

E-Learning in Undergraduate Humanities Classes: Unpacking the Variables

ROBERT FRIEDMAN, NORBERT ELLIOT, AND BLAKE HAGGERTY

New Jersey Institute of Technology, USA

robert.s.friedman@njit.edu

norbert.elliott@njit.edu

blake.haggerty@njit.edu

This study describes the design, implementation, and analysis of three related surveys launched to investigate E-Learning in undergraduate humanities classes at a public technological research university. Examined are the independent variables of learning style, general expectation, and interaction. The surveys were administered in the summer of 2006 (Survey 1, $n = 108$ [41.53% return], Survey 2, $n = 89$ [34.23% return], Survey 3, $n = 62$ [23.85% return] and fall of 2006 (Survey 1, $n = 68$ [50.75% return], Survey 2, $n = 58$ [43.28% return], Survey 3, $n = 58$ [52.25% return]). Modest to high correlations and statistically significant relationships identified among survey questions designed to explore the three independent variables led the researchers to create constructed scales based on those variables. When the dependent variable of expected course grade was used to hypothesize a relationship based on performance, the model was weak ($R^2 = .17$, $F(5, 51) = 2.092$, $p = .1$). However, when a new dependent variable was constructed, based on Zhang and Sternberg's (2005, 2006) Type II learning styles – those expressing a preference for structure, cognitive simplicity, conformity – the model was strengthened ($R^2 = .227$, $F(4, 52) = 3.816$, $p = .01$). It appears that learning style, general expectations, and interaction are more related to the instructor's online presence than to standard criterion variables such as course grade. Because little is known about E-Learning of humanities classes, examining complex variable relationships allows researchers to explore a new educational field.

INTRODUCTION

In a landmark review of online teaching in higher education, Wallace (2003) noted that research from communication, higher education, and educational technology, as well as many subject-matter disciplines, has contributed to our understanding of online education. Conspicuous in its absence, however, are studies of online education as it is conducted in disciplines based in humanistic inquiry. Studies of courses in cultural history, literature, philosophy, and writing – the courses examined in the present study – are virtually absent. Empirical information about the processes involved in the reception of online courses designed to contribute to an understanding of the unique aspects of human culture (our individual and collective attempt to express value, to discover meaning, and to create aesthetic response) is not represented in the study of online education.

Seventeen years ago, Michael Dertouzos (1991) predicted an information age based on computers and networks, a world that would supplant the industrial age that came before it and the agricultural age that started the assumed march toward progress. Yet in this imagined pageant of progress, the question of agency, or how these processes occur, is unasked. In the brave new world of online learning, the technological centerpiece of information age education, how are students responding to those courses offered to help them understand how humans create, celebrate, and question the very pageant Dertouzos describes?

The recent online learning literature related to the variables examined (learning style, general expectation, and interaction) reports on factors contributing to student success, including concepts such as: student self-motivation and self-regulation; the benefits of collaborative networks; the importance of participating in a caring community online, including understanding and experienced instructors; the need for around the clock faculty and technical support; and the use of visual and auditory media.

This study addresses the absence of empirical data regarding E-Learning in the humanities by reporting on the creation of a set of heuristic questions, practical and applied in nature, and an analysis of the data our survey instruments have generated. In designing this study, we set the following questions for ourselves:

- Can efficient, online survey methods be established to determine the profile of those who take online courses in humanities, developed within a socio-technical system framework, as that profile reveals information about the available technology, prior learning experiences, and reasons for enrollment in humanities courses?
- Can this survey be designed to generate meaningful information on learning styles, general expectations, and interaction – key variables in online education in general with particular relevance to humanities courses?

- Can a preliminary model be developed from this survey that will allow further research into these key variables and their interaction, research that will, in turn, help universities to develop policies that will help students determine whether online learning is best for them?

E-LEARNING IN HUMANITIES: A SOCIO-TECHNICAL SYSTEM

The instructional model examined in this article is best described as a socio-technical system. In terms of education, Socio-Technical Systems (STs) are computer technologies that enable social interaction of online learning, whether conversation (email), group discussion (chat), or group writing (wiki). STs allow social networking as well as collaborative idea generation and the simple sharing of knowledge through academic journals (Whitworth, 2006; Whitworth & Friedman, 2008). At NJIT, the site of the present study, Figure 1 depicts the required and recommended elements of course development.

Established and Required Course Elements

While elements such as a syllabus are certainly a central requirement for any course, the syllabus for an E-Learning course must be very specific regarding the week-by-week tasks, established in advance, so that students can plan for successful, timely assignment submission. As Grigorovici, Nam, and Russill (2003) discovered, the design of an online syllabus is correlated with the perception of a course instructor.

In terms of the required assignments, in all E-Learning courses offered by the Department of Humanities writing is the most intensive activity. Specifically, students participate in discussions, draft, and submit writing in which referential (comprising scientific, informative, and exploratory discourse) and persuasive writing (comprising the systematic application of logical models) are both required (Kinneavy, 1971). As well, the courses are informed by traditional and current directions in writing theory (MacArthur, Graham, & Fitzgerald, 2006), the ways that writing shapes and is shaped by cognition (Bazerman, 2008), and the state-of-the-art methods by which writing is assessed (Elliot, Briller, & Joshi, 2007).

This kind of iterative, collaborative work also informs the online discussions. A cooperative principle plays a prominent role in defining coherence in online learning (Sammons, 2007), and analytic methods such as rhetorical structure theory (Mann & Thompson, 1988) can provide ways for our understanding and analysis of the nature and effectiveness of online learning (Potter, 2008).

Recommended and Experimental Course Elements

Among the innovative course design elements, we are presently experimenting with podcasts developed in partnership with iTunesU. As Copley (2007) had found in his study of podcast use, students overwhelmingly

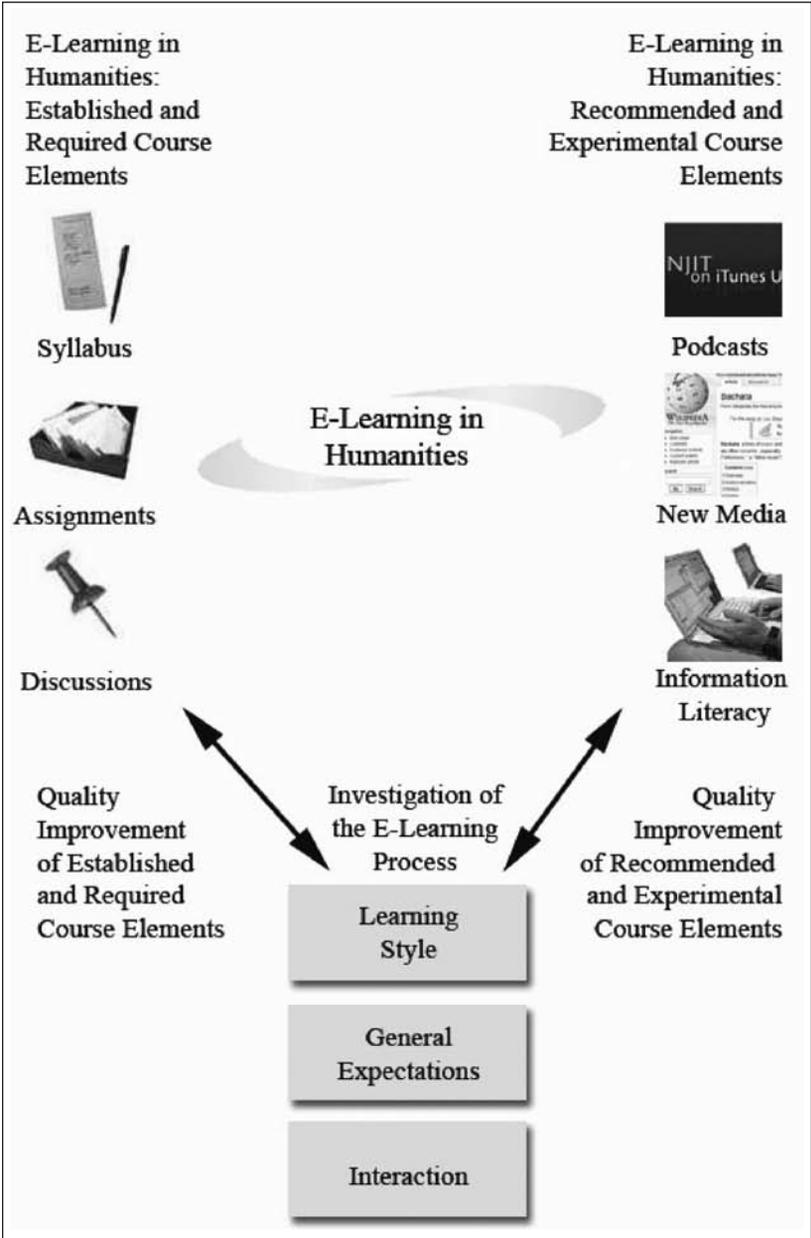


Figure 1. E-Learning in Humanities: A Conceptual Model for a Socio-Technical System.

download these digital files as soon as they are available, using them to prepare for assignments, to take notes at their own pace, and to catch up on missed material.

An information literacy effort in humanities course – defined as the ability to cite sources, provide evidence of independent research, use sources appropriately, and integrate sources – has been combined with the Information and Communication Technology framework developed by the Educational Testing Service so that digital technology may be used to help students solve complex problems in an information-based society (Scharf, Elliot, Huey, Briller, & Joshi, 2007; Katz, Elliot, Attali, Scharf, Powers, Huey, Joshi, & Briller, 2008).

Additionally, various forms of new media use, such as collaborative wikis and individual blogs, are also under experimentation as vehicles of social networking. Such STS technology promotes communicative webs, which in turn create a sense of community among students. These communicative contexts have been found to improve student success and satisfaction rates, particularly when learning is a mutual process (Moskal, Dziuban, Upchurch, Hartman, & Truman, 2006). Students who have instant access to information, assemble their individual personal learning spaces, and feel the competition for a place in the workforce provide a framework in which learning moves from a teacher-focused structure to a student-focused environment. Gao, Varma, and Houck (2006) and Crawford (2006) advocate for the use of PowerPoint and other visually based software, as it contributes to successful student performance in online courses. Their research provides indications that an audio track along with a video track would be helpful to students, but instructional designers should be aware of the potential of stimuli overloaded. Squires, Pennotti, and Varma (2006) studied the promotion of auditory learning styles to examine the effect of incorporating verbal stimuli to the online education environment, finding that adding audio to the online environment enables a positive effect on the performance of the student body. As Naidu (2007) has concluded in a review of the existing literature, there is growing evidence to suggest that delivery media offer tremendous opportunities for building the kind of rich, interactive learning environments we desire in our STS framework.

Benefits of a STS Approach to E-Learning in Humanities

Ultimately, we believe that this STS fosters legitimate course interactions that are fair and beneficial to the parties involved, transactions supported by what may be viewed as a kind of justice within the course (Adams, 1965; Lind & Tyler, 1988). This sense of justice is key in fields such a humanities in which knowledge building is seen as a formative process and cannot, therefore, be captured in limited response tests with their appearance of objectivity (Neuman, Parry, & Beecher, 2002; Smith, Heindel, & Torres-Ayala, 2008). As well, the system affords transparency (or translucency) in

which a framework emerges that encourages those behaviors associated with effective learning (such as the tenacity involved in enriching a threaded discussion) and reduces unfavorable behaviors (such as cosmetic, superficial postings) simply because students and instructors alike are observing the behaviors (Erickson & Kellog, 2000). Also, the STS framework encourages engagement instead of efficiency as the main criterion of success; the STS affords a sense of privacy in which students are allowed to reveal emerging understanding in both collaborative and individual work within an environment of instructor control. It was the student perception of this environment that we wished to examine in the survey.

LITERATURE REVIEW: THE VARIABLES OF E-LEARNING

As Langdon Winner long ago correctly argued, artifacts have politics (1980). The socio-technical system we describe was designed to foster best-known practices in E-Learning. While general principles such as the Sloan Consortium's categories for success in online learning were in mind as the system was emerging, we sought to know the specifics of learning effectiveness, student satisfaction, and access (Lorenzo & Moore, 2002). A model of student learning was therefore designed in the survey around the variables of learning style, general expectations, and interaction – the educational beliefs that fueled the design of the STS artifact.

Learning Style

As a research stream providing knowledge that can be applied to selection of technology, creation of learning environments, and E-Learning course development, investigation of learning styles has rapidly become part of the research on E-Learning. Aragon, Johnson, and Shaik (2002) study learning styles through measurement of learner enthusiasm, assignment commitment, and information processing habits. Millwood and Terrell (2005) conclude that instructors can promote interesting and engaging learning through multimedia expression, which in turn aids online communities to promote citizenship and social equality. Watkins (2005) argues that identifying preferred learning styles – visual, auditory or tactile – can help online learners prepare for success in their courses by guiding their study habits.

Researchers have also attended to formal learning theories, and among these efforts, Kolb's theory of experiential learning (1984) has found its place in recent studies. Kolb's theory consists of four strategies of learning: concrete experience (the desire for personal experience), abstract conceptualization (the need for logical analysis), reflective observation (the appreciation for multiple perspectives), and active experimentation (the impulse to test). Kolb's Learning Style Inventory identifies convergent thinkers as having a preference for experimentation and application of ideas; conversely,

divergent thinkers prefer to look at a learning situation from many points of view. Using these categories, Terrell (2002) found that students completing doctoral studies in a web-based learning environment fell into the classification of convergent thinkers.

Zhang and Sternberg (2005), however, find conceptual shortcomings with models such as Kolb's, believing them to be value laden, malleable, overlapping, and inconsistent. They propose, instead, an orientation toward learning styles based not on rigid categories but on individual differences. The concept of learning styles was of interest to us in the survey design.

General Expectations

Research on general expectations within an E-Learning environment has also become central to E-Learning Research. As enrollments have continued to grow – the National Center for Education Statistics (2003) has reported that during the 12-month 2000–2001 academic year, 56 percent (2,320) of all 2-year and 4-year granting institutions offered distance education courses (Table 1), with an enrollment of 3,077,000 during that period (Table 4) – topics such as instructor preparedness have come to the forefront of research. Shavelson and Huang (2003), for example, found that many universities lack faculty who are properly trained for creating and delivering online classes, resulting in lower student success rates.

Elements for success identified by Frey, Faul and Yankelov (2003) include online posting of grades, sufficiently detailed and accurate lecture notes, and well-defined guidelines on how to finish the assignments, as well as consistent, constant interaction with the instructor. Such contact and interaction can take the form of virtual office hours and phone availability, lecturer clarity, and dependability, according to Memon, Shih and Thinger (2006). In terms of behaviors that foster success, Ley and Young (2001) find that self-regulation is an essential component. Instructors should encourage students to make themselves aware of their cognitive and meta-cognitive abilities and help them to monitor and evaluate themselves. This research is complementary to Dabbagh and Kitsantas (2005), who suggest that instructors spend more time building up and designing courses that actually promote self-regulation. In their comparative study, Leners and Sitzman (2006) find that caring in face-to-face classrooms is experienced through voice, body language, facial expressions, and behaviors that translate, according to Dillon and Stines (1996), to the E-Learning classroom through means of an empathetic perspective, timeliness of communications, and a tone of appreciation. This finding is in accord with Simonson (1996), who stresses that the relationship between the teacher and student may also matter in the student's success. A caring teacher is one who displays an overt expression of concern about what happens to others, demonstrates sensitivity to the uniqueness of each student, promotes awareness of self in each student, cul-

tivates acceptance of differences in others, shares genuine life/professional experiences, and provides of a supportive emotional, socio-cultural, and spiritual environment. For Cereijo (2006), a similarly optimistic attitude and a strong willpower is required for student success, which is facilitated by self-discipline and enthusiasm reinforced by faculty-student interactions. Generally, as Jamison (2003) has found, capability beliefs, a responsive environment, goal-oriented curriculum, mutual respect, enthusiasm, and diplomacy are strong factors of student completion.

In an analysis of gender differences in response to survey questions about instructor response to student work, Sahin (2008) recommended the use of Moore's theory of transactional distance (1973, 2007) to design a variety of feedback methodologies and opportunities for students, especially in cases where gender differences in learning styles are apparent. Moore (1973) proposed that activities yielding high transactional distance, such as reading a textbook, afford little dialogue and less communication; activities yielding low transactional distance, such as independent studies, yield highly individualized communication. In the writing-enhanced E-Learning course surveyed, all transactions are writing-intensive, thus allowing for the desired low transactional distance. Hence, student writing is seen as the vehicle by which the STS framework is mediated (Bolter & Grusin, 1999) into an individualistic, student-centered context allowing low transactional distance and, thus, greater communication. In that student writing plays such a central role in course design, the concept of transactional distance was of interest to us in the survey design.

Regardless of course design, however, Foster, Bower, and Watson (2001) found that instructors should make sure that only students who really have the need, desire, and ability to take online classes should take them. For Elwert and Hitch (2002), student motivation is a very strong factor that decides whether or not a student is going to succeed in an online environment. Such studies were of special interest to us in the survey design. While it may appear obvious that only students who have the desire and ability to take an E-Learning class should do so, it is not at all clear that such is the case, especially in an environment in which ease of access is confused with ease of content.

Interaction

Given the adoption of constructivist pedagogy for E-Learning environments, it should not be surprising that early work on online pedagogy, such as that of Felder and Brent (1996), concludes that collaborative learning necessitates the development of teamwork skills and sees individual learning as a means of success of the groups. DeTure (2004) finds that student attributes such as field reliance, strong online technology self-efficiency, and high confidence levels with those technologies are markers for student success in E-Learning environments.

Ownership and awareness of the tools and behaviors necessary for one's E-Learning education are important to Williams and Hellman (2004), who identify self-regulation (an individual's use of self-monitoring, self-judgment, and self-reaction) as a prominent factor for student success in online education. Zimmerman (2002) states that students who try to seek help in getting themselves self-regulated and disciplined are the ones who demonstrate persistence. One of the barriers to tenacity discussed by Paloff and Pratt (2003), response time, can be improved if instructors provide responses to student questions within a 24-hour period. In addition, Andrusyszyn, Cragg, and Humbert (2001) note that students are more engaged with E-Learning courses when instructors, along with timely return of assignments, provide precise guidelines and instructions for assignments. In a study of online courses offered in the State University of New York's online learning community, Swan (2002) found that a clear and consistent course structure, instructor interaction, and dynamic discussion contributed most to successful online learning. As Wallace (2005) has concluded in review of the literature, online courses benefit from interaction with the instructor. Studies dealing with the role of the instructor in providing an interactive environment were of interest to us in the survey design.

SURVEY DESIGN: THE VARIABLES OF E-LEARNING IN A SOCIO-TECHNICAL SYSTEM

Created to investigate the STS framework evidenced in humanities E-Learning courses, the survey was designed to capture student demographics and the ways the students responded to the variables of learning style, general expectations, and interaction.

Questions on Demographics

Nineteen questions on Survey 1 in our study were designed to obtain information about our students. While questions of gender, age, and ethnicity were standard, questions were also asked about the best language for writing and hours worked per week. To determine if the students had the technology at hand for these digitally-intensive E-Learning classes, questions were included regarding the available of high-speed connection and computers. Information regarding experiences with previous online courses was also requested.

Studies of withdrawal rates of online learning courses suggest that perseverance rates fall in disproportional ranges when compared to traditionally taught courses (Institute for Higher Education Policy, 1999). Such appears to be the case in the institution hosting the present case study. An archival study of the records of 15,468 students taking face-to face courses and 2,544 students taking online courses in the Department of Computer Science and the

Department of Information Systems revealed that the withdrawal rates for the online courses was higher (16%) than from the face-to-face courses (9.6%). A limited case study of courses in World Literature taught over a one-year period demonstrated that of the 115 students originally enrolling for the course, only 63 were awarded final grades – a 42.5% loss. Both studies (Elliot, Friedman, & Briller, 2005) suggest that students do not fully appreciate the distinctions between face-to-face and online courses. As part of the demographic profile, questions of tenacity were of interest to us. As Foster, Bower, and Watson (2001) and Elwert and Hitch (2002) suggest, only motivated students dedicated to the intensive environment of the STS under investigation will succeed.

Questions on Learning Style

With Zhang and Sternberg (2006), we define intellectual style as “one’s preferred way of processing information and dealing with tasks” (p. 3). In offering a model of learning style, Zhang and Sternberg (2005, 2006) have developed a classification that attends to individuality rather than monolith. Type I intellectual styles are characterized by low degrees of structure, cognitive complexity, non-conformity, and autonomy. Type II intellectual styles suggest a preference for structure, cognitive simplicity, conformity, and authority. Falling into the classification of neither Type I nor Type II, Type III intellectual styles are realistic and investigative, social and enterprising (Zhang & Sternberg, 2006, pp. 164-168).

To provide information about learning styles, the survey included questions that asked students to select between their preferences for instructor-centered or learner-centered approaches, and between viewing the instructor as the class expert or the class facilitator. Along with questions on motivation, students were also asked about their preferences in deadlines.

Questions on General Expectations

In his original theory formulation, Moore (1973) does not specifically address writing as a vehicle by which low transactional distance can be achieved. Nevertheless, the transactional nature of writing, between student and student and between student and instructor, informs each of the courses in the study and, thus, informed the study design.

While the survey included questions asking students to identify the degree of difficulty of the course, the amount of time, and the degree of engagement required for success, the survey also asked if the students found the writing demands of E-Learning courses different than those encountered in face-to-face courses.

Questions on Interaction

Just as the variables of learning styles and general expectations were deliberately problematized in the survey, so, too, was the concept of inter-

action broadened to avoid construct under-representation. We were here especially interested in the removal of barriers by instructor interaction (Andrysyszn, Cragg, & Humbert, 2001; Swan, 2001; Paloff & Pratt, 2003; Wallace, 2005).

Hence, questions were designed to gather information about the importance of interaction with the instructor, with classmates, with the digital video material, and with the online reading material. The relationships between these interactions and those involving learning style and general expectations would, we hoped, reveal more about the variables of E-learning in undergraduate humanities as they were hosted within our STS framework.

METHOD

After design and review by the researchers to allow for the greatest possible construct representations of the variables that would be allowed in a limited-response format, the surveys were prepared for distribution by a teaching assistant and submitted to the instructional designer as a Microsoft Word document. The instructional designer added the questions to one of the courses using the WebCT "Question Database" and created the surveys using WebCT's "Quizzes/Surveys" tool. Once the surveys were reviewed and approved, all three were exported using the WebCT "Export Content" tool. The "Export Content" tool automatically exported the questions and survey settings in the form of a zip file that could then be imported into other WebCT courses. In addition to ensuring that all of the questions were consistent, this process also met the goal of survey delivery efficiency. Once the zip file was imported, the surveys were automatically added to a course with only minor adjustments needed for the start and end dates. After the surveys were complete, the data was retrieved from the course using an application called Respondus. The survey data was then imported into Excel and uploaded into SPSS for analysis, thus meeting the goal of analytic efficiency.

The surveys were then distributed over three periods during the five-week summer semester and the fifteen-week fall semester of 2006. The first two surveys were distributed and collected sequentially before the withdrawal dates for each semester. Thus, the first two surveys were designed to afford an idea of how the course appeared as it emerged before the students. The third survey, given during the final week of classes in each semester, was taken to be summative.

Students were ensured of confidentiality in a letter sent in WebCT, the course platform used by all instructors, during the first week of all courses. While the software would indeed record the names of those who submitted the surveys, the names would not be matched to any survey results, a feature allowed by the WebCT "Quizzes/Surveys" tool. As an incentive to complete all three surveys during the summer semester, an iPod was given by random

drawing to a student who had completed all surveys. No incentive was provided during the fall semester.

During the summer of 2006, Survey 1 ($n = 108$) yielded a 41.53% return, Survey 2, ($n = 89$) yielded a 34.23% return, and Survey 3 (administered after the withdrawal date during the closing days of the class, $n = 62$) yielded a 23.85% return. Surveys were given in courses with the following titles: The Pre-Modern World; The Making of the Modern World; World Literature I (2 sections); World Literature II; Writing about Science, Technology, and Society (2 sections); and Esthetics and Modern Technology. During the fall of 2006, Survey 1 ($n = 68$) yielded a 50.75% return, Survey 2 ($n = 58$) yielded a 43.28% return, and Survey 3 (administered after the withdrawal date during the closing days of the class, $n = 58$) yielded a 52.25% return. Surveys were given in courses with the following titles: Technical Writing (2 sections), Literature and Medicine (2 sections), and Engineering Ethics. Each instructor in each course had previously taught in an E-Learning environment and had volunteered to teach these courses, electives for all students that satisfy the general university requirements.

RESULTS

Demographics

Broadly viewed as one of the nation's most diverse campuses, the undergraduate students enrollment composition for 2005 – the time after which all of the students in the survey were enrolled – reveals that 34.8% of the students are white, non-Hispanic; 20.2% are Asian/Pacific Islander; 31.2% are Hispanic; and 10.8% are Black, non-Hispanic. (14.8% declined to state their ethnicity, and 5.9% identified themselves as non-citizens). Additionally, 20.26 % of the 5, 360 undergraduates were women, while 79.93% of undergraduates are male.

During the summer, Survey 1 respondents ($n = 108$) identified themselves as 37% ($n = 40$) White, non-Hispanic; 25.9% ($n = 28$) Asian/Pacific Islander; 13% ($n = 14$) as Hispanic; and 11.1% ($n = 12$) as Black, non-Hispanic. Of the surveyed students, 14 identified declined to state their ethnicity. During the fall, Survey 1 respondents ($n = 68$) identified themselves as 42.6% ($n = 29$) White, non-Hispanic; 30.9% ($n = 21$) as Asian/Pacific Islander; 10.3% ($n = 7$) as Hispanic; and 7.4% ($n = 5$) as Black, non-Hispanic. Six students declined to state their ethnicities. While varying somewhat in representation, both surveys reflected the university's diversity in its stratification.

During the summer, 84.3% ($n = 91$) of the students reported that their best language for writing was English ($\chi^2(1, N = 108) = 50.704, p = .01.$) as opposed to another language. When asked about the hours they were working either on or off campus, 47.2% ($n = 51$) reported that they were working 35 or more hours per week, while only 13.9% ($n = 15$) reported that they

were working less than 5 hours per week. When asked if they used a DSL or cable connection when engaged in online learning, 94.4% ($n = 102$) reported that they did ($\chi^2(1, N = 108) = 85.333, p = .01.$); when asked if a computer was reserved primarily or exclusively for their use, 89.9% ($n = 97$) replied that there was ($\chi^2(1, N = 108) = 156.167, p = .01.$). Asked if this was their first online learning class, 39.8% of the students replied that it was, while 32.4% ($n = 35$) replied that they had enrolled in 2 or fewer classes; only 27.8% ($n = 30$) of the students were experienced online learners, having taken 3 or more such classes.

During the fall, 77.9% of the students ($n = 53$) reported that their best language for writing was English ($\chi^2(1, N = 68) = 21.235, p = .01.$). When asked about the hours they worked, 27.9% ($n = 19$) reported that they were working 35 or more hours per week, while 27.9% ($n = 19$) reported that they were working less than 5 hours per week. When asked if they used high speed connections, 97.1% ($n = 66$) replied that they did ($\chi^2(1, N = 68) = 60.235, p = .01.$); and 97.1% ($n = 66$) replied that they had a computer reserved for their use ($\chi^2(1, N = 68) = 60.235, p = .01.$). Twenty five percent ($n = 17$) of the students replied that this was their first experience with online learning, while 33.8% ($n = 23$) had enrolled in 2 or fewer classes. Forty one percent ($n = 28$) of the students reported that they had taken 3 or more online courses.

Among the most striking results associated with the demographic portion of the survey were the perseverance rates revealed by the WebCT's "Quizzes/Surveys" tool. The tool captures each student enrolled in the course at the time the survey was taken and maintains the students' names in the database. Hence, the tool records students who enroll yet withdraw before the registrar's deadline. These students, termed "shoppers" in this study, thus take up seats in the E-Learning classes beyond the drop-add deadline, preventing other students from enrolling.

During the summer semester 260 names appeared for the first survey; by the end of the semester, only 176 of these names appeared on the roster. Thus, 47.72% of the available seats (space for 84 students), were taken by those whose names never appeared on the final roster. During the fall semester, 134 names appeared on the first survey; by the end of the semester, 111 names appeared on the final roster – a 17.16% loss of available seats due to the presence of shoppers. As Foster, Bower and Watson (2001) and Elwert and Hitch (2002) have found, only students who truly have the need, desire, and ability to take asynchronous classes should do so. While it may appear obvious that only students who have the desire and ability to take an E-Learning class should do so, job demands for our students are severe. With 47% of students working nearly full-time in the summer and 28% working that same amount in the fall, it is easy to see how the convenience of asynchronous access can be confused with ease of course content.

We note this finding at the beginning of our results section to frame the

practicality of our findings. If we can empirically determine patterns among the variables of E-Learning in undergraduate humanities courses, we can better develop policies that will enable students to enroll only for those courses that match their learning styles, general course expectations, and anticipated level of interaction.

Inferential Analysis of Variable Relationships

Analysis of Survey 2 for both summer and fall semesters showed promising correlations. For example, in questions 5 and 6 of the Learning Scale variable, correlations were present regarding a preference for real-time versus asynchronous communication and a preference for a set schedule for the presentation of materials versus a continuous one (summer: Kendall's tau-b = .268, $p = .05$ [two-tailed]; fall: Kendall's tau-b = .401, $p = .01$ [two-tailed]). In questions 16 and 17 of the General Expectations variable, moreover, correlations were observed regarding the difficulty of the course and the time required (summer: Kendall's tau-b = .54, $p = .01$ [two-tailed]; fall: Kendall's tau-b = .556, $p = .01$ [two-tailed]). As well, questions 37 and 38, designed to tap the interaction variable, showed correlations between the ease of use of video materials, those digitally prepared streamed videos and podcasts, and reading materials, documents scanned and placed in WebCT and e-books along with journal articles available from the university's Robert W. Van Houten Library (summer: Kendall's tau-b = .436, $p = .01$ [two-tailed]; fall: Kendall's tau-b = .403, $p = .01$ [two-tailed]).

Scale construction – a practical end to such research – thus appeared promising. Survey 3, given at the end of the classes, was used to construct the scale. Questions were grouped and combined to produce the scale and sub scale shown in Tables 1, 2 and 3. The Learning Style Scale shown in Table 1 consisted of questions 3, 4, 5, 6, 7, and 10. The General Expectations Scale shown in Table 2 consisted of questions 14 to 20, with Subscale 1 (focusing on E-Learning versus face-to-face comparisons) utilizing questions 14 through 17 and Subscale 2 (focusing on comparative issues of time) utilizing questions 18 through 20. The Interaction Scale, shown in Table 3, used items 31, 33, 40, and 41. If relationships were identified among the scales, then a coherent model could be developed.

The relationships among the constructed scales are shown in Tables 4 and 5. In the summer, the General Expectations Scale and its Subscale 1 demonstrated a strong correlation and statistical significance (summer, $r = .759$, $p = .01$, $r = .797$, $p = .01$). In the fall, the General Expectations Scale and both Subscales 1 and 2 demonstrated strong correlations and statistical significance (fall, $r = .833$, $p = .01$, $r = .858$, $p = .01$, $r = .431$, $p = .01$). The key to these strong within-scale relationships is found in Table 2 by examining General Expectations questions 14 to 20. The majority of the students

Table 1
Learning Style Scale

LEARNING STYLE	Summer 2006 (n=62)	Fall 2006 (n=58)
<p>3. Keeping your experience in this online course in mind, which option of the following pairs better suits your approach to learning?</p> <p>a. I am more suited to an instructor-centered approach in which the instructor takes the sole leadership role in the course.</p> <p>b. I am more suited to a learner-centered approach in which the interests of the class are considered seriously by the instructor.</p>	<p>a. 34 58.4%</p> <p>b. 28 45.2%</p>	<p>a. 27 46.6%</p> <p>b. 31 53.4%</p>
<p>4. Keeping your experience in this online course in mind, which option of the following pairs better suits your approach to learning?</p> <p>a. I am more suited to a class in which the instructor serves as the expert in the class.</p> <p>b. I am more suited to a class in which the instructor serves as a facilitator of learning.</p>	<p>a. 39 62.9%</p> <p>b.23 37.1%</p>	<p>a. 34 58.6%</p> <p>b. 24 41.4%</p>
<p>5. Keeping your experience in this online course in mind, which option of the following pairs better suits your approach to learning?</p> <p>a. Even in an E-learning course, I prefer real-time communication in which the instructor schedules regular time online using, for example, an instant messaging system.</p> <p>b. In an E-learning course, I am satisfied with asynchronous communication in which I communicate with the instructor and my classmates within defined deadlines but not necessarily using a real-time system.</p>	<p>a. 18 29%</p> <p>b.44 71%</p>	<p>a. 16 27.6%</p> <p>b. 41 70.7%</p>
<p>6. Keeping your experience in this online course in mind, which option of the following pairs better suits your approach to learning?</p> <p>a. provided on a set schedule</p> <p>b. be available 24 hours a day, 7 days a week</p>	<p>a. 7 11.3%</p> <p>b. 55 88.7%</p>	<p>a. 6 10.3%</p> <p>b. 52 89.7%</p>
<p>7. Keeping your experience in this online course in mind, which of the following do you believe was the greatest motivator in this class?</p> <p>a. The instructor</p> <p>b. My classmates</p> <p>c. My own self-motivation</p>	<p>a. 20 32.3%</p> <p>b. 4 6.5%</p> <p>c. 38 61.3%</p>	<p>a. 17 29.3%</p> <p>b. 2 3.4%</p> <p>c. 39 67.2%</p>
<p>10. Keeping your experience in this online course in mind, with which of the following statements do you most identify?</p> <p>a. I learned most and best when there was a hard deadline</p> <p>b. I learned most and best when there was no deadline</p>	<p>a. 49 79%</p> <p>b.13 21%</p>	<p>a. 41 70.7%</p> <p>b. 17 29.3%</p>

Table 2
General Expectations Scale

LEARNING STYLE	Summer 2006 (n=62)	Fall 2006 (n=58)
<p>14. This course was _____ a similar face-to-face, traditionally taught courses.</p> <p>a. easier than b. the same as c. harder than</p>	<p>a. 8 8.1% b. 26 41.9% c. 31 50%</p>	<p>a. 8 13.8% b. 25 41.3% c. 25 41.3%</p>
<p>15. This course required _____ a section of a similar courses on campus.</p> <p>a. less time than b. the same time as c. more time than</p>	<p>a. 5 8.1% b. 17 27.4% c. 40 64.5%</p>	<p>a. 8 13.8% b. 21 36.2% c. 29 50%</p>
<p>16. This course required _____ similar courses on campus.</p> <p>a. less class participation than b. the same class participation as c. more class participation than</p>	<p>a. 8 12.9% b. 27 43.5% c. 27 43.5%</p>	<p>a. 20 34.5% b. 14 24.1% c. 24 41.4%</p>
<p>17. This course required _____ a similar courses on campus.</p> <p>a. less writing time than b. the same writing time as c. more writing time than</p>	<p>a. 2 3.2% b. 19 30.6% c. 41 66.1%</p>	<p>a. 5 8.6% b. 17 29.3% c. 36 62.1%</p>
<p>18. Over the span of the entire course, I engaged course materials on an average of:</p> <p>a. 1 days per week b. 2 days per week c. 3 days per week d. 4 days per week e. 5 days per week f. 6 days per week g. 7 day per week</p>	<p>a. 0 0% b. 1 1.6% c. 10 16.1% d. 12 19.4% e. 22 35.5% f. 6 9.7% g. 11 17.7%</p>	<p>a. 3 5.2% b. 13 22.4% c. 16 27.6% d. 9 15.5% e. 8 13.8% f. 5 8.6% g. 4 6.9%</p>
<p><i>Continued on page 67</i></p>		

Continued from page 66

Table 2
General Expectations Scale

LEARNING STYLE	Summer 2006 (n=62)	Fall 2006 (n=58)
19. When I engage course materials, I did so for:	a. 0	a. 2
a. less than 1 hour	0%	3.4%
b. less than 2 hours	b. 1	b. 15
c. less than 3 hours	1.6%	25.9%
d. 3 or more	c. 23	c. 22
	37.1%	37.9%
	d. 38	d. 19
	61.3%	32.8%
20. When I did engage course materials, my attention was generally:	a. 0	a. 0
a. Very distracted	0%	0%
b. Rather distracted	b. 3	b. 1
c. Aware	4.8%	1.7%
d. Focused	c. 8	c. 13
e. Complete	12.9	22.4%
	d. 38	d. 33
	61.3%	56.9%
	e. 13	e. 11
	21%	19%

reported that the E-Learning course is the same or harder than a traditional course, that the same or more time is required, that the same or more class participation will be required, that the course material must be engaged at least three times a week (with five days a week needed for the shorter summer semester), that between two and three hours will be needed for that effort (again, more time needed for the summer), and that attention during that effort will be either focused or complete. Of special interest is that 66% of the summer students reported that the E-Learning course took more writing time than a traditional, on-campus course, and 62% of the fall students reported a similar time demand in response to question 17.

As we had hoped, the writing-intensive nature of the all the courses surveyed provided the desired low transactional distance (Moore, 1973). As the strong correlations between the General Expectations Scale and its two Subscales demonstrate, it is justified to think about student writing as being a cohesive vehicle by which the STS framework is mediated. Indeed, while student responses to question 17 remained consistent across semesters, just as we had hoped, other questions varied by more than 10 percent in both the General Expectations Scale and the Interaction Scale: question 15 (answer c); question 18 (answer g); question 19 (answer d); question 31 (answer f); question 40 (answer e). This variation may be related to the correlations

Table 3
Interaction Scale

LEARNING STYLE	Summer 2006 (n=62)	Fall 2006 (n=58)
31. Interaction with the instructor was an important part of this course. a. Very Strongly Disagree b. Strongly Disagree c. Disagree d. Agree e. Strongly Agree f. Very Strongly Agree	a. 0 0% b. 0 0% c. 4 6.5% d. 18 29% e. 15 24.2% f. 25 40.3%	a. 1 1.7% b. 1 1.7% c. 5 8.6% d. 21 36.2% e. 14 24.1% f. 16 27.6%
33. Interaction with my classmates in which we work collaboratively on class material was an important part of this course. a. Very Strongly Disagree b. Strongly Disagree c. Disagree d. Agree e. Strongly Agree f. Very Strongly Agree	a. 2 3.2% b. 2 3.2% c. 14 22.6% d. 23 37.1% e. 8 12.9% f. 13 21%	a. 4 6.9% b. 1 1.7% c. 8 13.8% d. 26 44.8% e. 13 22.4% f. 6 10.3%
40. During this semester, access to and usage of video material has been: a. A constant headache b. A struggle c. Problematic d. Easy e. Foolproof	a. 2 3.2% b. 1 1.6% c. 4 6.5% d. 25 40.3% e. 30 48.8%	a. 5 8.6% b. 2 3.4% c. 8 13.8% d. 33 56.9% e. 10 17.2%
41. During this semester, access to and usage of reading material has been: a. A constant headache b. A struggle c. Problematic d. Easy e. Foolproof	a. 0 0% b. 2 3.2% c. 2 3.2% d. 34 54.8% e. 24 38.7%	a. 2 3.4% b. 1 1.7% c. 3 5.2% d. 40 69% e. 12 20.7%

identified between these scales in the summer (Interaction and General Expectations: $r = .398, p = .01$; Interaction and General Expectations Subscale 1: $r = .256, p = .05$; Interaction and General Expectations Subscale 2: $r = .36, p = .01$), a time in which instruction is more intensive. In the fifteen-week fall semester, as shown in Table 5, the correlations between the General Expectations Scale and the Interaction Scale were absent. The survey may be sensitive to course time constraint.

Of interest is the statistically significant negative correlation observed in the summer semester between the Learning Style Scale and the Interaction Scale ($r = -.394, p = .01$). A hint as to the cause of this finding is found in comparison of question 7 and question 31. During the summer semester, only 32% of the students held that the instructor was the greatest motivation, and 29% of the fall students answered in the same fashion. Yet 94% of the students agreed, strongly agreed, or very strongly agreed that interaction

Table 4

Pearson Correlation Coefficients: Learning Style, General Expectations, and Interaction Scales (Summer 2006, $n = 62$)

VARIABLES	1	2	3	4	5
1. Learning Style	–	-.239	-.213	-.161	-.394**
2. General Expectations	-.239	–	.759**	.797**	.398**
3. General Expectations Subscale 1: E-learning vs. traditional	-.213	.759**	–	.212	.256*
4. General Expectations Subscale 2: Time	-.161	.797**	.212	–	.36**
5. Interaction	-.394**	.398**	.256*	.36**	–

* $p < .05$ ** $p < .01$

Table 5

Pearson Correlation Coefficients: Learning Style, General Expectations, and Interaction Scaled (Fall 2006, $n = 58$)

VARIABLES	1	2	3	4	5
1. Learning Style	–	.033	.073	-.011	-.038
2. General Expectations	.033	–	.833**	.858**	-.16
3. General Expectations Subscale 1: E-learning vs. traditional	.073	.833**	–	.431**	-.087
4. General Expectations Subscale 2: Time	-.011	.858**	.431**	–	-.18
5. Interaction	-.038	-.16	-.087	-.18	–

* $p < .05$ ** $p < .01$

with the instructor was an important part of the course in the summer, and 89% of the fall students reported the same perception. The Learning Style Scale, thus, appears to be reporting a very different set of beliefs than the Interaction Scale: while learning style may be varied – note that students are split on the issue of instructor-centered versus learner-centered approaches posed in question 3 – interaction with the instructor remains the most important factor in E-Learning courses (Andryszyn, Cragg, & Humbert, 2001; Swan, 2001; Paloff & Pratt, 2003; Wallace, 2005).

The significance of the instructor is further demonstrated by a regression analysis of the constructed scales. Question 21 of Survey 3 asked students to identify their expected grade in the course on a 9-point scale (A = 9, B+ = 8, B = 7, C+ = 6, C = 5, D = 4, W = 3, I = 2, F = 1). While we could not match survey to student, we nevertheless knew who had completed Survey 3 and, thus, could obtain their final grade from the class roster. In the summer semester, these students ($n = 62$) expected a final grade with a mean of 7.23 ($SD = 2.13$). The actual final grades of those students has a mean of 7.58 ($SD = 1.4$). In the fall semester, students who completed Survey 3 ($n = 58$) expected a final grade with a mean of 7.74 ($SD = 12.9$). The actual mean for final grades was 7.34 ($SD = 1.91$). Hence, using question 21 as a proxy performance-based dependent variable appeared conceptually warranted. The regression model, with the Learning Scale, the General Expectations Scale (and its two Subscales), and the Interaction Scale serving as the independent variables, was not statistically significant ($R^2 = .12$, $F(4, 56) = 1.97$, $p = .112$). Similar results were seen in a regression analysis of the fall semester ($R^2 = .17$, $F(5, 51) = 2.092$, $p = .1$). Clearly, there were factors influencing the model that were not explained by the usual criterion variable of the final grade.

We then constructed a variable based on Type II learning styles – items capturing an expressed preference for structure, cognitive simplicity, and conformity (Zhang and Sternberg, 2005, 2006). These items, participant responses, and their associated X^2 values are shown in Table 6. Using these items as a constructed variable, termed the Type II scale, we performed a regression analysis with the General Expectations Scale (and its two Subscales), and the Interaction Scale serving as the independent variables for the fall semester with the following results: $R^2 = .227$, $F(4, 52) = 3.816$, $p = .01$. The level of significance was high, with 23% of the variance in the Type II dependent variable represented by interaction among the independent variables.

This finding is among the most important of the study. We offer three reasons for the significance of this finding. First, an outcome variable capturing a structured type of learning style provides a cohesive model for the STS framework examined in this study. This is not to say that grades, the universal proxy for performance, do not matter, but it appears as if the construct of structure is more important to the present model's coherence. Second, structure is dependent on factors attributed to the instructor, as questions 22, 23,

and 27 of Table 6 reveal. The syllabus, course materials, assignment content, and grading criteria, all provided by the instructor, are overwhelmingly found by the students to be adhered to, on hand, known, and articulated. As other researchers have found, the role of the instructor is key to E-Learning (Andrysyszn, Cragg, & Humbert, 2001; Swan, 2001; Paloff & Pratt, 2003;

Table 6

Type II Scale: Structure, Cognitive Simplicity, Conformity, and Authority

Type II Scale	Summer (n=62)	Fall (n=58)
<p>22. During this semester, I have had sufficient contact with my instructor to ensure my success in the class.</p> <p>a. Yes b. No</p>	<p>a. 58 93.5% b. 4 6.5% $(\chi^2(1, N = 62) = 47.03, p = .01)$</p>	<p>a. 43 74.1% b. 15 25.9% $(\chi^2(1, N = 58) = 13.52, p = .01)$</p>
<p>23. During this semester, this sufficient instructor contact was important to me.</p> <p>a. Yes b. No</p>	<p>a. 60 96.8% b. 2 3.2% $(\chi^2(1, N = 62) = 54.28, p = .01)$</p>	<p>a. 48 82.8% b. 10 17.2% $(\chi^2(1, N = 58) = 24.89, p = .01)$</p>
<p>24. During this semester, I had all my course materials.</p> <p>a. Yes b. No</p>	<p>a. 59 95.2% b. 3 4.8% $(\chi^2(1, N = 62) = 50.58, p = .01)$</p>	<p>a. 56 96.6% b. 2 3.4% $(\chi^2(1, N = 58) = 50.28, p = .01)$</p>
<p>25. During this semester, possession of course materials was important to me.</p> <p>a. Yes b. No</p>	<p>a. 60 96.8% b. 2 3.2% $(\chi^2(1, N = 62) = 54.26, p = .01)$</p>	<p>a. 54 93.1% b. 4 6.9% $(\chi^2(1, N = 58) = 43.1, p = .01)$</p>
<p>26. During this semester, I have read the syllabus and am able to follow the outline of the course as it progresses.</p> <p>a. Yes b. No</p>	<p>a. 60 96.8% b. 2 3.2% $(\chi^2(1, N = 62) = 54.26, p = .01)$</p>	<p>a. 53 91.4% b. 5 8.6% $(\chi^2(1, N = 58) = 39.73, p = .01.)$</p>
<p>27. During this semester, the instructor has followed the syllabus.</p> <p>a. Yes b. No</p>	<p>a. 60 96.8% b. 2 3.2% $(\chi^2(1, N = 62) = 54.26, p = .01)$</p>	<p>a. 53 91.4% b. 5 8.6% $(\chi^2(1, N = 58) = 39.73, p = .01)$</p>

Continued on page 72

Continued from page 71

Table 6

Type II Scale: Structure, Cognitive Simplicity, Conformity, and Authority

Type II Scale	Summer (n=62)	Fall (n=58)
28. During this semester, knowing the content and assignments of the class was important to me. a. Yes b. No	a. 100% (At 100%, χ^2 is not run)	a. 54 93.1% b. 4 6.9% ($\chi^2(1, N = 58) = 43.1, p = .01$)
29. During this semester, I knew what it would take to pass. a. Yes b. No	a. 55 88.7% b. 7 11.3% ($\chi^2(1, N = 62) = 37.16, p = .01$)	a. 52 89.7% b. 6 10.3% ($\chi^2(1, N = 58) = 36.5, p = .01$)
30. During this semester, knowing the work required for success was important to me. a. Yes b. No	a. 4 100% (At 100%, χ^2 is not run)	a. 12 100% (At 100%, χ^2 is not run)

* $p < .05$ ** $p < .01$

Wallace, 2005). Third, in that these are humanities classes under investigation, it might be assumed, in following Kolb's theory, that an enrolled student might prefer reflective observation and active experimentation. In fact, however, the students might be said to prefer concrete experience and abstract conceptualization. As students in a technological university, their learning styles may or may not vary according to subject matter and may be mediated by both the STS framework (incorporating structure) and the humanities instructors (fostering divergent thinking). Hence, as Zhang and Sternberg (2005) suggest, modernist systems such as Kolb's are not useful when coming to terms with complex instructional settings. With Zhang and Sternberg, we believe that an orientation toward learning styles should be based not on rigid categories but on individual differences as they are found in context. Learning styles matter and must be considered as they emerge within contexts in which structure, provided by the instructor, rests at the center of the E-Learning environment.

DISCUSSION

What can we say about the students who completed Survey 3 during the two semesters of this study? First, they demonstrate the characteristic of tenacity in that they completed all surveys as well as the courses themselves

(Sternberg & Subotnik, 2006; Schmitt, Oswald, Kim, Gillespie, Ramsey & Yoo, 2003). They also performed at significantly higher levels ($t(168) = 5.69, p = .01$), as indicated by their final grades, than did their classmates who did not complete the surveys. The summer students who completed Survey 3 earned mean final course grade of 7.58 ($SD = 1.4$). Their classmates ($n = 102$) had a mean final grade of 5.29 ($SD = 2.97$). The same was true of students during the fall semester. Those who completed Survey 3 had a mean final grade of 7.34 ($SD = 1.91$), a significantly higher grade ($t(109) = 5.766, p = .01$) than their classmates ($M = 4.82, SD = 2.66$). What we have described, therefore, are high performing students who have done very well in the described STS framework. It may indeed be inferred, following Zimmerman (2002) and Williams and Hellman (2004), that these high performing E-Learning students have exhibited the self-regulation behaviors characteristic of online learning students in general.

Nevertheless, even among these students, conflict persists among the variables described in this study. While E-Learning is designed to encourage collaboration and interactive learning – the kind of instruction associated with the Type I learning described by Zhang and Sternberg (2005, 2006) – the instructor, it appears, remains the key success variable. Tensions between low degrees of structure, cognitive complexity, nonconformity, and autonomy, on one hand, and a preference for structure, cognitive simplicity, conformity, and authority, on the other remain. Type II learning adds cohesive force to the model.

Practically, then, not only do we need to inform students in a much more candid way regarding the variables needed for success in E-Learning, but we need also to call into question the efficacy of constructivist tenets, especially those that divest critical instructor authority. As Memon, Shih, and Thinger (2006) have shown, those behaviors of contact and interaction that must be demonstrated consistently by the instructor must remain at the center of E-Learning. Hence, in humanities courses, we need to recruit instructors that are able to fulfill the complex, structured demands of E-Learning, even when those demands are in seeming conflict with a recognized disciplinary impulse for fluidity. If the characteristics of Type I and Type III thinking are to take place, they must occur within a highly structured environment of sustained instructor presence.

By making public the results of base line studies such as these, we will enable students to make informed decisions regarding enrollment, decisions that will foster their success and allow class space for those who are truly prepared for (and dedicated to) E-Learning. Ultimately, empirically-based scales such as those under development in the present research should be derived so that a university-specific policy framework can be built. Such an environment, stressing consequential validity (Messick, 1994; Brennan, 2006), will allow students, instructors, and administrators to attend to the

complexities of E-Learning in the humanities. On a broader scale, it is from just such environments that appropriate, contextually-based theories of E-Learning will arise that will, in turn, allow the emergence of more meaningful discussions of the best ways to foster student learning.

References

- Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz, (Ed.), *Advances in Experimental Social Psychology* (Vol. 2, pp. 267-299). New York: Academic Press.
- Andrusyszyn, M.A., Cragg, B., & Humbert, J. (2001). Nurse practitioner preferences for distance education methods related to learning style, course content and achievement. *Journal of Nursing Education, 40*, 163- 170.
- Aragon, S. R., Johnson, S. D., & Shaik, N. (2002). The influence of learning style preferences on student success in online versus face-to-face environments. *American Journal of Distance Education, 16*, 227-244.
- Bazerman, C. (Ed.). (2008). *Handbook of research on writing: History, society, school, individual, text*. New York: Earlbaum.
- Bolter, J. D., & Grusin, R. (2000). *Remediation: Understanding the new media*. Cambridge: MA, MIT Press.
- Brennan, R. L. (2006). Perspectives on the evolution and future of educational measurement. In R. L. Brennan (Ed.). *Educational measurement* (4th ed., pp 1-16.). Westport, CT: Praeger.
- Cerejjo, M. V. P. (2006). Attitude as predictor of success in online training. *International Journal on E-Learning, 5*, 623-639.
- Copley, J. (2007). Audio and video podcasts of lectures for campus-based students: production and evaluation of student use. *Innovations in Education and Teaching International, 44*, 387-399.
- Crawford, D.L. (2006). *Characteristics leading to student success: A study of online learning environments*. Unpublished doctoral dissertation, Texas A&M University-Commerce.
- Dabbagh, N., & Kitsantas, A. (2005). The role of web-based pedagogical tools in supporting student self-regulation in distributed learning environments. *Instructional Science, 25*, 24-37.
- Dertouzos, M. L. (1991, September). Communication, computers, and networks. *Scientific American, 62-69*.
- DeTure, M. (2004). Cognitive style and self-efficacy: Predicting student success in online distance education. *American Journal of Distance Education, 18*, 21-38.
- Dillon, R.S., & Stines, RW. (1996). A phenomenological study of faculty-student caring interactions. *Journal of Nursing Education, 35*, 113-118.
- Elliot, N., Briller, V., & Joshi, K. (2007). Portfolio assessment: Quantification and community. *Journal of Writing Assessment, 3*, 5-29.
- Elliot, N, Friedman, R., & Briller, V. (2005, June). *Irony and asynchronicity: Interpreting withdrawal rates in e-learning courses*. Paper presented at the meeting of the Ed-Media World Conference on Educational Multimedia, Hypermedia, and Telecommunications, Montreal, Canada.
- Elwert, B., & Hitch, L. (Eds.). (2002). *Motivating and retaining adult learners online*. Essex Junction, VT.: GetEducated.com.
- Erickson, T., & Kellog, W. (2000). Social translucence: An approach to designing systems that support social processes. *ACM Transactions on Computer-Human Interaction, 7*, 59-83.

- Felder, R., & Brent, R. (1996). Navigating the bumpy road to student-centered instruction. *College Teaching*, 44(2), 43-47.
- Foster, L., Bower, B. L., & Watson, L. W. (Eds.). (2001). *ASHE Reader: Distance Education: Teaching and Learning in Higher Education*. Boston: Pearson.
- Frey, A., Faul, A., & Yankelov, P. (2003). Student strategies of web-assisted teaching strategies. *Journal of Social Work Education*, 39, 443-457.
- Gao, Z., Varma, V., & Houck, C. (2006, June). *Investigation of developing and delivering an online course in construction management*. Paper presented at the meeting of the ASEE Annual Conference & Exposition: Excellence in Education, Chicago, IL.
- Grigorovici, D., Nam, S., & Russil, C. (2003). The effects of online syllabus interactivity on students' perception of the course and instructor. *Internet and Higher Education*, 6, 41-52.
- Institute for Higher Education Policy. (1999). *A review of contemporary research on the effectiveness of distance learning in higher education*. Washington, DC: The Institute for Higher Education Research.
- Jamison, T. M. (2003). *Ebb from the web: Using motivational systems theory to predict student completion of asynchronous web-based distance education courses*. Unpublished doctoral dissertation, George Mason University.
- Katz, I. R., Elliot, N., Attali, Y., Scharf, D., Powers, D., Huey, H., Joshi, K., & Briller, V. (2008). *The assessment of information literacy: A case study* (ETS Research Rpt. No 08-33.) Princeton, NJ: Educational Testing Service.
- Kinneavy, J. L. (1971). *A theory of discourse*. New York: Norton.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.
- Leners, D.W., & Sitzman, K. (2006). Graduate student perceptions: Feeling the passion of caring online. *Nursing Education Perspectives*, 27, 315-319.
- Ley, K., & Young, D. B. (2001). Instructional principles for self-regulation. *Educational Technology Research and Development*, 49, 93-103.
- Lind, E. A., & Tyler, T. R. (1988). *The social psychology of procedural justice*. New York: Plenum Press.
- MacArthur, C. A., Graham, S., & Fitzgerald, J. (2006). *Handbook of writing research*. New York: Guilford Press.
- Mann, W. C., & Thompson, S. A. (1988). Rhetorical structure theory: Towards a functional theory of text organization. *Text*, 243-281.
- Memon, A., Shih, L., & Thinger, B. (2006, June). *Development and delivery of nuclear engineering online courses: The Excelsior College experience*. Paper presented at the meeting of the ASEE Annual Conference & Exposition: Excellence in Education, Chicago, IL.
- Messick, S. (1994). The interplay of evidence and consequences in the validation of performance assessments. *Educational Researcher*, 23, 13-23.
- Millwood, R., & Terrell, I. (2005). Overview: New technology, learning and assessment in higher education. *Innovations in Education & Teaching International*, 42, 195-204.
- Moore, M. G. (1973). Toward a theory of independent teaching and learning. *The Journal of Higher Education*, 44, 661-679.
- Moore, M. G. (2007). The theory of transactional distance. In M. G. Moore (Ed.), *Handbook of Distance Education* (2nd ed., pp 89-105). New Jersey: Earlbaum.

- Moskal, P., Dziuban, C., Upchurch, R., Hartman, J., & Truman, B. (2006). Assessing online learning: What one university learned about student success, persistence, and satisfaction. *Peer Review, 8*(4), 26-29.
- Naidu, S. (2007). Instructional designs for optimal learning. In M. G. Moore (Ed.), *Handbook of Distance Education* (2nd ed., pp 247-258). New Jersey: Earlbaum
- National Center for Education Statistics (2003). *Distance learning in higher education institutions: 2000-2001*. (Rep. No. NCES 2003-017). Washington, DC: National Center for Education Statistics.
- Neumann, R., Parry, S., & Becher, T. (2002). Teaching and learning in their disciplinary contexts: A conceptual analysis. *Studies in Higher Education, 27*, 405-418.
- Palloff, R.M., & Pratt, K. (2003). *The virtual student: A profile and guide to working with online learners*. San Francisco, CA: Jossey-Bass.
- Potter, A. (2008). Interactional coherence in asynchronous learning networks: A rhetorical approach. *Internet in Higher Education, 11*(2), 87-97.
- Sahin, S. (2008). The relationship between student characteristics, including learning styles, and their perceptions and satisfactions in web-based courses in higher education. *Turkish Journal of Distance Education, 9*, 123-138.
- Sammons, M. (2007). Collaborative interaction. In M. G. Moore (Ed.), *Handbook of Distance Education* (2nd ed., pp. 311-321). New Jersey: Earlbaum.
- Scharf, D., Elliot, N., Heather, H., Briller, V., & Joshi, K. (2007). Direct assessment of information literacy using writing portfolios. *The Journal of Academic Librarianship, 33*, 462-478.
- Schmitt, N., Oswald, F. L., Kim, B. H., Gillespie, M. A., Ramsay, L. J., & Yoo, T. (2003). Impact of elaboration on socially desirable responding and the validity of biodata measures. *Journal of Applied Psychology, 88*, 979-988.
- Shavelson, R. J., & Huang, L. (2003, January/February). Responding responsibly to the frenzy to assess learning in higher education. *Change, 11-19*.
- Simonson, C. L. S. (1996). Teaching caring to nursing students. *Journal of Nursing Education, 35*, 100-104.
- Smith, G. G., Heindel, A. J., Torres-Avala, A.T. (2008) E-learning commodity or community. Disciplinary differences between online courses. *Internet and Higher Education, 11*(3-4), 152-159.
- Squires, A., Pennotti, M., & Varma, D. (2006, June). *The effect of incorporating verbal stimuli in online education environment: an online case study*. Paper presented at the meeting of the ASEE Annual Conference & Exposition: Excellence in Education, Chicago, IL.
- Sternberg, R., & Subotnik, R. F. (2006). *Optimizing student success in school with the other three Rs: Reasoning, resilience, and responsibility*. Greenwich: Information Age Publishing.
- Swann, K. (2002). Building learning communities in online courses: The importance of interaction. *Education, Communication and Information, 2*, 23-49.
- Terrell, S. R. (2002). The effect of learning style on doctoral course completion in a web-based learning environment. *Internet and Higher Education, 5*, 345-352.
- Wallace, R. M. (2003). Online learning in higher education: A review of research on interactions among teachers and students. *Education, Communication, and Information, 3*, 241-280.
- Watkins, R., & Corry, M. (2005). *E-learning companion: A student's guide to online success*. Boston: Houghton-Mifflin.

- Whitworth, B. (2006). Social-technical systems In C. Ghaoui (Ed.), *Encyclopedia of Human Computer Interaction* (pp. 533-541). London: Idea Group Reference.
- Whitworth, B., & Friedman, R. (2008). The challenge of modern academic knowledge exchange. *SIGITE Newsletter*, 5(2), 4-10.
- Williams, P. E., & Hellman, C. M. (2004). Differences in self-regulation for online learning between first- and second-generation college students. *Research in Higher Education*, 45, 71-82.
- Winner, Langdon. (1980). Do artifacts have politics? *Daedalus*, 101, 121-136.
- Zhang, L., & Sternberg, R. J. (2005). A threefold model of intellectual styles. *Educational Psychology Review*, 17, 1-53.
- Zhang, L., & Sternberg, R. J. (2006) *The nature of intellectual styles*. New Jersey: Erlbaum
- Zimmerman, M. C. (2002). *Academic self-regulation explains persistence and attrition in web-based courses: A grounded theory*. Unpublished doctoral dissertation, Northern Arizona University, Flagstaff.

Acknowledgement

The authors would like to thank Frances Ward, David R. Devereaux Chair in Nursing at Temple University's College of Health Professions, for her expert consultation on variable coding and Statistical analysis.

For Further Research

Copies of the surveys used in this study may be obtained from the authors.