

The Clipper Project: An Introduction to the Impact of Web-based Courses on Pre-Baccalaureate Students

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Abstract: The emergence of the World Wide Web as a valued medium for delivering instruction is sparking an interesting change in education on all levels. Universities, in particular, are investigating ways to exploit the power of new technologies in education. Yet, few have engaged in empirically-based investigation of the true costs and benefits for students -and teachers - actively engaged in online course experiences. The Clipper Project is a research endeavor designed to study the effects of Web-based learning on pre-college students. The project coordinators hope to provide baseline information to inform future developers and providers of online education and guide them toward the provision of informed, responsible learning experiences for students. This paper describes the aims, goals, objectives, and design of this web-based research initiative.

Introduction

The acceptance of the World Wide Web as a reasonable medium for delivering instruction is sparking an interesting change in education on all levels. It has been argued that Web-based technology has a positive effect on student learning (see Oliver, Omari, & Herrington 1998; Magalhaes & Schiel 1997). Yet, despite the universal call for Web-enabled learning, there exists little research regarding what, exactly, constitutes effective and appropriate practice in online education.

Few have engaged in empirically-based investigation of the true costs and benefits for students -and teachers - actively engaged in online course experiences. A recent review (DiPerna & Volpe 2000) of evaluation of Web-based instruction found only a dozen articles (from a pool of nearly 250) that include some form of data-driven investigation. Of the twelve, *all but one* relied solely on students' self-reported attitudes or perceptions regarding Web-based instruction. Whereas anecdotal accounts of successful online classes and reports that draw upon commonly shared theory are useful, they are not sufficient alone as proof of effectiveness. The kind of understanding needed to make truly informed decisions about the value of online education requires more varied and rigorous investigation.

The Project

The Clipper Project is designed to study the effects of Web-based learning on pre-college students. High school students accepting early decision to Lehigh University are eligible while still in high school to complete college courses offered online. The students may take Web-based courses in chemistry, calculus, economics, engineering, and English. The courses are taught by Lehigh faculty, follow a semester schedule, and carry with them all of the responsibilities, activities and expectations one would find in a face-to-face course. The faculty member who designs the course is also be responsible for interacting with students enrolled in the Web-based versions. This interaction is an imperative component of these courses, and is facilitated via a combination of discussion groups, chat rooms, email, and other media.

Researchers directing the project are carrying forth a longitudinal quasi-experimental study with both qualitative and quantitative measures to determine the behavior of students during the Web-based instruction, the extent to which this instruction has prepared them for advanced instruction, whether this vehicle indeed opens broader learning experiences to them, and the effects of such a project on the faculty engaged in the process. This project is intended to enhance the collegiate experience of Lehigh freshman students by accelerating their entry into advanced studies in their specialties and in complementary fields. The purpose of this project is to provide empirically-based insight into what factors impact success within a Web-based learning environment by investigating the following factors:

1. **Implementation/Transformation Considerations**--computer access, scheduling, assessment
2. **Cost Considerations**--time, money, and personnel budget impact during development *and* delivery
3. **Student Learning Outcomes**—grades, number/quality of online communications, achievement in consequent courses related to content area(s)
4. **Faculty Teaching Outcomes**—impact on pedagogy of on-campus as well as on-line courses

Researchers are utilizing transcripts, focus groups, journals, activity logs, observations and student performance artifacts (e.g., grades, transcripts, reports) as the primary sources of data for measuring student and faculty behaviors.

Participants include students (current and prospective) as well as faculty at Lehigh University. Across the lifespan of the project, no fewer than 900 students will participate. High school participants are solicited through informational brochures sent to seniors who are granted Early Decision status at Lehigh. Student participants on campus are solicited through a variety of means including information shared with advisors and emails distributed to first year students.

The First Cohort

The first cohort of students began in February 2001. Of the 309 students offered early admission, 88 applied to one of the two Clipper Project courses (course offerings are staggered, with Calculus and Economics online first and the other three to be added in year two). At the 10-week point, the Calculus course has a 90% retention rate, and the economics course maintained an 85% rate. Participation has been steady, as well. Each student has maintained an active access rate for the course materials and each has participated in the mandatory assignments, as well as the optional chat sessions.

An interesting impact point that has emerged is the value of the online community itself in promoting success within Web-based course environments. That is, the more facilitative structures provided, the more comfortable the participants appear to be with not only the courses themselves, but also with the impending transition to the university. As the project matures, it appears the construction and maintenance of an active community of learners among the online participants - a community that spans across the courses themselves and includes opportunities for students to interact with one another, as well as with students, faculty, and other campus leaders - before making the physical transition from high school to college life will be an important factor for success.

Conclusion

Many universities are spending a great deal of time and money augmenting traditional curricula with distance education classes and Web-based instruction without investigating the most effective ways to develop and deliver the courses. It is often assumed that technology will automatically expedite learning - making learning easier and faster. Yet, we have no reason to believe instruction has improved simply because course information has been placed on the Web and students are working on their computers. As more learning becomes digitized, it becomes imperative that we understand what factors influence success. Given the pace of change and potential impact of distributed learning on higher education, we must now undertake due diligence and begin investigating empirically the exact impacts--if any--technology-based coursework has on teaching and learning at the university.

The National Commission on the High School Senior Year (NCHSSY) recently reported that more than a quarter of the freshmen at four-year colleges do not make it to their sophomore year. In addition, at selective four-year colleges and universities, only about half of college freshmen earn a bachelor's degree in about six years (NCHSSY, 2001). One of the problems the Commission focused on was how colleges can retain their students to improve graduation

rates. One aspect of introducing a program like the Clipper Project is getting students motivated and committed to college classes before moving to campus.

The next phase for the Clipper Project will be guided primarily by the students' interest in developing a community of learners. Establishing relationships between on-line classmates seems an important factor in facilitating success. As the Clipper Project moves forward, initial feedback suggests that efforts spent on forming informal chat sessions, Web-casts, and discussion boards that extend to topics outside course material is likely to contribute to the overall effectiveness of the online academic experience. We may find that Clipper students have less anxiety over classes (already having completed a Lehigh course), transition easier to living away from home, have parents less anxious about their children living away from home, or feel connected to their University earlier than traditional freshmen. As the Clipper Community continues to evolve, it is becoming clear that understanding these factors will be instrumental in providing a picture of the true impacts of learning online.

By examining the impact a Web-based course has on a student population, the Clipper Project can determine characteristics of successful online course offerings. We hope to provide baseline data to inform future developers and providers of online education and guide them toward the provision of informed, responsible learning experiences for students. Rather than investing time and money into instructional design that we hope works, we will be able to concentrate funds on what we know works. This is a constructive step towards effective Web-based instruction that will lead to a positive learning experience for students and faculty alike.

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