

The Drivers of Online Education: A Causal Model

Alexander Nill

*University of Nevada-Las Vegas
College of Business*

Denise Schoenbachler

*Northern Illinois University
College of Business*

As institutions of higher learning are begin to adopt teaching technologies and infrastructures that utilize the unique and collaborative capabilities of the Internet, they are attempting to understand how these virtual communities can be employed to enhance distance education in general and more specifically online education. (Lang and Zhao, 2000). It is estimated that nearly half of all U.S. colleges and universities provide Internet-based educational offerings; serving nearly 2 million students in the U.S. in 2002, with growth estimates as high as 5 million by 2006 (Wechsler, 2002). As the use of the Internet in higher education and the formation of virtual learning communities are proliferating, critics argue that distance education adversely affects the nature of the student-to-instructor and student-to-student interactions, thereby undermining the quality of the educational experience (Abrahamsom, 1998; Rham and Reed, 1997; Sonner, 1999). Opponents of online education note that web-based course instruction often has a higher dropout rate than that found for traditional in-class instruction (Aron, 1999, Roblyer, 1999). Just as businesses have to learn how buyers and sellers interact via e-commerce sites (Mathwick, 2002), interactive educators will need to find ways to enhance online education and virtual relationships with and between their students (Leonard, 1999; Looi and Ang, 2000). Undeniably, the use of the Internet as an instructional medium has a significant effect on the role that educators play in the learning experience (Atwong and Hugstad, 1997). At issue is whether online learning and e-commerce technologies will merge in a way that is conducive for improving the quality of distance learning programs and the experiences students have with others in their virtual learning community (Abernathy, 1999; Karns, Pharr, and Kelley, 2001; Lang and Zhao, 2000; Rheingold, 1993; Young, 2001).

In this paper, we briefly introduce literature from three areas to help provide a foundation for our model: distance education and technology, virtual communities, and measuring the students' satisfaction with the educational experience. Undeniably, technology is transforming how businesses operate, how educators teach, and how students learn (McCorkle, Alexander, and Reardon, 2001). However, many questions remain regarding how technology can be best integrated into today's rapidly changing educational environment. The traditional approach of the professor at the blackboard and students in their seats is no longer appropriate for all learning environments (Smith, 1996). Online education has caused educators to rethink the approaches to teaching and learning. The teacher is no longer the center of all knowledge, nor is the student a passive recipient of information. Instead, an interactive process has evolved in online education whereby participants are assigned and often share new roles to the mutual benefit of all parties in the virtual community (Pye, 1999). While the use of virtual communities in online education have grown significantly in recent years, little is known about the types of interactive relationships students are looking for and the best ways to evaluate the quality of these relationships. Virtually no studies have addressed this issue for online and interactive education.

Our study is based on Peltier's identification of six dimensions of teaching effectiveness in an online educational setting: (1) student-to-student interactions, (2) student-to-instructor interactions, (3) instructor support and mentoring, (4) information delivery technology, (5) course content, and (6) course structure (Peltier et al. 2003). We developed a model with these six dimensions and evaluate their ability to predict the effectiveness of the online educational experience. The study was conducted in conjunction with a large Midwestern university with a nationally ranked online MBA program. Since much of the graduate education experience deals with interacting with teachers and other students to build "communities of learning," the online education experience needed to make sure that "virtual communities of learning" were present. Based on a review of the literature on distance education, virtual communities, and teaching effectiveness a survey was developed by the College's Graduate Studies Committee. The questionnaire was distributed to students enrolled in all 16-week online MBA courses taught over the full spring semester of 2001, all online 8-week courses taught over the second half of the same semester, and all online courses taught during the first half of the 2001 summer session.

Since the purpose of the study was to investigate the sequential, causal relationships between the various constructs in order to develop a better understanding of drivers of the effectiveness of the online experience, the appropriate data analysis technique was structural equation analysis. To focus on the structural relationships, the measures were fixed. The parameter estimates and corresponding t-values are shown in Table 1.

All of the factors were either direct or indirect drivers of effectiveness of the online experience. Specifically, technology, course structure, teacher-student interactions, and student-student interactions indirectly impacted effectiveness, while the course content and instructor support and mentoring were found to be direct drivers of effectiveness. This also indicates that the relationships between the variables are multifaceted, sequential and interactive. The relationships are more complicated than was previously suggested. As such more research in this area is needed to better understand the relationships. While all the factors provide insights into the design and execution of online programs, the instructor support and mentoring dimension is of particular significance. It highlights the importance of the instructor as an active participant in online courses (and, perhaps the importance of managers as active participants in the virtual communities they manage). Based on the questions contained in this measure learning support by the instructor requires a mix of facilitating learning, providing direction and explanations, maintaining rapport with and between classmates, actively participating in discussions, motivating and providing effective feedback. The results indicate that course content is the single most important driver of the students' assessment of the overall effectiveness of the online experience, followed by support and mentoring. This is both surprising and encouraging for faculty members that have complained for years that the degree to which a student 'liked' an instructor rather than course content or some other more pertinent characteristic of teaching drives student evaluations. This also suggests that faculty members that have a difficult time relating to students in face-to-face interactions might fair better in an online education setting.

The factors uncovered by this study provide direction for organizations interested in developing and assessing online education programs and could act as a guide for the effective development of courses and training programs for instructors that will deliver those courses. While these factors were identified for virtual 'learning communities', they are likely to be similar for other types of virtual communities. Certainly more research is required to determine how generalizable these dimensions are to virtual communities in the business world.

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Table 1
Model Estimates

Course Structure	Mentoring and facilitating	.69	15.04
To	From	Estimate	t-value
Mentoring and facilitating	Technology	.58	12.43
Course Structure	Technology.	.11	2.37
Student –Student interactions	Course Structure	.11	1.44
Student –Student interactions	Mentoring and facilitating	.47	6.44
Instructor-Student interactions	Course Structure	.11	2.16
Instructor-Student interactions	Mentoring and facilitating	.71	13.37
Course Content	Technology	.14	3.23
Course Content	Mentoring and facilitating	.27	3.83
Course Content	Course Structure	.20	3.69
Course Content	Student –Student interactions	.22	5.46
Course Content	Instructor-Student interactions	.15	2.68
Learning, Enjoyment and Recommendation	Mentoring and facilitating	.29	5.22
Learning, Enjoyment and Recommendation	Course Structure	.09	1.78
Learning, Enjoyment and Recommendation	Course Content	.52	10.48

Fit statistics

Chi square = 14.59 with 6 degrees of freedom

Goodness of fit index GFI = .99

Adjusted goodness of fit AGFI = .04

Comparative fit index CFI = .99

Incremental fit index IFI = .99.

Total paths 15 Significant paths 13