The Interdependence of the Factors Influencing the Perceived Quality of the Online Learning Experience: A Causal Model

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A structural model of the drivers of online education is proposed and tested. The findings help to identify the interrelated nature of the lectures delivered via technology outside of the traditional classroom, the importance of mentoring, the need to develop course structure, the changing roles for instructors and students, and the importance of designing and delivering course content on the enhancement of the online learning experience. The results support an integrated, building-block approach for developing successful online programs and courses.

Keywords: *online; e-learning; Web-based learning; education; interactions*

INTRODUCTION

Institutions of higher education have embraced the Internet as an important vehicle for delivering courses and programs to a wide array of audiences. In the past decade, higher education has gone from a few schools offering online programs to the point where 63% of all institutions of higher learning were offering undergraduate courses online in 2005 and 65% were offering graduate courses (Sloan Consortium, 2005). The Sloan Consortium (2005) estimated that the number of students taking online college courses doubled from 2002 to 2004 and estimated that 3.5 million students took online classes in 2005. Over the next decade, the growth of online students is expected to average around 40% per year (Botelho, 2004; Dolezalek, 2003). Colleges of business are among the fastest growing in terms of course and programming efforts, with 43% offering online educational programs (Sloan Consortium, 2005). The question is no longer whether online education will continue to expand but the form it will take (Granitz & Hugstad, 2004; Stallings, 2002). Unquestionably, there is an online learning boom occurring, and this form of educational delivery has become a top priority for the 21st-century higher education system (Bagnato, 2004).

One of the defining characteristics of online education is that it allows students access to learning without the constraints of time and location (Gallagher, 2004; Morrison, Sweeney, & Hefferman, 2004). For many, and especially for nontraditional students, online education might be their only opportunity to better themselves through advanced learning. Some of the added benefits of online education include flexibility; ease of participation; absence of labeling due to such things as race, gender, and appearance; training in electronic communication; and exposing students to information technology (Close, Dixit, & Malhotra, 2005; Grandzol, 2004; Hunt, Eagle, & Kitchen, 2004). E-learning in general and online college education specifically are having a profound effect on the future of postsecondary education and is transforming the educational model from an instructor-driven to an interactive and community-driven educational environment in which all students share responsibility for learning outcomes (Peltier, Drago, & Schibrowsky, 2003).

Challenges for Online Learning

Although online delivery has been deemed the eductional "medium of the future," it cannot be taken for granted that "if they build it, students will come" (Kyle & Festervand, 2005). A number of institutions found that students were

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dissatisfied with their overall learning experience (Bisoux, 2002). Much of this dissatisfaction centered around a lack of teacher training, technology problems, course content and pedagogy issues, student inexperience, and a failure to provide multiple forms of communication with and between students (Granitz & Greene, 2003). Too frequently these online courses were taught as mere replications of traditional face-to-face classes rather than attempting to find more suitable ways to present and deliver classes in an online setting (Dolezalek, 2004). Despite some early failures, there is increasingly more evidence that online education is an effective learning medium (Crawford, 2005; Sloan Consortium, 2004). For example, in a study of 39 online programs Allen et al. (2004) found no reduction in learning outcomes for online education. Grandzol (2004) showed that pedagogy was not compromised when courses were taught online. Similarly, Hay and colleagues (Hay, Hodgkinson, Peltier, & Drago, 2004; Hay, Peltier, & Drago, 2004) uncovered evidence that online classes may in fact increase student-to-student interactions, instructor-to-student interactions, critical thinking, and student satisfaction.

Need for Online Education Research

Online education has become big business and is viewed as an important institutional asset and as a necessary strategic initiative for remaining competitive in the worldwide marketplace (Tham & Werner, 2005). Many educational researchers argue that online education does not just have the opportunity to provide education comparable to the current brick and mortar model, in some ways it has the real potential to provide superior learning (Sherif & Kahn, 2005). Despite this promise, empirical research on how to best develop and deliver business education is only now starting to receive attention in the academic community (Rungtusanatham, Ellram, Siferd, & Salik, 2004). To date, much of what has been written about online education has focused on "how to" articles and those using case studies or anecdotal evidence. There is a significant need for empirical research that begins to determine the factors that affect the quality of online education (Chyung & Vachon, 2005; Hollenbeck, Zinkhan, & French, 2005; Orr & Bantow, 2005). Of utmost importance is research that identifies what students feel are important aspects of the online learning environment and how this assessment can be used to improve learning outcomes (Stallings, 2002). To accomplish these objectives, online educators must adopt teaching methods and infrastructures that take advantage of the unique and "collaborative" capabilities available through Internet-based virtual communities (Hay, Hodgkinson, et al., 2004). Just as businesses have had to learn how buyers and sellers interact via e-commerce sites (Mathwick, 2002), online educators need to find ways to improve online education and virtual learning relationships (Looi & Ang, 2000).

There is a growing call by educational researchers for the development and testing of comprehensive frameworks for enhancing our understanding of how to best design, implement, and manage online programs (Chyung & Vachon, 2005; Evans, 2001; Hollenbeck et al., 2005; Peterson, Albaum, Munuera, & Cunningham, 2002). In response, a number of models have been developed, most notably the elements of technology-based distance education model (Evans, 2001); the virtual communities perspective model (Peltier et al., 2003); the institutional, students, and technology interface model (Tham & Werner, 2005); the effective online learning model (Marks, Sibley, & Arbaugh, 2005); and the satisfying and dissatisfying factors in online learning model (Chyung & Vachon, 2005). Of these comprehensive models, the Peltier et al. (2003), Chyung and Vachon (2005), and Marks et al. (2005) frameworks have been empirically tested.

Although these models provide a starting point for identifying some of the drivers of the perceived quality of online education, none investigated the sequential and interrelated nature of the factors that affect the success of online learning. In the research reported here we seek to advance the understanding of online education by developing and testing a theoretical model that examines the relationships between factors that purportedly influence the perceived quality of the online learning experiences. Using the variables developed by Peltier et al. (2003), we are particularly interested in determining whether the identified learning constructs have a hierarchical ordering and thus whether certain variables are important antecedents for other aspects of the learning process. To this end, a structural equation approach is employed to parcel out how the learning constructs in our model interact with each other and influence the overall perceived quality of the online learning experience. Although our research focus is on improving the quality of online business programs, the ideas we present are transferable to a broader learning environment.

MODEL DEVELOPMENT—MANAGING THE QUALITY OF THE LEARNING EXPERIENCE

To develop an integrated model of the building blocks of a high-quality online learning environment we used the virtual communities perspective model conceptualized by Peltier et al. (2003), the effective online learning model (Marks et al., 2005), and the satisfying and dissatisfying factors in online learning model (Chyung & Vachon, 2005). Combined, six dimensions of teaching quality in an online learning setting were identified: (a) student-to-student interactions, (b) student-to-instructor interactions, (c) instructor support and mentoring, (d) lecture delivery quality, (e) course content, and (f) course structure. Individually, each of these variables has been shown to be significantly related to student perceptions of the quality of the online learning experience. Based on the results of these studies, each of these dimensions in our structural model is hypothesized to have a direct, positive impact on perceptions of the learning experience. More important, a review of the teaching effectiveness,

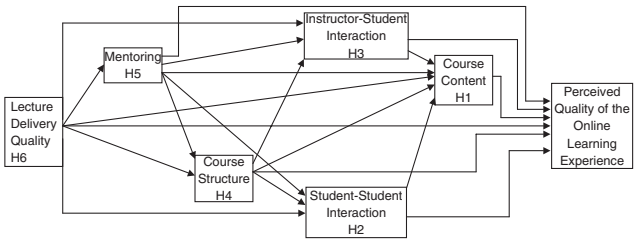

FIGURE 1: Proposed Model of the Perceived Quality of the Online Learning Experience
NOTE: H1 = Hypothesis 1; H2 = Hypothesis 2; H3 = Hypothesis 3; H4 = Hypothesis 4; H5 = Hypothesis 5; H6 = Hypothesis 6.

online education, and virtual community literatures provides a basis on which we hypothesize a number of sequential and interactive relationships. It is these relationships that are of greatest interest in our study and whether the direct relationships reported by Peltier et al. (2003) and others are modified when these structural interactions are considered. The proposed model is displayed in Figure 1.

Course Content

In virtual learning communities much of what is taught in online courses is delivered through instructor-delivered content (e.g., Atwong & Hugstad, 1997; Benbunan-Fich, Lozada, Pirog, Priluck, & Wiesenblit, 2001; Jones & Kelley, 2003), Internet-driven content (e.g., Bisoux, 2004; Lang & Zhao, 2000), and assigned learning and assessment activities (Smith, 2001). As with the traditional classroom, course content in an online learning environment should be challenging, current, easy to access, relevant to students' needs, and conveyed in an interesting manner (Drago, Peltier, & Sorensen, 2002; Evans, 2001; Jones & Kelley, 2003).

Online courses offer a somewhat unique dilemma for instructors in terms of maintaining currency. Because students are often given some control to proceed through the course at their own pace, content should be planned in advance and made available to students at the beginning of the course (Abernathy, 1999). However, given the timeliness of the medium, effective instructors will add course content as the term unfolds in response to current events or evolving student needs (Sherif & Khan, 2005). Research has shown that members of virtual communities are more likely to interact with other participants and become committed to the community if they feel they are receiving valuable information through their participation (Drago & Peltier, 2004). Likewise, students in online courses are more likely to participate and be motivated to learn when course content is relevant, interesting, and of high quality (Bocchi, Eastman, & Swift, 2004; Kozinets, 1999).

The general education literature indicates that students' perceptions of the learning environment is higher when choice and independent thought are encouraged (Feldman, 1976), quality is stressed in developing course content and learning experiences (Entwistle & Tait, 1990), the learning environment is both challenging and motivating (Ramsden, 1991), and learners are respected (Patrick & Smart, 1998). Specific to online learning, Marks et al. (2005) and Peltier et al. (2003) identified a significant relationship between the evaluations of course content and the perceived quality of the learning experience. As such, we posit that:

Hypothesis 1: Course content is positively related to the perceived quality of the learning experience.

Student-to-Student Interactions

Classroom interactions have long been viewed as an important learning opportunity. Student-driven communications are even more important in MBA courses where students often bring a wealth of business experience to the discussion. Because students are not physically present in a virtual environment, student-to-student interactions must be carefully integrated into the online course (Lam, 2004). One way to enhance student interactions in the online learning environment is to place more emphasis on peer-to-peer learning in the form of collaborative discussions and team projects (Bocchi et al., 2004; Driver, 2002; Eastman & Swift, 2001).

There is some evidence that virtual interaction between students may be superior to that which occurs via direct face-to-face contact (Sweeney & Ingram, 2001). In particular, the anonymity of the virtual classroom creates an environment that lets students be more open to express their opinions and perspectives (Hay, Hodgkinson, et al., 2004; Peltier et al., 2003). The willingness to speak out often leads to the development of trust-based relationships among students in the virtual classroom (Figallo, 1998; Sullivan, 2001). There are also fewer time constraints when discussions are of an asynchronous (i.e., self-selected time) nature. Asynchronous settings allow students to join discussions when they are ready to participate and at a time when they can contribute in detail. In general, student participation in and assessment of discussions are critical to developing an effective virtual learning community (Rheingold, 1993). Failure to achieve high-quality interaction between students will result in an inferior learning experience for online learners (Hay, Hodgkinson, et al., 2004; Karuppan & Karuppan, 1999; Lam, 2004; Ueltschy, 2001). Marks et al. (2005) and Peltier et al. (2003) found that the perceived quality of student-to-student interactions had a positive influence on the perceived quality of the learning experience. We posit that:

Hypothesis 2a: Student-to-student interaction is positively related to the perceived quality of the learning experience.

Hagel and Armstrong (1997) suggested that virtual communities share knowledge among participants (i.e., students), with the result being superior information content. The online

classroom is a virtual learning community in which participants play a key role in assessing the quality and reliability of the communications they encounter (Fombrun, 1996). As part of this communication forum, discussions between members can go on over an extended period of time and contribute to the amount of knowledge imparted (C. S. Lee, Tan, & Goh, 2004). In addition, because all students have access to responses within the virtual community, there may be greater motivation to provide quality content in the discussion room (Harasim, 1990), which in turn is likely to impact perceptions of the quality of the information provided in the course. We thus pose the following exploratory indirect relational link:

Hypothesis 2b: Student-to-student interaction is positively related to the perceived quality of course content.

Instructor-to-Student Interactions

One of the most important responsibilities for instructors in both traditional and online courses is interacting with students (Benbunan-Fich et al., 2001; Faranda & Clark, 2004). Instructor-to-student interactions are influenced in part by the ease with which communications take place, the degree to which students feel free to ask questions and express their views, and how accessible and responsive faculty are to information-related problems (Marks et al., 2005; Peltier et al., 2003). The interaction between an instructor and students takes more time and effort in the online learning environment where many of the interactions are in written form. Instructor-to-student interactions generally take place via e-mail, chat rooms, and to a much lesser extent, telephone. These communications are critical for generating student connectedness to the virtual learning community (Drago & Peltier, 2004; Rothaermel & Sugiyama, 2001). Importantly, instructors must willingly interact through these means of communication to build an effective learning community (Wallace, 2004). Past research has shown that instructor-to-student interactions significantly impact classroom rapport and the perceived quality of the learning experience (Hay, Hodgkinson, et al., 2004), particularly when interpersonal relationships are cultivated (Lowman & Mathie, 1993), instructors provide feedback (Marsh 1987), and interactions between the instructor and students are emphasized (Brightman, Elliot, & Bhada, 1993). Online students often seek assurance that their questions and concerns will be addressed in a timely and effective manner, especially as they relate to feedback students receive regarding their progress in learning the content of the course (Drago et al., 2002; Smith, 2001). We posit that

Hypothesis 3a: Instructor-to-student interaction is positively related to the perceived quality of the learning experience.

Hypothesis 3b: Instructor-to-student interaction is positively related to the perceived quality of course content.

Course Structure

The course structure dimension can be divided into two parts: course expectations (Grandzol, 2004) and course infrastructure (Tham & Werner, 2005). These structural elements address how well the course is organized and what is expected of community participants (Gurak & Duin, 2004). Course structure provides students with guidance in terms of topic coverage, rules of behavior, and expectations (Peltier et al., 2003). In addition, well-communicated expectations give students some assurance that they will have a positive learning outcome if they complete predetermined course requirements. Related to course structure, learning is more effective when clear guidelines and instructions are provided to students (Fraser, 1986), lectures are clear and useful (Boex, 2000), the course is structured to make effective use of available technologies (Ballantyne, Borthwick, & Packer, 2000), and the instructor is well organized (Nelson & Lynch, 1984).

The teaching effectiveness literature has found that students want and expect clearly laid out direction in terms of topical coverage, required workload and activities, and specific evaluation criteria (Boex, 2000; Brightman et al., 1993; Entwistle & Tait, 1990; Ramsden, 1991). Karuppan and Karuppan (1999) suggested that in an online learning environment it is particularly important to communicate these expectations in advance via course descriptions and syllabi. The ease with which a student can navigate within the online learning environment is also seen as an important dimension of course structure. Courses should be designed in such a way that students can move from one activity to another easily and in a logical flow (Eastman & Swift, 2001; Karuppan & Karuppan, 1999). Chyung and Vachon (2005) found that the evaluation of course structure was positively related to the perceived quality of the learning experience. We posit that

Hypothesis 4a: Course structure is positively related to the perceived quality of the learning experience.

Although as yet untested in the virtual community and the online education literature, we would presume that course expectations and guidelines will help students understand how interactions are to be managed in the virtual community and the extent to which these interactions help to positively impact quality course content. It is also expected that the perceived quality of the course infrastructure will influence the ease to which interactions take place and how content is delivered (Grandzol, 2004; Sivakumar & Robertson, 2004; Tham & Werner, 2005). We posit that

Hypothesis 4b: Course structure is positively related to the perceived quality of course content.

Hypothesis 4c: Course structure is positively related to the perceived quality of student-to-student interaction.

Hypothesis 4d: Course structure is positively related to the perceived quality of instructor-to-student interaction.

Instructor as Mentor and Overseer of the Virtual Learning Environment

The importance of the instructor in guiding the learning process across all types of course delivery systems cannot be underestimated (Drago et al., 2002). However, the traditional method of teaching with the instructor in front of the class and students in their seats is no longer appropriate for an online learning environment (Conaway, Easton, & Schmidt, 2005). Online learning generally requires a change in teaching style from the instructor as the ultimate authority to the instructor as one voice among many (McGrath, 1997-1998). Within this role as facilitator of the learning process, good online instructors must find ways to stimulate, guide, and challenge their students (Bocchi et al., 2004; Drago et al., 2002; Sherron & Boettcher, 1997). Online instructors are seen as having a supportive, nearly pastoral role in the learning process (Kinuthia, 2005; Lealock, 2005; Orr & Bantow, 2005). They must provide guidance, rapport, and motivation to their students. We posit that

Hypothesis 5a: Instructor mentoring is positively related to the perceived quality of the learning experience.

As is evident in Figure 1, mentoring is proposed to influence four of the five dimensions in our model. Related to student-to-student interactions, to benefit from the capabilities of a virtual learning community, the instructor must encourage students to participate in discussions with other students (Hay, Hodgkinson, et al., 2004; Sullivan, 2001; Wallace, 2004). In practice, mentoring may take multiple forms, including having instructors ask questions in the electronic forum that are based on previous student comments, grading discussions in part on how well students explore responses of fellow participants, complimenting student-to-student responses, and the like. As mentors, instructors must provide guidance pertaining to their expectations via activities such as intermediation, setting the rules (e.g., when assignments are due, how and in what form they should be handed in, etc.), and course management (Hagel & Armstrong, 1997). Valued mentoring techniques should enhance instructor-to-student interactions through the development of trust, relational bonding (Brown & Eisenhardt, 1998; Kinuthia, 2005), and content knowledge exchange (Drago et al., 2002). We posit that:

Hypothesis 5b: Instructor mentoring is positively related to the perceived quality of course content.

Hypothesis 5c: Instructor mentoring is positively related to the perceived quality of student-to-student interaction.

Hypothesis 5d: Instructor mentoring is positively related to the perceived quality of instructor-to-student interaction.

Hypothesis 5e: Instructor mentoring is positively related to the perceived quality of course structure.

Lecture Delivery Quality

Innovations in information delivery technology have transformed the way courses are designed and how interactions take place (Gurak & Duin, 2004; Hunt et al., 2004; McCorkle, Alexander, & Reardon, 2001). The Internet, course-room software, e-mail, chat rooms, CD-ROMs, and streaming video are some of the new technologies commonly used in these courses (Hiltz & Turoff, 2005; Tham & Werner, 2005). When using various information delivery technologies, it is important that the online course simulates the traditional course as closely as possible in terms of learning objectives and expectations (Barbera, 2004). As with traditional course delivery methods, the ability to provide students with clear and interesting lectures that contain information beyond what they can find in the textbook is likely to lead to a more satisfying learning experience in online settings as well (Hiltz & Turoff, 2005; Smart, Kelly, & Conant, 1999).

As information delivery technology continues to evolve, instructors will need to adapt content, course structure, and teaching styles to available information delivery technology and the needs of online learners (Eastman & Swift, 2001; J. Lee, 2002; Wallace, 2004). For example, students that travel frequently might prefer CD-ROM-based lectures, whereas students with on-demand access to the Internet may favor receiving the same lectures via streaming video. In the context of this study, lecture-based materials were most commonly though not restricted to one of two information delivery approaches: (a) professionally filmed video featuring the instructor along with PowerPoint slides and a scrolling outline or (b) "screen capture" technology when software and similar applications were taught. Students accessed these lecture materials via a course CD-ROM (students also had access to the same materials through streaming video). Regardless of the specific information delivery method, it is expected that the communication quality of lecture materials provided will significantly influence the perceived quality of the online learning experience (Chyung & Vachon, 2005; Peltier et al., 2003). We posit that

Hypothesis 6a: Lecture delivery quality is positively related to the perceived quality of the learning experience.

Because the information delivery technology used in online teaching environments is designed to supplant the traditional classroom lecture, it is likely to impact all aspects of the online learning experience in the same way that the classroom instructor, textbooks, and other related resources affect traditional classes (Driver, 2002; Hiltz & Turoff, 2005; Hollenbeck et al., 2005; Orr & Bantow, 2005; Tham & Werner, 2005). In our model, the perceived quality of the lecture delivery is the starting point for the virtual experience and is hypothesized to impact the other factors. We posit that

Hypothesis 6b: Lecture delivery quality is positively related to the perceived quality of mentoring.

Hypothesis 6c: Lecture delivery quality is positively related to the perceived quality of course structure.
Hypothesis 6d: Lecture delivery quality is positively related to the perceived quality of instructor-to-student interaction.
Hypothesis 6e: Lecture delivery quality is positively related to the perceived quality of student-to-student interaction.
Hypothesis 6f: Lecture delivery quality is positively related to the perceived quality of course content.

In the next section we describe the method used to measure the impact of the learning constructs on the perceived quality of the learning experience and the interrelationship between these learning constructs.

METHOD

Research Setting

The study was conducted with the support of a large business program at a midwestern university with a nationally ranked online MBA program. The business school wanted to assess students' perceptions of its online MBA program to determine whether there were ways to improve how the program was delivered. To accomplish this, the school decided to survey MBA students who were taking online courses. Research from the traditional (for a review of the use of student evaluations see Marsh, 1987; Wachtel, 1998) and online education (Houston & Bettencourt, 1999; Sweeney & Ingram, 2001) literature shows that students can provide reliable and valid evaluations of their learning experience.

Questionnaire Development

As a starting point, the college's Graduate Studies Committee reviewed conceptual and empirical research from the traditional and online education literature to determine potential learning constructs to include on the questionnaire. The Purdue Rating Scale (Remmers, 1960) and questionnaires from other online programs were also examined in detail to identify specific questions that could be used on the instrument and/or modified to fit the needs of the study. The final questionnaire contained 47 perceptual questions covering various aspects of the traditional and online learning experience. Three global questions were also included that assessed students' perceptions of the overall quality of the course they were evaluating. All questions employed a 5-point Likert-type scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*).

Data Collection

The courses evaluated in the current study were taught totally online, used the same instructional technologies, employed the Internet as the primary communication and dissemination tool, and never met together as a group. The questionnaire was distributed electronically to all 16-week online MBA courses taught over the full spring semester, to all online 8-week courses taught over the second half of the same semester, and in online courses taught during the summer session. A total of 18 management, marketing, finance/business law, and economics courses were taught in this time period. A total of 548 students were enrolled in these courses, with an average class size of 30 students. The questionnaire was distributed to students at the end of the term through Learning Space, a course management software product used by all the online courses in the MBA program. A total of 299 questionnaires were returned for a response rate of 54.6%.

The Measures

The 47 questions were evaluated and measures were developed according to the principles outlined by Churchill (1979) and Peter (1979). First, a principle components analysis employing varimax rotation was conducted to identify the major commonalities in the data associated with the design and execution of online MBA education. Next, the questions associated with each of the identified learning measures were evaluated using an item-to-total correlation analysis. To enhance the reliability of the measures, items with low item-to-total correlations were eliminated. The coefficient alphas for the final learning dimensions ranged from .84 to .95, indicating that the measures were highly reliable. The following is a brief summary of the measures:

- Instructor mentoring: 12-item scale pertaining to teaching methods, identifying key learning points, explaining concepts, facilitating learning, and motivating students (coefficient alpha = .95);
- Course content: 8-item scale dealing with subject coverage, rigor, range of challenges, quality of assignments, relevant and up-to-date with developments in the field, applied learning, and problem-solving experiences (coefficient alpha = .93);
- Course structure: 4-item scale related to structural aspects of the course, including the structure of the modules, along with clearly defined expectations and learning objectives (coefficient alpha = .84);
- Student-to-student interactions: 5-item scale measuring the degree to which the course encouraged student group work and the quality of student interaction (coefficient alpha = .84);
- Lecture delivery quality: 3-item scale assessing the instructor-designed CD-ROM lectures and added value they provided; consistent with the dimension, the focus was more on delivery (information was effectively communicated, contained information not covered in the text, and contributed toward learning) than actual content (coefficient alpha = .87);
- Student–instructor interactions: 4-item scale measuring communications between student and instructor related to whether students felt free to ask questions and express their views, instructor accessibility, and responsiveness to questions asked (coefficient alpha = .88);
- Quality of the learning experience: 3-item global quality scale pertaining to the amount of learning, enjoyment of taking the course, and the likelihood of recommending it to friends and colleagues (coefficient alpha = .93).

TABLE 1
SUMMARY OF HYPOTHESES

Hypothesis	*From*	*To*	*Model Support*	*Estimate*	t *Value*
Hypothesis 1	Course structure	Quality of the learning experience	Yes	.10	1.96*
Hypothesis 2a	Student–student interactions	Quality of the learning experience	No		
Hypothesis 2b	Student–student interactions	Course content	Yes	.22	5.46
Hypothesis 3a	Instructor–student interactions	Quality of the learning experience	No		
Hypothesis 3b	Instructor–student interactions	Course content	Yes	.15	2.68
Hypothesis 4a	Course content	Quality of the learning experience	Yes	.54	10.22
Hypothesis 4b	Course structure	Course content	Yes	.20	3.69
Hypothesis 4c	Course structure	Student–student interactions	No		
Hypothesis 4d	Course structure	Instructor–student interactions	Yes	.11	2.16
Hypothesis 5a	Mentoring	Quality of the learning experience	Yes	.38	5.70
Hypothesis 5b	Mentoring	Course structure	Yes	.69	15.04
Hypothesis 5c	Mentoring	Student–student interactions	Yes	.47	6.44
Hypothesis 5d	Mentoring	Instructor–student interactions	Yes	.71	13.37
Hypothesis 5e	Mentoring	Course content	Yes	.27	3.83
Hypothesis 6a	Technology	Quality of the learning experience	No		
Hypothesis 6b	Lecture delivery quality	Mentoring	Yes	.58	12.43
Hypothesis 6c	Lecture delivery quality	Course structure	Yes	.11	2.37
Hypothesis 6d	Lecture delivery quality	Instructor–student interactions	No		
Hypothesis 6e	Lecture delivery quality	Student–student interactions	No		
Hypothesis 6f	Lecture delivery quality	Course content	Yes	.14	3.23

NOTE: Fit statistics: chi-square = 4.10 with 1 degree of freedom; goodness-of-fit index = .99; adjusted goodness-of-fit index = .89; comparative fit index = .99; incremental fit index = .99; root mean square error of approximation = .10; root mean square residual = .012. Total paths = 20; significant paths = 14.
*Significant at $p < .05$. All others significant at $p < .01$.

MODEL TESTING RESULTS

The purpose of the study was to investigate the relationships between the various perceptual antecedents of high-quality online education and how these "drivers" affect each other and the overall perceived quality of the learning experience. To this end, the appropriate data analysis technique was structural equation modeling. To focus on the structural relationships, a two-step method was employed as recommended by Anderson and Gerbing (1988; Gerbing & Anderson, 1988). First, summated measures were developed using the methods discussed previously. The structural model was then investigated using these measures.

The proposed structural model is shown in Figure 1. It should be noted that the study was exploratory in nature. As such, the model is nearly saturated with almost all of the feasible paths included. The structural model was estimated using LISREL 8.30 (Joreskog & Sorbom, 1999). To assess the overall fit of the model, indicators from each of the families of fit statistics were investigated. The overall chi-square statistic for the model (1 $df = 4.10$, $p < .043$), the goodness-of-fit index (GFI = .99), the adjusted goodness-of-fit index (AGFI = .89), the comparative fit index (CFI = .99), and the incremental fit index (IFI = .99) all provided evidence of an excellent model fit. In addition, the root mean square residual was .10. Finally, the EVCI of the tested model was .19, the same as the saturated model. Combined, these statistics provided evidence of a good model fit, especially for an exploratory data analysis.

As a final check on the stability of the model, the paths between the variables were individually reversed. In no case did the resulting model provide a better fit. The results suggested that the model was a logical basis to investigate the relationships between the antecedent variables. The parameter estimates and corresponding *t* values are shown in Table 1. Figure 2 contains the resulting model with the significant paths.

EVALUATION AND DISCUSSION OF THE VARIABLES IN THE MODEL

The findings from the structural equation analysis highlight a number of pertinent discussion points. First, the proposed model provided an excellent fit of the data, with a total of 14 of the 20 proposed paths supported. These findings contribute to our understanding of the comprehensive and complex relationship between a variety of learning constructs and the perceived quality of the online learning experience. Second, each of the learning constructs was found to be a direct and/or indirect driver of the perceived quality of online learning. Whereas Peltier et al. (2003) found that all six learning constructs significantly impacted perceived quality, in the structural equations analysis reported here, only course content, course structure, and instructor mentoring "directly" influenced the perceived quality of the online learning experiences. For lecture delivery quality, instructor–student interactions, and student–student interactions, the impact was indirect through their influence on intervening variables. Overall, our

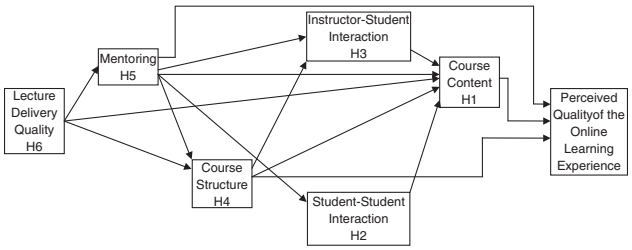

FIGURE 2: Resulting Model of the Perceived Quality of the Online Learning Experience
NOTE: H1 = Hypothesis 1, H2 = Hypothesis 2, H3 = Hypothesis 3, H4 = Hypothesis 4, H5 = Hypothesis 5, H6 = Hypothesis 6.

findings illustrate that the online learning experience is more complicated than was previously proposed and provide some direction for designing and implementing quality online programs. Next we discuss some strategic considerations, which are summarized in Table 2.

The Role of Lecture Delivery Quality

Logically, the initial driver of a successful online course is to have faculty deliver information in an interesting way and that goes beyond what can be found in the textbook. A positive evaluation of the quality of lecture delivery external to a classroom leads to better perceptions of the instructor's role as a mentor, course structure, and course content. As such, and consistent with the traditional classroom, the form and quality of information delivery by the instructor provide the basis for the execution of the course. Ineffective lecture delivery makes it difficult to mentor students and to provide clear course expectations. Similarly, course content is likely to be negatively affected by inadequate or ineffective instructor presentation skills and lectures (Granitz & Greene, 2003). Although a number of scholars writing about online education have posited that the quality of information delivery and technology are related to perceptions about the quality of mentoring, course structure, course content, and overall student satisfaction (e.g., Drago et al., 2002; Hiltz & Turoff, 2005; Orr & Bantow, 2005), this study provides empirical support for these relationships. It is important to realize that in the end, students' perceptions of the form and quality of lecture delivery (i.e., CD-ROMs) affect their overall evaluation of the course and the individual learning components of that course.

The Importance of Faculty Mentoring

Each of the five hypothesized relationships between mentoring and the remaining learning constructs was supported. The results underscore the importance of faculty mentoring as a significant determinant of the online learning experience in that it directly impacts perceptions of course structure, student–student interactions, instructor–student interactions, course content, and the overall quality of the online learning experience. Undeniably, the extent to which faculty are willing to get involved in the course and provide support for students has a snowball effect, either positive or negative, on the remaining elements in the learning experience. It is imperative that faculty are identified, recruited, and selected based on the likelihood that they will willingly put in the time and effort needed to successfully teach in this new environment. Too often, "volunteers" are those faculty members interested in earning extra financial incentives, spending less time on their teaching activities, interacting less with students, or the technology rather than on the online program itself. This is particularly problematic at schools that place a high priority on research relative to teaching.

It is apparent that proper mentor training is a requisite for the successful delivery of online courses because the skills necessary to be a good online instructor are often different from those associated with traditional face-to-face classes (Orr & Bantow, 2005; Smart et al., 1999). As with traditional classes, the instructor is responsible for setting up the course structure, establishing expectations, and designing course content. The online instructor is also largely responsible for facilitating the interaction with and between students. Compared to traditional courses, the online instructor is much more of an active participant rather than the primary provider of content via face-to-face lectures. Successful support and mentoring in online courses thus require a combination of providing direction and explanations, identifying ways to facilitate learning, maintaining relationships with and between students, actively participating in discussions, motivating students to learn on their own, and providing effective feedback.

Finally, the institution must be willing to devote resources to identify empathetic, qualified faculty and provide them with the skills necessary to run the online classroom. This would include technology skills, understanding learning styles, providing effective and timely feedback, managing online discussions, providing student assessments using online communication tools, and getting students involved as active participants. It is not enough to provide faculty members with a course release to prepare their online classes; the institution must be actively involved in providing training for those faculty members motivated to provide highly effective online learning experiences.

The Role of Preparation in Online Learning—Course Structure

The results revealed that three of the four hypothesized relationships pertaining to course structure were statistically significant. Course structure was a significant influencer of instructor–student interactions, course content, and the perceived quality of the online learning experience. Even though it is always important to organize courses, clearly explain assignments and projects, and articulate expectations, the results of

TABLE 2
IMPLICATIONS FOR MARKETING EDUCATORS

Finding	*Managerial Recommendations*
Lecture delivery quality impacts course structure	Well-organized, easy to understand lectures help students to understand expectations, learning objectives, and class projects. The order of topics is important for creating a well-organized class structure. Faculty members need to identify creative ways to deliver information in interesting, interactive ways. This allows for more flexibility in designing the course structure.
Lecture delivery quality impacts course content	Lecture delivery quality directly impacts overall course content. This is a primary vehicle to deliver content. It lays the foundation for the course content. New emerging technologies can impact course structure by creating innovative and effective ways to deliver content. Lectures need to add value by including frameworks, examples, thought-provoking comments, and questions. Professors need to search and capture a wide range of materials to make the lectures more interesting and enhance content.
Lecture delivery quality impacts mentoring	The professor must spend time on this important tool. It gets the course off on the right foot and impacts many other factors. The lectures provide the differentiation between various faculty members teaching the same course. Interesting lectures that go beyond the textbook provide a signal to the students pertaining to the professor's topic knowledge and expertise. This leads to a better mentoring environment. Clear lectures create easy to follow pedagogy and make mentoring easier and more effective. New cutting-edge technology also signals to the students that the professor is knowledgeable, allowing for a better mentoring environment.
Course structure impacts course content	A course structure should be employed that reduces ambiguity and confusion but also allows for flexibility to address topics as they emerge. A well-organized course helps students achieve their learning objectives and acquire the required content. Think about experiential learning activities that really emphasize the learning objects and help students to better understand the concepts. The online course must be fully planned prior to its start date. The course organization and activities that make up the course (i.e., student achievement assessment and student expectations) need to be determined prior to the beginning of the course and be clearly articulated to the students. This leads to better overall course content.
Course structure impacts instructor–student interactions	The structure needs to be planned out to create opportunities to get to know the students. Asking for bios, outside interests, career goals, and so on provide a way to personalize communications. Think of structuring the course as a community of learning with each participant being both learner and teacher. The course structure should include some reward for those students who add value to the course via participation. Think about multichannels. The more ways you have to communicate with students, the more likely meaningful communications will take place.
Mentoring impacts instructor–student interactions	The professor has to embrace the role of facilitator. Once the students get to know the mentor they will be much more likely to communicate with that faculty member. Providing students with fast constructive feedback will keep students involved and motivated to participate in the course.
Mentoring impacts student–student interactions	The professor has to identify ways to facilitate communication between students and to embrace the role of facilitator. Examples include things like introductions, pointing out similarities in backgrounds, and so on. The professor must work to get everyone involved in online discussions. Motivating, clarifying, redirecting, refereeing, and asking additional questions all help to create an environment in which students feel free to express themselves. Lead by example. If the faculty member gets involved in discussions, so will students. Once students get to know the professor, they will be much more likely to participate in online discussions with other students. Just be careful not to dominate.
Mentoring impacts course structure	The concept of a learning community starts with the professor. Motivating, directing, grading, and providing other forms of feedback all improve course structure by helping to create expectations and organization.

TABLE 2 (continued)

Finding	*Managerial Recommendations*
	The institution must be willing to devote resources to provide instructors with the need knowledge to understand learning styles, providing effective and timely feedback, managing online discussions, providing student assessments using online communication tools, and getting students involved as active participants. This training will help the faculty member to design and organize the course.
Mentoring impacts course content	Clarifying, refereeing, grading, encouraging, and providing other forms of feedback all help to create the overall course content and help the students to reach their learning objectives.
	The institution must provide training for those faculty members motivated to provide highly effective online learning experiences. Areas of training include providing direction and explanations, identifying ways to facilitate learning, maintaining relationships with and between students, actively participating in discussions, motivating students to learn on their own, and providing effective feedback.
Instructor–student interactions impact course content	Make sure the faculty is technologically enabled to communicate with students.
	Establish two-way communications. Encourage questions. Carefully read and answer all communications. Provide meaningful feedback.
	Challenge students. Make them think and learn to defend their opinions and beliefs. They will get much more from the communications.
Student–student interactions impact course content	Student–student interactions can dramatically influence the course content delivered. Students learn from each other. Online courses must be designed with these interactions in mind.
	The professor must make a concerted effort to get everyone involved. As in traditional classrooms, students learn a great deal from each other.
	Discussions need to challenge students to think. Explaining things to others is a great learning tool.
	Monitor the discussions to redirect and ask thought-provoking questions. The role of the facilitator is to get the students to add content to the course by communicating with each other.
Course content is the number one driver of perceived quality of the learning experience	Because course content is influenced by content delivery technology, instructor support and mentoring, course structure, student-to-student interactions, and instructor-to-student interactions, online educators need to explore all of these factors when designing course content.
	The best online courses are interactive collaborative learning environments. Managing course content in an online environment is truly a multifaceted activity.

this study highlight the critical and integrative importance of course structure in online education. In practice, online classes require more effort to obtain clarification as the course unfolds. Because students do not meet face to face with the instructor, how the course is organized, activities that make up the course, student achievement assessment, and student expectations need to be thoughtfully determined prior to the beginning of the course and must be articulated to students (Taylor, Humphreys, Singley, & Hunter, 2004). Logically, preparation of online courses requires more thought and planning prior to the start of the actual course, which in turn significantly impacts student–instructor interactions and course content. Of significance, instructors in the evaluated program have found that changes made to the online course as the term unfolds are often poorly received by students.

It is important that online educators realize that the course structure that works for a traditional course might be dramatically different for the same course offered in an online setting. Good course structure enhances instructor–student interactions and the quality and quantity of course content. This is a key empirical finding for developing better online courses. The instructor must think of the course structure as it relates to building instructor–student rapport, delivering course content, and the assessment of student learning. From a managerial perspective, the results highlight the importance of providing faculty financial and nonfinancial incentives to thoughtfully plan the design of online courses.

Adding Substance, the Role of Instructor–Student and Student–Student Interactions

A key finding from this study was the pervasive importance of creating an interactive learning environment. Of interest, unlike previous research that did not use path analysis techniques, perceptions regarding the quality of instructor–student interactions and student–student interactions were not found to directly impact perceptions of the overall quality of the course. Instead, both of these interaction dimensions influenced perceptions of course quality indirectly through their

impact on course content quality. Typically, in-class and after-class discussions, office hours, and experiential activities are used in traditional classes to supplement course content and enhance the overall course experience. In contrast, in online courses these activities are replaced with e-mail messages, chat rooms, online discussions, and group projects done at a distance. For the current study, online students who reported that they felt free to express themselves in the course, they learned from other students, and found the instructor to be accessible via the available technology had superior evaluations of course content. Although these factors are often overlooked in online education, this study indicates that they are important inputs for coproducing high-quality content. Particularly relevant to online learning theories and different from past findings, the fact that faculty and student interactions were not directly related to perceived quality and instead impact quality via other learning components underscores the need to explore antecedent interactions.

Course Content

Possibly most revealing is that course content is the single most important factor in determining the perceived quality of the online learning experience. In this way and similar to traditional educational approaches, what is ultimately learned carries considerable weight for online students. As such, instructors involved with developing online courses need to understand that this requires far more than simply selecting a textbook and assigning readings and papers. As hypothesized, the study found that content delivery technology, instructor support and mentoring, course structure, student-to-student interactions, and instructor-to-student interactions all impacted the students' perceptions of course content. Combined, the findings suggest the best online courses are interactive collaborative learning environments and that managing course content in an online environment is truly a multifaceted activity.

The results make it clear that students and faculty cocreate much of the course content. Past researchers have often argued that "liking" the instructor rather than course content drives student evaluations. Based on our findings it seems logical that "personality-oriented delivery issues" are less significant in an online setting. They also suggest that faculty members who have historically had difficulty interfacing with students in a traditional face-to-face environment might be able to do better in an online learning setting in which one's "effort" is more important than one's personality traits.

In summary, the results highlight the highly integrated and dependent nature of the variables associated with the online learning environment. The proposed model and the related results suggest that those schools interested in developing or enhancing online courses should start with the lecture delivery platform that will be used to deliver the learning experience. Next the instructor must design the course concentrating on course structure and content. Finally, once the course is underway the faculty member must shift roles to that of an active supporter, mentor, and facilitator, making sure to encourage instructor–student and student–student interactions.

CONCLUSIONS

This study extends the research reported by Chyung and Vachon (2005), Marks et al. (2005), and Peltier et al. (2003) and enhances our understanding of the relationship between the drivers of perceived quality of online teaching in a number of ways. First, our model confirmed the interdependent nature of the drivers of the perceived quality of online education and noted that the variables associated with developing a successful online course are more interrelated than suggested by previous work that used simple linear regression models. Our findings suggest that the decision to develop a quality online program requires the consideration of a number of interrelated decisions and antecedent conditions. Successful implementation of online educational delivery takes a commitment from both the administration and the faculty and is not as simple as merely putting course materials online. Second, the quality of lecture delivery in online courses is just as important as it is for traditional classes. It impacts course structure, course content, and the amount of interaction between students and the faculty member. Third, the results imply that a significant amount of time is needed to develop the right course structure and that this activity needs to be accomplished before course content is delivered. This is in contrast to the traditional classroom environment where instructors have a greater ability to alter the class schedule on demand. Fourth, communication among students and between students and the instructor is an essential aspect of creating an effective learning environment. The study underscores the fact that classes that integrate these communications indirectly impact the perceived quality of the course through increased evaluations of the value of the course content. Fifth, the role of the faculty member is significantly different in the online environment, and new skills and techniques are needed. Of particular importance is the need for the faculty member to structure the course, manage expectations, effectively deliver content, and provide an opportunity for students to communicate with all learning stakeholder groups. Overall, the findings show that teaching online is much more complicated than selecting a textbook, assigning a couple of readings, and making a few assignments. The instructor needs to develop a learning community rather than viewing the online course as a group of simultaneous independent study courses where each student is operating independently of each other.

Although this research represents a step forward in the development and evaluation of online learning, it also raises many additional questions. How do the factors that influence the perceived quality of the online learning experience differ from those of traditional classes? How does the ordering of these factors differ in online settings compared to traditional classes? Is there a different set of learning activities and assessment methods that is best for traditional and online classes? More research is also needed to determine whether undergraduate and graduate business students enrolled in online courses differ in their learning needs. Research is also needed that goes beyond student perceptions to examine more quantifiable learning outcomes. Lastly, because this study was conducted at a single institution, the generalizability of these findings to other online programs is unknown. Future research should target multiple institutions, both national and abroad.

In conclusion, not only will faculty members get better at online learning over time, students will also become better online learners as they gain more experience with this educational medium. The end result will be improved learning experiences and rising student expectations. Business students will come to expect highly integrated, effective, and efficient online learning experiences. Those schools unwilling to commit significant resources to the endeavor will not be competitive over time.

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