Evaluating Distributed Learning In Metropolitan Universities

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Abstract

The authors describe the University of Central Florida's distributed learning evaluation design with respect to student demographics, perceptions, success strategies, learning styles, and success/withdrawal rates. Faculty research focuses on demographics, perceptions, and teaching strategies. Success and withdrawal rates for courses with varying web presence degrees connote that classes featuring reduced seat time face-to-face presence, combined with web-based instruction, produce superior results than fully online or completely face-to-face course outcomes.

In a few short years, the metropolitan university has experienced rapid technological changes, disparate learning environments, and students with expanding learning needs. These developments have had a significant, cumulative effect on the higher educational process. Distributed learning, specifically delivering courses via the Internet, has evolved into a multi-faceted situation. The metropolitan university responds to a much more diverse learning population in distance education's anytime, anywhere environment.

Students' reaction to web-based learning is consistently very positive They assume a more active posture in the online learning environment, and report increased interaction with both their peers and the instructor. They find web-based learning much more convenient and congruent with their busy lifestyles, and once engaged in a web-enhanced course, a student will most probably take another.

Professors find that their teaching expectations expand and that they are able to envision new methods to incorporate technology and to integrate successful instructional resources into their teaching protocols. Their technology-enhanced teaching environments allow more flexibility than face-to-face classes, and the online classroom leads to continual teaching improvement.

The University of Central Florida's (UCF's) interaction with distance learning produces a program design that takes into consideration system dynamics for student success and university benefits. Several sources (Sorg, et al. 1999; Moskal and Dziuban 2000; Hartman, Dziuban, and Moskal 1999) document our program design, which utilizes a centralized approach to course and program development.

In this paper we identify important research issues that contribute to successful program development by considering two components and their interaction: metropolitan universities and distributed learning programs. We introduce a model that deals effectively with the demands of online instruction and addresses the diverse learning characteristics of its student population. We detail the course of our university's conceptual evolution to its present state through varying degrees of web presence.

Metropolitan Universities

The metropolitan university's emergence and technology's rapid growth are the definitive educational movements in the latter part of the 20th century. Serving a large population area, the metropolitan university serves a student body that seeks a curriculum germane to its career needs and one that also accommodates a busy lifestyle. Many of the students who attend metropolitan universities need more time to complete their degrees, because of family and work commitments. Further, many students are women returning to college after fulfilling other lifestyle demands.

The metropolitan university often responds by expanding its curriculum, building branch campuses, and offering online and web-enhanced study programs. Utilizing innovative technology in distance learning can maximize students' chances for success in online courses. This involves the development of instructional strategies and support mechanisms for students who are not necessarily comfortable in web-based courses, but who find themselves in this environment.

Distributed Learning's Impact on a Complex Metropolitan University

The University of Central Florida began its distributed learning program in Summer 1996 with one fully online course in vocational education; by Spring 2000, web-based or enhanced course enrollments exceeded 15,000 students. The university expects this trend to continue so that, in the foreseeable future, the majority of UCF classes will feature some web presence.

Distributed learning demonstrates a profound, permanent, and noticeable impact on our university—an iterative process with the online initiative and the university impacting each other. Web-based instruction can transform the classroom into a learner-centered environment where students assume a more active posture and faculty function as facilitators and managers. UCF, as an institution, continues to develop successful strategies for both student and faculty in response to this modified culture. UCF's program design involves a centralized course and program development approach that offers faculty instructional, technical, and financial support to convert face-to-face courses to courses with varying degrees of web presence. Students also benefit from comprehensive support services that enable them to shift smoothly to the web's instructional mechanism. Several external awards validate UCF's program: the 1998 American Productivity and Quality Center State Higher Education Executive Officers (APQC-SHEEO) Faculty Development Award for Teaching with Technology, and the 2000 Excellence in Distance Learning Program Award from the United States Distance Learning Association (USDLA).

The University of Central Florida Distributed Learning Model

The University of Central Florida designed its distributed learning program as a developmental opportunity for both students and faculty. Courses with the designation "E" offer entirely face-to-face instruction with varying degrees of web enhancement. "M"-designated courses must replace some face-to-face class time with web instruction so that a three-hour course may occupy only one hour of actual classroom space; "W" courses offer fully online instruction with no regular class meetings. In this structure, faculty and students can make the transition from face-to-face classes to the degree of web-enhancement with which they are comfortable.

The University of Central Florida highly recommends M (mixed mode) courses for an institution wishing to make use of the Internet's power and flexibility in its instructional program while maintaining its campus's original academic climate. The mixed-mode approach also results in space saving—an economic advantage. By replacing some face-to-face instruction with web components, M courses allow the weekly operation of multiple classes in a classroom previously occupied by only one course. We have found these courses to have equivalent or reduced student withdrawal rates as well as equivalent or superior student success rates. This is an important finding for a university with five to six percent student population growth per year. Fully online programs will continue to grow at UCF, but classroom instruction combined with web-presence is the model of choice for this metropolitan university.

The Research Design at the University of Central Florida

UCF's impact evaluation began with its distributed learning initiative inception and is in continual transition. *Table 1* portrays the design components. Systematic program development is an absolute requirement.

Table 1. **UCF's Distributed Learning Impact Evaluation Design Elements**

	Students	Faculty
Demographics	*	*
Perceptions	*	*
Strategies for success	*	*
Learning styles	*	
Success rates	*	
Withdrawal rates	*	
Course-grounded research		*

At UCF, we are committed to converting data into useful information that can be effectively used by those who wish to develop or modify their programs. The evaluation process is formative rather than summative because findings generate more questions than they answer. Administration—specifically Academic Affairs at UCF—funds the evaluation process.

Our evaluation centers on faculty and student characteristics: demographics, reactions to the online environment, and success strategies. It also measures how web-based teaching impacts student learning styles and environment, and compares student success and withdrawal rates in online and web-enhanced courses with the face-to-face versions.

UCF's faculty initiate class-based research in their individual disciplines, while the UCF research staff of the Research Initiative for Teaching Effectiveness (RITE) provides the necessary technical and logistical support. We believe that these pockets of in-class research will become UCF's evaluation program's most effective element, and will build the university's strongest research base. In addition, this research as a whole adds to the university's knowledge base by providing snapshots of various instructors in various fields dealing with online classroom instructional issues and effectiveness.

RITE completes the evaluation and data analysis, and presents the findings to the concerned constituencies: faculty, Academic Affairs, Course Development and Web Services, the Center for Distance Learning, and Information Technologies and Resources. The objective evaluation is ongoing with all parties responsible for the data and for placing an interpretation on the findings.

Major Research Findings: Expected Effects and Side Effects

This section presents several major research findings that include some expected effects and some unexpected side effects.

The majority of distance education students are not consistently at a distance. Students' registration patterns indicate that the majority of students (75-85 percent) in web-based courses simultaneously register for classes that require some campus presence. This finding has been consistent since the program's onset.

Enrollments in fully online and web-enhanced courses will increase rapidly. Current UCF projections for 2003 place student enrollments at slightly over 9,000 in fully online courses (no regular class meetings) and at 24,000 in web-enhanced courses. Such marked enrollment numbers will require significant technological infrastructure upgrades and both student and faculty support.

Current demographic studies also show that students of all ethnic backgrounds participate in, succeed in, and withdraw from online courses at rates proportional to their comparable counterparts in face-to-face classes. Women consistently register in fully online courses in greater proportions than students in the university's general population, and women succeed at higher rates (Females=85 percent, Males=77 percent) and withdraw at lower rates (Females=6 percent, Males=8 percent) than men. Results indicate that these higher rates for women are not artifacts of programs that register larger female populations.

When examining student ages in our web courses, we find the oldest students in fully online sections, web-enhanced sections, and face-to-face sections, respectfully. Both the fully online student majority (58 percent) and the web-enhanced students (55 percent) report an over-30 minute drive time to campus.

Students report high satisfaction with Web-based courses Students completing online courses consistently give the same high approval ratings of these courses, as do students completing web-enhanced courses (87 percent in both cases). Those high satisfaction levels translate into student willingness to enroll in another online (89 percent) or media-enhanced course (86 percent). In repeated follow-up evaluations, convenience (79 percent) emerges as the primary reason why students register for fully online courses. A large percentage of students (44 percent) in web-enhanced courses wanted to experience the new format.

More high-energy dependent learners select fully online courses. Using measurement protocols based on the theory of reactive behavior patterns (Long 1975; 1985; 1989), most students who participate in fully online courses are Aggressive/Dependent (AD) learners (53 percent). When ADs translate their dependency needs into high

energy, they become candidates who can achieve success in almost any academic situation. Aggressive/Independent students (AI) represent the second largest constituency in online courses (23 percent). AI learners, who are unconcerned with approval, may act on impulse or emotion without fear of reprisal or rejection; these students may or may not achieve success depending on their organizational skills and impulse control.

Passive/Independent (PI) students comprise approximately 17 percent of UCF's online population. In the extreme, these students stubbornly ignore course requirements. Their dilatory tendencies cause them to fall behind and/or withdraw both emotionally and physically from their courses. Passive/Dependent students represent the smallest percentage (7 percent) of UCF students participating in online courses; they exhibit low energy levels and demonstrate high need for approval. PDs are highly sensitive and willing to please at almost any cost. Their excessive need for approval may make them poor candidates to succeed in web-based instruction; they prefer a face-to-face instruction context that provides interaction and immediate approval.

Surveys conducted in some general education courses indicate a much more balanced distribution of the Long Behavior Types exists in UCF's general student population. Students representing Aggressive/Dependent (AD) learners account for approximately 37 percent of the population and Aggressive/Independents (AI) for approximately 27 percent. Passive/Independents (PI) appear 18 percent of the time and Passive/Dependents (PD) account for the remaining 19 percent. These comparative data depict passive students participating in online courses at an approximate rate of 24 percent, although these students represent 37 percent of the general student population. Aggressive students participate in online courses (78 percent) at rates higher than the general student population, though they comprise 63 percent of the general student population.

A successful student majority in online courses reports a changed learning approach that relates to their learning styles. Students in this new context discern a newfound flexibility and technological empowerment, but experience radical changes. They must transform their passive classroom style into a more active approach, and become responsively involved in the learning process, often controlling both the time and, to some extent, the pace of their own learning progress. Students access traditional support mechanisms (the instructor and their peers) electronically through e-mail, forums, and chat rooms.

The majority of students enrolled in web courses (66 percent) indicate learning approach changes. Aggressive/Dependents (AD) report much less rigidity in online classes when compared to their face-to-face course behavior. Aggressive/Independents (AI) report an improved sense of time management and organization and cite increased motivation levels in their web-based classes. Passive/Independents (PI) also cite a newfound sense of motivation in their online experience, and report an increased sense of responsibility for their achievements. Most importantly, the PI group reports less resistance to academic demands. Successful Passive/Dependents (PD) enjoy increased interaction levels in the online environment and less pressure in their web-based courses than in face-to-face sections. Successful students in each learning style offer the same advice to their peers in online courses: attend orientation sessions and avoid procrastination. Veteran web students advise newcomers to have strong computer skills, to keep up with course materials, and to seek assistance. They further stress that new web students should maintain contact with the instructor and check the class forum daily.

Discipline area is the best success predictor. Usually, two viable outcomes measure success in web-based courses—class grades and specifically designed assessment tools for particular courses. Each indicator reveals disadvantages: grades that cannot accurately be compared across departments or disciplines, and evaluations that are ineffectual when course-specific protocols lack the ability to be generalized. Our work with reliability, however, suggests that defining course "success" with a C grade or higher yields a workable model. The information loss associated with this declassification procedure is more than compensated for by eliminating the error variance associated with differing departmental policies regarding A, B, and C assignments.

Clear patterns emerge when using success (by our definition) as an independent variable and department membership, course modality (online, web-enhanced or face-to-face), sex, and ethnicity as predictors in segmentation models. Department membership is consistently the best success predictor followed by course modality and sex; rarely does ethnicity find its way into the models.

Students withdraw from online courses for diverse reasons. UCF student surveys indicate many reasons why our students withdraw from online courses. Two reasons predominate: students lack technology readiness, and they underestimate online course demands. Follow-up student interviews reveal their failure to understand that although online courses offer convenience as to time and place, they are as demanding as their comparable face-to-face sections. Other factors for online course withdrawal include the student's inability to adjust to the online format, conflicts with the instructor, and the student's lack of organization.

Instructors report a modified teaching and learning environment. Our most recent faculty survey reveals that teaching a fully online or web-enhanced course demands considerably more preparation, maintenance, and delivery than its comparable face-to-face course. Instructors indicate, however, that the quality and quantity of interaction in these courses is greater than in their on-campus sections. Virtually all faculty who undertake and persevere in web courses report high satisfaction levels and a strong willingness to continue teaching in the online mode. Interestingly, their satisfaction is independent of the increased workloads associated with this mode of teaching.

Faculty adjust their teaching methods when they go online. In spite of the online instructional benefits, teachers encounter many substantial challenges in this environment. Instructors facilitate rather than dispense information, and they are often uncertain mediators in an environment of constant transition. Accomplished teachers again become novices while attempting to utilize technological advances. They are forced to re-engineer their learning environment and rethink their teaching activities after an online experience.

Some professors lament the reduced or eliminated face-to-face contact with students in addition to what many perceive as a loss of control. Others worry that the World Wide Web's exhaustive information will overwhelm students who do not have the expertise to determine its quality. Many faculty members express uneasiness about online teaching's correspondence to the academy's value system. Instructors who utilize more traditional methods in a web-based format express conflicts with security issues when administering exams at a distance.

Other instructors, however, assert that they see themselves as more learner-centered in their instruction, designing their courses with a variety of active learning techniques. They feel better organized, but less structured in their teaching. They further indicate that they deliver more material online with greater effectiveness, improved timing, and with less reliance on tests for grading.

The faculty unanimously enumerate the online environment's substantial challenges: excessive time demands, technology frustration, and the lack of face-to-face contact that many still feel is a vital component in effective teaching and learning. Most faculty also discern that the additional time demands detract from their ability to complete research and service. Faculty also believe that they receive lower ratings in web-based courses than in their face-to-face sections, although no data presently confirms this concern.

Courses featuring both face-to-face and web components yield superior results when compared with fully online or face-to-face formats.[1] We compared success and withdrawal rates in fully online (W), media-enhanced (M) and comparable face-to-face (FTF) courses, and found consistent results in the past eight semesters. The Spring 1999 semester yields typical data. Web-enhanced classes produce success rates five to six percent higher than online or face-to-face courses (M=88 percent, W=83 percent, FTF=83 percent) when matched only by course modality (W, M, and FTF). Web-enhanced classes produce a four to five percent higher success rate than face-to-face courses when matched by subject and modality (M= 88 percent, FTF=84 percent). Online courses (W) yield a three to four percent lower success rate than equivalent face-to-face classes (W=79 percent, FTF=83 percent). Overall withdrawal rate comparisons for the three modalities show W courses with the highest rate (6 percent), followed by FTF (4 percent) and M (4 percent). In section-matched courses, M and their comparable FTF sections yield a similar 5 percent withdrawal rate; W sections show a 7 percent withdrawal rate compared to 3 percent in face-to-face counterparts.

Conclusion

Transition requires a university to recognize its metropolitan mission and reaffirm its commitment to provide successful learning experiences in a manner congruent with its non-traditional students' lifestyles. UCF, as a metropolitan university, must responsibly prepare its students for success in a manner congruent with their lifestyles without sacrificing its commitment to provide successful learning experiences. In this changing milieu, it is important to recognize that learner characteristics are widely diverse.

UCF presupposes that learning style is independent of intellectual capacity, and assumes, therefore, that those students representing all learning styles have the ability to excel. In the future, we hope to maximize student success by designing diagnostic profiles that alert students to online course demands. By undertaking this initiative, we intend to prevent our distributed learning program from discriminating against any student group—a most unwelcome side effect.

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[1] Designation of the complete UCF modality format (W=fully online, M=combined face-to-face and online learning with reduced seat time, E=web presence, but no reduced seat time) did not begin until the spring 2000 semester. Therefore, the data for M courses in this section combine M and E formats.

A university offering fully online courses must develop instructional strategies and support mechanisms for students who find themselves uncomfortable in web-based courses. These students might be easily overlooked in an environment that attracts high achievers. The University of Central Florida is committed to a continuous evaluation of its web-based course initiative. As part of the evaluation, the demographics and attitudes of those who take and those who teach in courses with varying degrees of web instruction will continue to be an important factor in establishing trend patterns as our web courses evolve. Researchers will continue to examine the degree to which the university is impacted by web instruction, including the changing roles experienced by faculty and students. Classroom-based faculty research will continue to be an important component of evaluation. We hope to explore instructional changes faculty have enacted in the transition to a web environment. We know that many faculty are producing instructionally creative web courses and we intend to evaluate the web components that achieve better student/instructor and student/student interaction.

In large and complex metropolitan universities, researchers who consider an initiative in terms of design inputs and outputs gain more information and produce an iterative process that influences growth and development within the institution. These more comprehensive models facilitate program policy decisions that are more responsive to the many constituencies concerned with the initiative. We de-emphasize statistical significance as a success indicator in our online courses. Extensive quasi-experimental course comparisons with and without web presence lead to the "no significant difference phenomenon." This finding taken at face value will lead to the erroneous conclusion that web-enhanced instruction's impact is negligible on student cognitive, affective, and behavioral outcomes. Program evaluation involves much more than the computation of the probability of observed sample values given an assumed null hypothesis.

Hybrid courses with a combination of web-based and face-to-face instruction offer the greatest promise. The mixed-mode format offers the best of both worlds—interaction with the instructor plus the power of the World Wide Web. Technologically empowered students become lifelong learners that developmentally benefit from the instructor's personality and teaching style in a face-to-face setting, gaining insight into their own social strengths and weaknesses (Heath 1964). In response to this modified culture, UCF, as an institution, continues to develop successful strategies for both students and faculty.

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