complete the Web module exercise where they smell and taste vanilla, lemon, salt, etc?

2. Why did you choose the M model? What was your motivation to use this model rather than a face-to-face class? Did the M format provide features you could not obtain in the face-to-face format?

3. How do you think the M version of your course would differ if it was delivered face-to-face instead?

4. How satisfied are you with the M format? Are there features that improve or enhance the delivery? Conversely, are there feature that inhibit the class?

5. Do you believe the workload is greater, the same, or less in the M format?
APPENDIX D: HFT4932 SURVEY
1. Do you like the format of the course with part of the content online and part in the classroom? Please explain.

2. What is the value of the face-to-face portion of your course?

3. What is the value of the online portion of your course?

4. Does the wine tasting improve your knowledge of wine and how to describe wines to others?
APPENDIX E: SPRING 2005 SURVEY
Partially Online Courses at UCF
Online Student Survey

1. Overall, how satisfied have you been with your partially (M) online course?
   - Very satisfied
   - Satisfied
   - Neutral
   - Unsatisfied
   - Very Unsatisfied

2. In general, how do you feel your partially online course affected the following when compared with face-to-face courses without a Web component?

<table>
<thead>
<tr>
<th></th>
<th>Increased</th>
<th>Somewhat increased</th>
<th>No difference</th>
<th>Somewhat decreased</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>The <em>quality</em> of interaction with other students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The <em>amount</em> of interaction with the instructor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The <em>quality</em> of interaction with the instructor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The <em>amount</em> of interaction with other students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

3. How frequently did you experience technical difficulties with the online portion of your course? *(Select one)*
   - Frequently
   - Moderately
   - Infrequently
4. Which of the following resources did you use to resolve technical difficulties?  
(Select all that apply)  
☐ Instructor  
☐ Other students  
☐ Help Desk  
☐ Techrangers  
☐ Campus labs  
☐ None  
☐ Other (Please specify): ________________________

5. Describe the kind of technical difficulties encountered:  


6. Enter the number of credit hours you earned in your last partially online class:  


7. How many times a week did your class meet face-to-face in your last partially online class?  
☐ 1 Hour Once a Week  
☐ 1 Hour Twice a Week  
☐ 1.5 Hours Once a Week  
☐ 2 Hours Once a Week  
☐ 3 Hours Once a Week  
☐ More Than 3 Hours a Week  
☐ Other

8. The classroom (face-to-face) portion of your course included (Select all that apply).  
☐ Discussions  
☐ Lecture/Content  
☐ Exams/Quizzes  
☐ Individual Assignments  
☐ Group Assignments  
☐ Expert Presentations  
☐ Other (Please specify): ________________________

9. The online portion of your course included (Select all that apply).  
☐ Discussions
10. The course was well organized?
   ○ Strongly Agree
   ○ Agree
   ○ Neither Agree or Disagree
   ○ Disagree
   ○ Strongly Disagree

11. The online content/assignments fit with the classroom activities.
   ○ Strongly Agree
   ○ Agree
   ○ Neither Agree or Disagree
   ○ Disagree
   ○ Strongly Disagree

12. Including this course, how many fully online or partially online courses have you taken?

13. In your opinion, what content/assignment was best delivered in the classroom, face-to-face? Why?

14. Reflect for a moment on the ways you learn best and the skills you normally use to acquire new understanding. What did you noticed about your learning process in your last partially online class that is different from more traditional classroom settings?
15. In addition to anything you've already mentioned, share other **strengths** you experienced in your last partially online course.

16. In addition to anything you've already mentioned, share **challenges** you experienced in your last partially online course.

17. Please enter your age: __________

18. Select your gender:
   - Female
   - Male

19. Select your work status:
   - Full time
   - Part time
   - None

20. Select your ethnicity:
   - African American
   - Asian American
   - Caucasian
   - Hispanic
   - Native American
   - Other

21. Select your academic standing:
   - Freshman
22. Please consider the descriptions in the four boxes below and select the **ONE** that you feel best portrays you. All the behaviors in a particular box may not fit you exactly, but please pick the **ONE** box you feel is the best fit.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>B</strong></td>
</tr>
<tr>
<td>Lower energy level</td>
<td>Highly energized and action-oriented</td>
</tr>
<tr>
<td>Little need for approval - unconcerned with pleasing others</td>
<td>Little need for approval; unconcerned with who they please</td>
</tr>
<tr>
<td>Independent and strong-willed</td>
<td>Puts thinking into immediate action</td>
</tr>
<tr>
<td>Sometimes non-communicative</td>
<td>Very frank, speaks out freely</td>
</tr>
<tr>
<td>Prefers to work alone</td>
<td>Is truthful about feelings</td>
</tr>
<tr>
<td>May resist pressure from authority</td>
<td>Has no problem confronting people</td>
</tr>
<tr>
<td>Independent thinker</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C</strong></td>
<td><strong>D</strong></td>
</tr>
<tr>
<td>Highly energized and productive</td>
<td>Lower energy level</td>
</tr>
<tr>
<td>Strongly motivated by approval</td>
<td>Needs approval-concerned with pleasing others</td>
</tr>
<tr>
<td>Sensitive to the wishes of others</td>
<td>Rarely shows anger or resentment</td>
</tr>
<tr>
<td>Translates energies into constructive tasks</td>
<td>Very sensitive to the feelings of others</td>
</tr>
<tr>
<td>Deeply values close bonds with others</td>
<td>Very compliant and loyal</td>
</tr>
<tr>
<td>Some difficulty dealing with direct confrontation</td>
<td>Forms strong attachments</td>
</tr>
<tr>
<td>Highly idealistic, setting lofty goals for self</td>
<td>Gives and thrives on affection</td>
</tr>
<tr>
<td>Fosters harmonious relationships</td>
<td></td>
</tr>
</tbody>
</table>

23. Directions: Please consider the descriptions in the four boxes below and select **AS MANY** as you feel apply to you. All the behaviors in a particular box may not fit you exactly, but please pick **AS MANY** as you feel are a good fit for you. In this case you may pick from 0-4 boxes.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trait 1</strong></td>
<td><strong>Trait 2</strong></td>
</tr>
<tr>
<td>Thinks of all possibilities and contingencies before venturing into activities</td>
<td>Highly organized and methodical</td>
</tr>
<tr>
<td>&quot;What if&quot; ...person</td>
<td>Strongly motivated to finish tasks</td>
</tr>
<tr>
<td>May see the negative side of things</td>
<td>Perfectionist</td>
</tr>
<tr>
<td>Unwilling to take risks</td>
<td>Tends to form habits</td>
</tr>
<tr>
<td></td>
<td>Extremely diligent in work habits</td>
</tr>
<tr>
<td></td>
<td>May be mildly ritualistic</td>
</tr>
<tr>
<td>Trait 3</td>
<td>Trait 4</td>
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<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Sometimes explosive and quick-tempered</td>
<td>• Dramatic</td>
</tr>
<tr>
<td>• Sharp tongued</td>
<td>• May have wide mood swings</td>
</tr>
<tr>
<td>• Very frank</td>
<td>• May overreact in some situations</td>
</tr>
<tr>
<td>• May act without thinking</td>
<td>• Can have emotional outbursts</td>
</tr>
<tr>
<td></td>
<td>• Creative thinker (rich imagination)</td>
</tr>
<tr>
<td></td>
<td>• Artistically inclined</td>
</tr>
<tr>
<td></td>
<td>• Devalues routine work</td>
</tr>
</tbody>
</table>
APPENDIX F: HISTORY OF BLENDED LEARNING AT THE UNIVERSITY OF CENTRAL FLORIDA
History of Blended Learning at UCF

The following is a brief history of blended learning at the University of Central Florida (UCF). For a more detailed account, refer to Hartman’s (2002) dissertation, Models of Practice in Distributed Learning: A Catalyst for Institutional Transformation.

Online courses at the UCF began from a university strategic plan and the grassroots effort of faculty. According to Hartman (2002; interview with Hartman on November 17, 2004), six events from 1995 to 1996 shaped the direction of distance learning at UCF:

- First, UCF’s technology and information resources units were reorganized into one division.
- Second, as part of its accreditation review, the university conducted a self study and identified three goals for distance learning: increase access throughout UCF’s eleven county service region, deliver distance programs that adhere to same high quality standards as traditional on-campus programs, and develop resources, support structures, expertise and a delivery structure for distance learning.
- Third, the university developed its 1996-2001 strategic plan. Seven goals of the plan applied to distance learning including (1) develop ways to accommodate the 50% projected enrollment growth, (2) proactively develop infrastructure for distance learning modes, (3) establish multidisciplinary
graduate programs in distance education, (4) develop ways to access students’ performance in distance formats, (5) prepare faculty willing to use alternative delivery systems, (6) develop alternative delivery systems, and (7) make innovative use of technology.

- Fourth, UCF received several years of equity funding from the Florida Board of Regents providing funds that were used in part to develop its distance learning capabilities.

- Fifth, the presidents of UCF and Brevard Community College (BCC) determined it would be beneficial for students to transfer from BCC’s distance learning programs to similar programs at UCF. A Distance Learning Committee was created at UCF to investigate the possibilities. The committee was not successful in finding a solution; however, one committee member suggested the Web as an option.

- Sixth, the university president noted UCF did not have clear strategic goals and directions for distance learning. Carol Twigg, then vice-president of EDUCOM, was hired as a consultant and facilitated a workshop with academic leadership called the Deans and Directors Workshop. The workshop resulted in identification of three online programs, agreement from colleges to identify a cohort of faculty willing to participate, call for a faculty development program to be offered in summer of 1996, and delivery of the first online courses to occur in fall 1996.

The day prior to the Deans and Directors Workshop, May 21, 1996, a Distance Learning Roundtable was held (Hartman, 2002; interview with Hartman on November
One of the presentations at the Roundtable was given by Dr. Sorg and his graduate teaching assistant. They demonstrated an online course successfully delivered for the Vocational Teacher Education and Industry Training program. Because their online course was based on extensive research in learning theory, computer-mediated communication, learning communities, student support, and assessment, their course was identified as a model for UCF’s fledging distance learning program.

Truman, the graduate teaching assistant, was subsequently employed as the first employee for UCF’s online program (Hartman, 2002; interview with Hartman on November 17, 2004). Together, Truman and Sorg developed and delivered the first faculty development program to 12 faculty members from July 11 through August 6, 1996. In fall 1996, eight online courses were delivered to 125 students thus initiating the directive from the Deans and Directors Workshop and the strategic plan.

Another goal of the strategic plan was to develop ways to assess students’ performance in distance formats. To that end, Dr. Charles Dziuban was retained to conduct assessments of the new online initiative (Hartman, 2002). One of the early findings of Dzuiban’s research showed 75% of the students enrolled in online courses were also enrolled in on-campus courses (Hartman, 2002; interview with Hartman on November 17, 2004; interview with Truman on November 8, 2004). Students cited convenience as the reason they enrolled in the online courses. This finding led to the creation of a second online delivery format called mixed mode or “M” courses, i.e. UCF’s nomenclature for a blended course. The new M format combined the face-to-face classroom and online environments with a reduction in classroom attendance. A special
course helped faculty develop and deliver the first group of M courses. Eight M courses were delivered in fall 1997 to 125 students.

In recognition of on and off campus students taking online courses, UCF’s distance learning initiative was changed to “distributed learning.” Distributed learning encompassed all forms of distance learning including online courses, interactive video (ITV), and FEEDS (streamed video of engineering courses).

To support online learning in a scalable and sustainable manner, UCF created three new units and developed several theory-based systems including an instructional model, faculty development, course development, learner support, and assessment (Dziuban, Hartman, & Moskal, 2004; Hartman, 2002).
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