

# The Use of Survey Research to Measure Student Satisfaction in Online Courses

Elaine Strachota

## Abstract

Although student satisfaction in online courses is of concern to institutions of higher learning attempting to provide quality education, the field of distance education remains in a developmental stage as far as having valid and reliable instruments to measure student satisfaction. Therefore a valid and reliable instrument was developed as a tool to measure student satisfaction as an online program evaluation outcome. This study offers the researcher both a survey instrument as well as research findings relative to the constructs that are critical to a satisfying online learning experience.

## Introduction

The gathering of feedback from students is an important part of online program development and evaluation. Colleges and universities often focus a great deal of time and energy on developing new programs yet are often less effective when it comes to measuring program outcomes. Measuring online program outcomes can be efficiently and effectively done through the use of online survey research. Of importance however is that program evaluation must be conducted through the use of valid and reliable instruments. It is critical when conducting survey research that the instrument is more than a series of questions and that it measures what it is intended to measure. Therefore the *Student Satisfaction Survey* instrument was developed as a tool that could be used by institutions to evaluate student satisfaction as an online program evaluation outcome. This paper will focus on the process of conducting survey research, share the survey instrument and identify the constructs that are critical to a satisfying online learning experience.

## The Process of Survey Development

Developing a survey instrument is based on the identification of the intended outcome that is to be measured. For the purposes of this study the outcome to be measured was student satisfaction. The first step in survey development is a review of the literature specific to the outcome measurement issue of concern. Based on the literature, *The Student Satisfaction Survey* instrument was developed based on the typology of online interaction by Moore & Kearsley (2005, 1996). This typology of online interaction includes: learner-content interaction, learner-instructor interaction and learner-learner interaction. A fourth type of online interaction that of learner-technology interaction identified by Hanna, Dudka & Runlee (2000) and Palloff & Pratt (2001) was also included as a construct to be measured. A fifth construct of general satisfaction was also included as part of this survey instrument.

These five constructs served as the foundation for the development of survey questions that would be a measure of each construct. Subject matter experts in the field of adult education and distance education as well as a panel of measurement experts

examined these constructs, which included the definitions and questions for each construct. Several questions were modified or eliminated based on the experience of experts in the field. This step of survey development is necessary and is referred to as establishing content validity. After content validity was conducted the instrument had 33 items.

Following the establishment of content validity a pilot study utilizing the instrument was conducted. Conducting a pilot study serves to establish construct validity. The purpose of construct validity is to determine if the constructs being measures are a valid conceptualization of the phenomena being tested. Data from the pilot study were then analyzed through the use of factor analysis to determine if indeed given items loaded on the intended construct. As part of this process, items that did not load on the intended construct were eliminated, as they were not an adequate measure of that construct.

This pilot study was conducted (N = 249 online students) at a Midwest Technical College in the United States. The survey instrument was presented as a link within the college's learning management system. Through factor analysis of the data the instrument was reduced to 27 items as six items had low factor loading that overlapped across all constructs, indicating that they were not a good measure of that specific construct. The final instrument included seven items that measured learner-content interaction, six items that measured learner-instructor interaction, eight items that measured learner-learner interaction and six items that measured general satisfaction. Items specific to learner-technology interaction were taken from the Cassidy & Eachus (2000) survey instrument which had been previously pilot tested and showed a Cronbach's alpha of .97 for the single construct of computer self-efficacy which was equated as being synonymous with learner-technology interaction. Removal of the six items resulted in moderate to high factor loading with the appropriate items loading within the specified construct. Factor loading for learner-content interaction ranged from .604 to .780, learner-instructor interaction factor loading ranged from .594 to .841 and learner-learner interaction factor loading ranged from .588 to .786. Therefore, questions within each construct were considered to have good internal or construct validity.

To be effective an instrument must have both validity and reliability. Analysis of data from a pilot study determines the reliability of the instrument or the Cronbach's alpha, which is the internal consistency or reliability coefficient for an instrument requiring only one administration. Cronbach's alpha scores range from zero through one, with a coefficient closer to one indicating higher reliability. Reliability coefficients should be at least .70 or higher to be considered reliable for affective instruments (Wallen & Fraenkel, 2001). The *Student Satisfaction Survey* instrument pilot study indicated a Cronbach's alpha of .90 for the constructs of both learner-content interaction and general satisfaction. The constructs of learner-instructor interaction and learner-learner interaction resulted in a Cronbach's alpha of .89. Therefore removal of these six items resulted in a valid and highly reliable instrument that can be used at any institution of higher learning that offers online courses and is concerned with measuring the outcome of student satisfaction.

## Survey Instrument

The following includes the definitions for each construct within the *Student Satisfaction Survey*. Learner-content interaction is defined as the non-human interaction the student has with the subject matter (Moore & Kearsley, 1996). This includes interaction with course content, lessons, learning activities, learning objects, videos, assignments, websites and projects. Learner-instructor interaction is defined as the human interaction consisting of two-way communication between the learner and the instructor (Moore & Kearsley, 1996). This type of interaction is necessary for content clarification, student feedback and to minimize the impact of distance. Learner-learner interaction is defined as the human interaction consisting of two-way communication between one learner and other learners (Moore & Kearsley, 1996). This type of interaction may occur via e-mail and discussion boards. Learner-technology interaction is defined as the skill and comfort level the student has with the non-human interaction of the technology used in an online environment. General satisfaction is defined as the overall needs of the student have been met. All survey items included a four-point Likert scale of (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree. Questions specific to each construct within the *Student Satisfaction Survey* (Strachota, 2003) are as follows:

Table 1 - Learner-Content Interaction

LEARNER-CONTENT INTERACTION	
1. The course documents – lessons or lecture notes used in this class facilitated my learning	2. The websites that were linked to this course facilitated my learning
3. The assignments and/or projects in this course facilitated my learning	4. Preparation for quizzes/exams in this course facilitated my learning
5. The learning activities in this course required application of problem solving skills which facilitated my learning	6. I feel this online class experience has helped improve my written communication skills
7. The learning activities in this course required critical thinking which facilitated my learning	

Table 2 - Learner-Instructor Interaction

(\*\* Denotes question not completed if course did not utilize a discussion board)

LEARNER-INSTRUCTOR INTERACTION	
1. In this class the teacher was an active member of the discussion group offering direction to posted comments **	2. I received timely feedback (within 24-48 hours) from my teacher
3. I felt frustrated by the lack of feedback from my teacher	4. I was able to get individualized attention from my teacher when needed
5. In this class the teacher functioned as the facilitator of the course by continuously encouraging communication	6. Although I could not see the teacher in this class, I felt his/her presence

Table 3 - Learner-Learner Interaction

(\*\* Denotes question not completed if course did not utilize a discussion board)

LEARNER-LEARNER INTERACTION	
1. In this class the online discussion board provided opportunity for problem solving with other students **	2. In this class the online discussion board provided opportunity for critical thinking with other students **
3. The discussion board in this class was a waste of time **	4. This course created a sense of community among students
5. In this class I was able to ask for clarification from a fellow student when needed	6. I received timely (within 24-48 hours) feedback from students in the class
7. This online course encouraged students to discuss ideas and concepts covered with other students	

Table 4 - Learner-Technology Interaction – (abridged version - Cassidy & Eachus, 2000)

LEARNER-TECHNOLOGY INTERACTION	
1. Most difficulties I encounter when using computers, I can deal with	2. I find working with computers very easy
3. enjoy working with computers	4. Computers make me much more productive
5. I am very confident in my abilities to use computers	6. Using computers makes learning more interesting
7. Some computer software packages definitely make learning easier	8. Computers are good aids to learning
9. I consider myself a skilled computer user	

Table 5 - General Satisfaction

GENERAL SATISFACTION	
1. I am very satisfied with this online course	2. I would like to take another online course
3. This online course did not meet my learning needs	4. I would recommend this course to others
5. I learned as much in this online course as compared to a face-to-face course	6. I feel online courses are as effective as face-to-face courses

### Survey Implementation

A convenience sample of 1,593 online students were given the *Student Satisfaction Survey* instrument via a web link in the college's learning management system. The survey link and four e-mails were disseminated over a 4-week period of time. A total of 849 students in 101 online courses completed the survey for an overall response rate for 53.3 %. This online survey response rate exceeded the averages found by Sheehan (2001), who examined 31 online survey response rates from 1986-2000 and

found the average response rate for those surveys to be 36.83%. Conducting a survey online was found to be far more time efficient and cost effective compared to traditional phone or mail delivered survey methods (Schmidt, Strachota & Conceição, 2005).

### Survey Results

Through the use of multiple regression analysis, learner-content interaction was found to be the primary construct in predicting online satisfaction. Further learner-instructor and learner-technology contributed to this model as the second and third most important variables. A total of 63.8% of online satisfaction was predicted based on learner-content interaction (58%), learner-instructor interaction (4.8%), learner-learner interaction (.1%) and learner-technology interaction (.9%). Three of the four constructs significantly contributed to the prediction model for online satisfaction whereas learner-learner interaction did not significantly contribute to the prediction model.

Table 6 - Multiple Regression Analysis - Model Summary

Step		R Square	R <sup>2</sup> Change	F Change	df2	Sig. F Change
1	LC	.580	.580	1168.51	847	.000*
2	LI	.628	.048	110.59	846	.000*
3	LL	.629	.001	.84	845	.360
4	LT	.638	.009	21.66	844	.000*

Model 1- Predictors: (Constant), learner-content (LC)

Model 2- Predictors: (Constant), learner-content (LC), learner-instructor (LI)

Model 3- Predictors: (Constant), learner-content (LC), learner-instructor (LI), learner-learner (LL)

Model 4- Predictors: (Constant), learner-content (LC), learner-instructor (LI), learner-learner (LL), learner-technology (LT)

Analysis of variance (ANOVA) showed that students in courses that had either a voluntary or required discussion group were significantly more satisfied with learner-learner interaction than those students who were in courses with no discussion group. There however was no significant difference in overall level of satisfaction as measured by the construct of general satisfaction among students in these three groups.

### Summary

This study highlights the importance of having a valid and reliable instrument when conducting survey research. A critical step of this process is conducting a pilot test and modifying the instrument prior to final implementation. Online survey research has proven to be far more efficient and cost effective compared to traditional methods of mail and telephone delivery when surveying an audience of distance learners (Strachota, 2003). Further, learner-content interaction and learner-instructor interaction were found

to be the most important variables for a satisfying online experience. Critical to the findings of this study is the need to develop rich interactive content and to have instructor presence for a satisfying online learning environment. Although those students who had a discussion board were significantly more satisfied with learner-learner interaction there was no significant difference in overall course satisfaction among those students who had a discussion board as part of the course structure.

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Elaine Strachota, PhD, Associate Professor, Concordia University Wisconsin, Professor Milwaukee Area Technical College, [Elaine.Strachota@cuw.edu](mailto:Elaine.Strachota@cuw.edu) [strachoe@matc.edu](mailto:strachoe@matc.edu)

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