

How student satisfaction factors affect perceived learning

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Abstract: Data from students in two sections of a general education course offered at a research university in spring 2009 were used to explore whether student satisfaction factors are associated with perceived learning as rated by students. A list of 22 elements in the learning environment was explored. The 22 were used in creating 3 satisfaction factors related to the roles of student, instructor, and policy. The study showed all of these satisfaction factors to be associated with higher rates of perceived learning, measured via students' expectations of academic success. The findings' implications for practice are briefly discussed.

Keywords: student satisfaction, perceived learning, learning environment

I. Introduction.

In contemporary higher education, the role played by the classroom student has switched from that of passive receiver to that of active learner, under the *learning paradigm* that university professors everywhere are gradually adopting (Barr and Tagg, 1995). This new paradigm's constructivist approach is accompanied by the expectation that students take responsibility for their own learning by involving themselves in knowledge construction (Chermak and Weiss, 1999; Prince, 2004). While, under this paradigm, the university instructor has had to yield center stage to become him- or herself a learner in and out of the classroom, the instructor now becomes more important than ever in the learning process, because it falls to him or her to create the environment that fully realized student learning requires (Barr and Tagg, 1995). Instructors do matter, for their role as course designer; their creativity facilitates student learning (Barr and Tagg, 1995; Lo and Olin, 2009a, 2009b; Lo and Prohaska, 2009; Umbach and Wawrzynski, 2005).

To become effective, less-than-optimal learning environments should be redesigned to include a variety of learning activities and opportunities shown to foster achievement of the desired learning outcomes. Additionally, instructors should provide evidence of student learning by assessing students' understanding and their demonstration of desired results (Hersh, 2007). Student demographics have changed greatly in recent years, as have teaching and learning technologies; because the student population is increasingly diverse—and unevenly fascinated by these technologies—instructors seeking to obtain accurate learning outcomes may need to use a variety of assessment methods, in deference to the students' differential learning styles and thinking paths (Bauman, Bustillos, Bensimon, Brown II, and Bartee, 2005; Oblinger, 2003; Williams, Berger, and McClendon, 2005). Among their options are direct assessment methods evaluating how well students achieve desired outcomes and also indirect assessment methods, in particular surveys (written or interview) eliciting students' opinions throughout a course. Such data collected from students sheds light on their own perceptions of learning and of the

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effectiveness of the learning environment created by the instructor, and they are also helpful for ongoing course improvement.

Previous studies show that students' academic success relies on certain features of learning environments, notably on small-group work and problem-solving exercises (Gokhale, 1995; Johnson, Johnson, and Smith, 2007; Jones, 2006; Nelson, 1994; Olivares, 2005; Schamber and Mahoney, 2006; Springer, Stanne, and Donovan, 1999). Only a few previous studies, however, explicitly explored the student's roles in transforming learning environments to enhance learning; such transformation is itself a learning process (Arbaugh and Duray, 2002; Mbarika, Sankar, and Raju, 2003; Winberg and Hedman, 2008). One role necessarily belonging to the student is to capitalize on challenges posed through instructional methods such as problem-solving exercises, in order to strengthen their critical thinking and creativity. In an environment that is truly student centered, students are continually confronted with stimulating instructional methods and related environmental features, generating student satisfaction that may be linked to successful academic outcomes (Ocker and Yaverbaum, 2001).

Student satisfaction is the subjective perceptions, on students' part, of how well a learning environment supports academic success. Strong student satisfaction implies that appropriately challenging instructional methods are serving to trigger students' thinking and learning. Important elements in student satisfaction are likely to concern the role of the instructor and of the students; these elements may be central to student learning. The present study explored some of these elements, in an effort to begin identifying the ones most helpful for ensuring students' academic success (Winberg and Hedman, 2008). The study hypothesized that several distinct student satisfaction indicators would be positively related to student learning. It employed a survey, administered in spring 2009, through which enrolled students rated how strongly they agreed with statements describing environmental features of a particular redesigned course at a large research university. The student satisfaction indicators were developed for the study by empirically grouping related environmental features of the course.

II. Methods.

A. Design and Sample.

A hybrid course blending face-to-face, in-class meetings with online delivery of course materials was the focus of the present study. The course was of completely new design. It was offered at a large research university in the southeastern United States in spring 2009. Titled "Analysis of Social Problems," it was accepted by the university as a social/behavioral course fulfilling a requirement of the general education curriculum. The redesign of the course was intended to involve students more deeply in critical thinking, theory application, and synthesis of information, better preparing them to become lifelong learners. In the redesigned course, students engaged in collaborative learning activities and class discussions while in the classroom once a week for 75 minutes. They also took exams and completed weekly homework assignments, each through online delivery via eLearning, the learning management system supported by Blackboard. Also via eLearning, students received grades each week for their online assignments, group participation, and class participation, a means of monitoring academic progress. The course had been structured to provide an environment that was student centered and promoted active and collaborative learning. (For a detailed description of the redesigned course see Lo, 2009 and Lo, Johnson, and Tenorio, 2009.)

Data for the present study came from a survey designed to measure students' satisfaction with a particular course and instructor, along with their expectations of academic success in that course. Originally, the university had used the particular survey instrument in evaluating the online courses that are gradually becoming popular on campus; the instrument was viewed as appropriate for evaluating a hybrid course as well. In the second week of March 2009, about half way into the semester, two graduate assistants helping with the redesigned hybrid course administered the survey to their students in class, while the researcher, who was also the course instructor, attended a professional conference off campus. Students were told the survey would be used to improve the course and that no identifying information should be placed on the questionnaire. This survey was one of several indirect assessments that generated data for possible use in improving the redesigned course; the instrument did not, therefore, cover demographic variables (for example, gender or race). The course had 114 registered students. Only 78 filled out the questionnaire, a low number probably attributable to low attendance during a week that immediately preceded the university's scheduled spring break; the researcher had not previously found large numbers of students opting out of surveys of this kind. Students were not penalized for skipping the survey.

B. Measures.

Students were asked to answer 22 questions about satisfaction with the course and instructor. They were asked to use a 5-point response scale with the following answers: 1 *strongly disagree*, 2 *disagree*, 3 *neither*, 4 *agree*, and 5 *strongly agree*. Each question highlighted some feature of the learning environment in the course. Table 1 presents the actual questions asked.

To make the resulting data manageable and to identify reasonable latent dimensions of student satisfaction, the researcher performed exploratory factor analysis for all 22 questions. Principal component analysis with varimax rotation produced results indicating an underlying structure of 3 factors capable of explaining 66% of the cumulative variance of all items. None of the factor loadings was lower than .5. Table 1 shows the results of the factor analysis.

The first of the 3 factors described students' levels of agreement that the instructor's performance improved student learning in the course. Students recognized the role the instructor played in encouraging students to engage course materials and in using appropriate instructional methods to direct and support the learning process. This factor comprised 8 distinct items, and the reliability of the factor was very high, the Cronbach's alpha equals to 0.93. The 8 items were summed to yield a measure for a variable labeled *satisfaction with instructor's directions and support*. Among the surveyed students, measures for this variable ranged from 8 to 40, with a mean of 35.5 and a standard deviation of 5.3. The measures indicate that respondents generally were happy with the instructor's directions and support.

The second factor captured the availability, in the course, of environments in which students could actively create their own academic success, as demonstrated by sufficient challenge of their understanding of course materials and their more general academic growth and development of scholarly competence. The second factor comprised a 9-item index with high internal consistency (alpha = 0.94) that was labeled *satisfaction with own commitment to learning*. Among the students, scores for the second factor ranged from 12 to 45, with a mean of 36.5 and a standard deviation of 7.5. These measures indicate high levels of satisfaction among the

Table 1. Factor Analysis Results.

	h2	Pattern Matrix		
		Factor I	Factor II	Factor III
Satisfaction with Instructor's Directions and Support (Cronbach's Alpha = 0.93)				
The instructor encouraged students to ask questions.	0.67	0.76		
The instructor provided assignments that required critical and creative thinking.	0.72	0.67		
The instructor treated me fairly.	0.73	0.76		
The instructor used appropriate technology to present material clearly.	0.72	0.78		
The instructor was accessible to students.	0.69	0.59		
The instructor used collaborative groups/teams.	0.63	0.63		
This course was well organized.	0.76	0.67		
The instructor was able to utilize the technology to provide a supportive environment to accomplish course objectives.	0.69	0.60		
Satisfaction with Own Commitment to Learning (Cronbach's Alpha=.94)				
The Instructor consistently informed students of their progress.	0.66		0.73	
The instructor challenged me to understand ideas and concepts.	0.75		0.70	
The instructor directed students to multiple academic resources.	0.76		0.77	
The instructor was an effective online communicator.	0.68		0.55	
The course challenged me intellectually.	0.75		0.71	
I have become more competent in this area because of this course.	0.70		0.75	
The instructor clearly communicated concepts.	0.74		0.52	
The instructor was supportive of academic needs.	0.61		0.58	
The instructor evidenced a personal interest in my success.	0.61		0.72	
Satisfaction with Course Policies (Cronbach's Alpha=.90)				
The instructor provided prompt feedback to keep students on track with course expectations.	0.75			0.65
The grading system and other course policies were communicated clearly.	0.80			0.85
The rationale for grading decisions was clearly articulated by the instructor.	0.83			0.82
The instructor was able to utilize the technology to encourage and promote student dialogs and queries regarding course materials and topics.	0.70			0.65
The instructor syllabus was accurate and useful.	0.71			0.60
Total Explained Variance: 65.94%		53.59	6.39	5.96

students with the degree to which the instructor had challenged them and helped them improve their learning.

The third factor concerned the course syllabus and its clarity, course grading and its reasonableness, performance feedback and its timeliness, and the use of technology and its appropriateness. The survey asked the students how satisfied they were with each of the foregoing. Their responses on the 5-item index yielded high scores for the study variable *satisfaction with course policies*. Students' scores ranged from 5 to 25, with a mean score of 21.3 and a standard deviation of 4. This factor, like the others, also demonstrated good reliability ($\alpha = 0.90$).

Students' academic success was measured by asking them the grade they expected to receive for the redesigned hybrid course: 0 *F*, 1 *D*, 2 *C*, 3 *B* or 4 *A*. No respondent anticipated receiving a *D* or *F*, and only one expected to receive a *C*. Therefore, the *perceived academic success* variable was recoded as a dummy variable with 1 indicating *A* and 0 indicating *not A*.

III. Results.

The present study asked whether 3 student satisfaction factors could help explain students' perceived academic success in a redesigned hybrid course. Correlations among the 3 satisfaction factors showed them to be highly related to each other. The correlation coefficients ranged from 0.72, for *satisfaction with own commitment* and *satisfaction with course policies*; to 0.75, for *satisfaction with instructor* and *satisfaction with course policies*; to 0.82, for *satisfaction with instructor* and *satisfaction with own commitment*. In light of the factors' strong relationships, the researcher conducted separate directional *t*-tests to determine whether each factor was related to perceived academic success. The results confirmed the hypothesis; they indicated that students expecting an *A* grade were more likely than students expecting a *B* or *C* grade to express satisfaction with the instructor's directions, with their own commitment to learning, and with the various course policies. Specifically, mean differences found between the two groups of students were 2.26 ($t = 1.84, p < 0.05$) for reported satisfaction with instructor's direct directions and support; 3.75 ($t = 2.18, p < 0.05$) for students' own commitment to learning; and 2.61 ($t = 2.49, p < 0.01$) for the course policies.

IV. Discussion and Conclusion.

Under the contemporary learning paradigm in American higher education, university instructors are encouraged to innovate when it comes to the learning environment, introducing truly appropriate instruction methods able to facilitate the construction of knowledge by students (Barr and Tagg, 1995; Lo and Olin, 2009a). Students of differential backgrounds, beliefs, attitudes, and learning styles, however, may not all perceive that all the introduced features of the learning environment are crucial to, or even useful in, learning; they may variously show high and low levels of satisfaction with a course (Berg, Christina, Bergendahl, and Lundberg, 2003; Kasturiarachi, 2004; Limon, 2001). Where a low level of student satisfaction exists, there is often "unbalance" between the challenges imposed by the course and the student's possession of skills suitable to meet these challenges (Winberg and Hedman, 2008). Where a high level of student satisfaction exists, student learning may be enhanced. The present study was interested in identifying elements of the learning environment possibly linked to better student learning.

The study located 3 different satisfaction factors serving as predictors of perceived student learning. The first concerned instructor performance, the second the student's own commitment to learning, and the third the course policies. The study's results show that the student respondents expressed high levels of satisfaction with a learning environment that required instructor and students alike to assume responsibility for learning. The results support earlier findings showing that teacher performance contributes crucially to subjective perceptions of student learning (Jaarsma, de Grave, Muijtjens, Scherpbier, and van Beukelen, 2008; Munz and Munz, 1997). Clear and fair course policies communicated to students in effective ways also help further student learning (Nolen, 2003). But as the present results also attest, even though the instructor—as the designer of the course—is held responsible for whatever learning-environment

features characterize a given course, students' perceptions about those features and about the challenges they pose—whether it be to master course materials or to build one's general capacity for academic success—also influence how students perceive their own learning (Mbarika, et al., 2003).

This research examined students' perceptions concerning what instructional and other features actually work for them in a learning environment. Its linking of specific aspects of student satisfaction to perceived learning illustrated the important roles of student, instructor, and course. Because the data were collected from students in one course at one university, however, the results may not be generalizable to other students, whether enrolled in other courses at the same university or enrolled at other universities. Nevertheless, the empirical relationships found between the 3 measured student satisfaction constructs and perceived academic success augment the existing literature on the learning environment's importance for student learning. In addition, cautious consideration of the present results is needed due to the timing of data collection. At mid-semester, students may be in mid-process when it comes to formulating likes and dislikes among course features, and they may not have a particularly solid idea of what their final grade will be. Moreover, the small sample used in the present study precluded use of multivariate techniques of data analysis. Future studies should employ larger samples while continuing to seek out environmental features able to enhance student satisfaction, in light of the present finding that high levels of student satisfaction tend to be associated with better student learning.

In a student-centered environment, students' perceptions of what constitutes adequate intellectual challenge are situational; these perceptions must not be overlooked as instructors refine environments to facilitate learning. The present study's results clearly indicate a need to balance course designers' perceptions of students' skills and abilities with students' own perceptions of their skills and abilities. Balance will help university faculties facilitate all the learning possible among their students.

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