

Factors influencing faculty satisfaction with online teaching and learning in higher education

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Faculty satisfaction is considered an important factor of quality in online courses. A study was conducted to identify and confirm factors affecting the satisfaction of online faculty at a small research university, and to develop and validate an instrument that can be used to measure perceived faculty satisfaction in the context of the online learning environment. The online faculty satisfaction survey (OFSS) was developed and administered to all instructors who had taught an online course in fall 2007 or spring 2008 at a small research university in the USA. One hundred and two individuals completed the web-based questionnaire. Results confirm that three factors affect satisfaction of faculty in the online environment: student-related, instructor-related, and institution-related factors.

Keywords: distance education; factor analysis; faculty satisfaction; higher education; online teaching

Introduction

Distance education has become a fast-growing delivery method in higher education in the USA. According to a report by Allen and Seaman (2007), during the fall 2006 semester approximately 20% of all higher education students in the USA were enrolled in at least one online course. In fall 2005, enrollment in online courses experienced a 36.5% growth rate. The following year online enrollment experienced an increase of 9.7%. By 2006, almost 35% of higher education institutions offered entire programs online.

Reasons for offering online courses include improved student access, higher degree completion rates, and the appeal of online courses to nontraditional students. In contrast, institutions indicate barriers to the adoption of online courses include the lack of online student discipline, the lack of faculty acceptance, and high costs associated with online development and delivery (Allen & Seaman, 2007).

Moore and Kearsley (1996) have defined distance learning as a learning environment where 'students and teachers are separated by distance and sometimes by time' (p. 1). Rovai, Ponton, and Baker (2008) emphasized that if *any* element in structured learning is separated by 'time and/or geography' (p. 1), then the learning takes place in a distance learning setting. Online education is a process by which students and teachers communicate with one another and interact with course content via Internet-based learning technologies (Curran, 2008). A course is considered an online course if 80%

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or more of the content is delivered via the Internet (Simonson, Smaldino, Albright, & Zvacek, 2009).

It is important to inquire about student and faculty perceptions of campus environments in order to assist campus leaders in changing policies that will lead to improvement of teaching and learning conditions, if necessary (Baird, 1980). The commitment of faculty to online education is valuable to educational institutions (Curran, 2008) and important in the success of new distance education programs (Betts, 1998). However, online teaching is complex and demanding on faculty, which can lead to burnout, according to Hogan and McKnight (2007).

Faculty satisfaction is one of the five *pillars* of quality, together with student satisfaction, learning effectiveness, access, and institutional cost-effectiveness (Sloan Consortium, 2002). Components of faculty satisfaction need to be investigated as online education becomes more prevalent and dynamic forces such as adoption rates, learner expectations, levels of support, and other conditions continue to change.

Theoretical framework

Critics of online education have questioned the value, effectiveness, and quality of online education. Ulmer, Watson, and Derby (2007) examined perceptions of faculty pertaining to the value of distance education and reported statistically significant differences in findings between faculty with and without distance education experience. Their results suggest that experienced faculty view distance education as effective in terms of student performance and instructor-to-student interaction, and they 'promote and recommend engagement in distance education' (p. 69). However, researchers have reported conflicting results regarding the performance of online students. Some experts have reported no significant differences in levels of performance, whereas others have reported similar levels of online student achievement compared to campus-based courses (Hislop, 2000). Schutte (1996) reported that student performance was higher in an online course than in a traditional course. Olson and Wisher (2002) reviewed 47 online course evaluation reports published between 1996 and 2002 and suggested that online instruction 'appears to be an improvement over conventional classroom instruction' (p. 11). Undoubtedly, this topic warrants further investigation before we can draw conclusions about the effectiveness of online learning.

Quality is important in the delivery of all courses and programs, regardless of the environment in which they are delivered. Two of the five elements in the Sloan Consortium's quality framework for online education are student satisfaction and faculty satisfaction. These pillars of quality (Sloan Consortium, 2002) need to be assessed on an ongoing basis.

Student satisfaction

Student satisfaction is defined as the student's perceived value of his or her educational experiences at an educational institution (Astin, 1993). 'Significant differences still exist in the way students perceive their online experiences during learning' (Mullenburg & Berge, 2005, p. 29). Perceptions about their learning experiences can influence students in their decision to continue with the course (Carr, 2000) and impact levels of satisfaction with overall online learning experiences (Kenny, 2003). Student satisfaction, according to the American Distance Education Consortium (ADEC, n.d.), 'is the most important key to continue learning' (¶5).

Several elements influence student satisfaction in the online environment. Bolliger and Martindale (2004) identified three key factors central to online student satisfaction: the instructor, technology, and interactivity. Other components are communication with all other course constituents, course management issues, and course websites or course management systems used. Additionally, students' perceptions of task value and self-efficacy, social ability, quality of system, and multimedia instruction have been identified as important constructs (Liaw, 2008; Lin, Lin, & Laffey, 2008).

However, Muilenburg and Berge (2005) have reported several barriers to online learning encountered by students. These barriers include administrative issues, social interaction, academic and technical skills, motivation, time, limited access to resources, and technical difficulties. Other barriers include unfamiliar roles and responsibilities, delays in feedback from instructors, limited technical assistance, high degrees of technology dependence, and low student performance and satisfaction (Navarro, 2000; Simonson et al., 2009).

Students also need to be confident that they can be successful in the online learning environment (Sloan Consortium, 2002). Student satisfaction is linked to the students' performance, and student satisfaction is an important element in the investigation of faculty satisfaction. Hartman, Dziuban, and Moskal (2000) have suggested that faculty satisfaction and student learning are highly correlated.

Faculty satisfaction

Faculty satisfaction is a complex issue that is difficult to describe and predict. Included constructs are *triggers* described as changes in lifestyle (e.g., transfer to a new position or change in rank) and *mediators* such as demographics, motivators, and conditions in the environment that influence other variables (Hagedorn, 2000). Faculty satisfaction in the context of this study is defined as the perception that teaching in the online environment is 'effective and professionally beneficial' (ADEC, n.d., ¶10).

Because faculty are instrumental in the success of distance education programs, levels of faculty satisfaction are one measure for the assessment of program effectiveness (Lock Haven University, 2004). The National Education Association (NEA, 2000) found that approximately 75% of faculty surveyed felt positively about distance education. Hartman et al. (2000) reported that 83.4% of instructors were satisfied with teaching fully online courses, and 93.6% of respondents were willing to continue to teach online. Conceição (2006) pointed out that most participants in a phenomenological study indicated online teaching 'gave them some type of satisfaction' (p. 40). Fredericksen, Pickett, Shea, Pelz, and Swan (2000) reported a high level of faculty satisfaction in a large online network in postsecondary education.

Factors contributing to faculty satisfaction

Several motivating factors in the participation of faculty in distance education and barriers to faculty adoption have been identified in the literature (ADEC, n.d.; Betts, 1998; Bower, 2001; Durette, 2000; Fredericksen et al., 2000; Hartman et al., 2000; NEA, 2000; Palloff & Pratt, 2001; Panda & Mishra, 2007; Passmore, 2000; Rockwell, Schauer, Fritz, & Marx, 1999; Simonson et al., 2009; Sloan Consortium, 2006). These factors have the potential to influence faculty satisfaction in the online environment

and can be categorized into three groups: (a) student-related, (b) instructor-related, and (c) institution-related.

Student-related factors

One of the most often cited reasons of why faculty like to teach online is the fact that online education affords access to higher education for a more diverse student population (ADEC, n.d.; Betts, 1998; NEA, 2000; Rockwell et al., 1999; Sloan Consortium, 2006). Another motivating factor is that faculty perceive the online environment as an opportunity for students to engage in highly interactive communication with the instructor and their peers (ADEC, n.d.; Fredericksen et al., 2000; Hartman et al., 2000; Sloan Consortium, 2006). However, some faculty members express concern about limited interaction with students (Bower, 2001) in an environment where they never meet the students face-to-face. Researchers have established a positive correlation between faculty satisfaction and student performance. Generally, the level of faculty satisfaction is higher in courses where student performance is better (Fredericksen et al., 2000; Hartman et al., 2000).

Instructor-related factors

Faculty satisfaction is positively influenced when faculty believe that they can promote positive student outcomes (Sloan Consortium, 2006). Other intrinsic motivators include self-gratification (Rockwell et al., 1999), intellectual challenge, and an interest in using technology (Panda & Mishra, 2007). This environment provides faculty with professional development opportunities (ADEC, n.d.; Betts, 1998; Bower, 2001; Hartman et al., 2000; Palloff & Pratt, 2001; Panda & Mishra, 2007; Rockwell et al., 1999; Simonson et al., 2009; Sloan Consortium, 2006) and research and collaboration opportunities with colleagues (ADEC, n.d.; Sloan Consortium, 2006).

Faculty members are satisfied when they are recognized for the work that they are doing (Rockwell et al., 1999; Sloan Consortium, 2006). However, faculty expect reliable infrastructure and technology (ADEC, n.d.; Betts, 1998; Fredericksen et al., 2000; Hartman et al., 2000; Panda & Mishra, 2007; Simonson et al., 2009; Sloan Consortium, 2006). When faculty experience technology difficulties or do not have access to adequate technology and tools, their satisfaction is likely to decrease.

Institution-related factors

Faculty satisfaction is generally high when the institution values online teaching and has policies in place that support the faculty. Workload issues are the greatest barrier in the adoption of online education because educators perceive the workload to be higher than compared to that of traditional courses. At least initially, faculty expect to spend more time on online course development and online teaching. Faculty are more satisfied when the institution provides release time for course development and recognizes that online teaching is time consuming (ADEC, n.d.; Betts, 1998; Bower, 2001; Hartman et al., 2000; Howell, Saba, Lindsay, & Williams, 2004; Passmore, 2000; Rockwell et al., 1999; Simonson et al., 2009; Sloan Consortium, 2006).

Two other major concerns are adequate compensation (Bower, 2001; Simonson et al., 2009; Sloan Consortium, 2006) and an equitable reward system for promotion

and tenure (ADEC, n.d.; Bower, 2001; Hartman et al., 2000; Passmore, 2000; Simonson et al., 2009; Sloan Consortium, 2006). Policies that clarify intellectual property issues (Durette, 2000; Palloff & Pratt, 2001; Passmore, 2000; Simonson et al., 2009; Sloan Consortium, 2006) need to be in place. Faculty are also concerned about the quality of courses (Betts, 1998; Bower, 2001) because the perception is that student satisfaction as expressed in course evaluations tends to be lower than that in traditional courses.

The purpose of this study was twofold. First, researchers aimed to identify and confirm factors influencing faculty satisfaction in the online environment. Second, they desired to develop a quantitative self-report measure of perceived faculty satisfaction in the online environment.

Methodology

Sample

The sample consisted of the entire population of online instructors (122 individuals) who taught a course during fall 2007 or spring 2008 at a public research university. The university has an annual student enrollment of approximately 11,600 and is the only provider of baccalaureate and graduate degrees in the state. Because the university serves many rural areas, it has been engaged in providing distance learning and outreach services since 1984.

Of 102 (82%) individuals who responded, the majority were female (59.8%) and native English speakers (94.1%). Their ages ranged from 24 to 69 years ($M = 50$) and their online teaching experience ranged from 0 to 20 years ($M = 4.67$).

Data collection

All online instructors at the institution were contacted via email and invited to participate in the study. They were provided with information about the study and a link to the online faculty satisfaction survey (OFSS) that was an integral part of the university's course management system. Participants needed to log in to a secure server site in order to complete the questionnaire, which took approximately 10 minutes; however, all responses were anonymous and confidential. As an incentive, participants were able to register for the drawing of a gift certificate for the university bookstore after they completed the questionnaire by providing their contact information. After two weeks, a follow-up email was sent by the survey system to nonrespondents. Then the self-reported data were analyzed to confirm the factors pertaining to faculty satisfaction.

Instrument

The OFSS has a total of 36 questions including 28 questions with a 4-point Likert scale, ranging from 1 *strongly disagree* to 4 *strongly agree* (see Table 1). The questions were based on the results of the literature review, which included articles pertaining to challenges of and barriers to faculty teaching online and faculty satisfaction. Once elements were identified, researchers focused on issues that directly impact *teaching* in the online environment. Items were developed for each of the three subscales: (a) student-related issues, (b) instructor-related issues, and (c) institutional-related issues. Respectively 14, 8, and 4 items were created based on the constructs derived from the literature. Scale items were compared to other instruments published in the literature

Table 1. Survey instrument.

No.	Item
1	The level of my interactions with students in the online course is higher than in a traditional face-to-face class.
2	The flexibility provided by the online environment is important to me.
3	My online students are actively involved in their learning.
4	I incorporate fewer resources when teaching an online course as compared to traditional teaching.*
5	The technology I use for online teaching is reliable.
6	I have a higher workload when teaching an online course as compared to the traditional one.*
7	I miss face-to-face contact with students when teaching online.*
8	I do not have any problems controlling my students in the online environment.
9	I look forward to teaching my next online course.
10	My students are very active in communicating with me regarding online course matters.
11	I appreciate that I can access my online course any time at my convenience.
12	My online students are more enthusiastic about their learning than their traditional counterparts.
13	I have to be more creative in terms of the resources used for the online course.*
14	Online teaching is often frustrating because of technical problems.*
15	It takes me longer to prepare for an online course on a weekly basis than for a face-to-face course.*
16	I am satisfied with the use of communication tools in the online environment (e.g., chat rooms, threaded discussions, etc.).
17	I am able to provide better feedback to my online students on their performance in the course.
18	I am more satisfied with teaching online as compared to other delivery methods.
19	My online students are somewhat passive when it comes to contacting the instructor regarding course related matters.*
20	It is valuable to me that my students can access my online course from any place in the world.
21	The participation level of my students in the class discussions in the online setting is lower than in the traditional one.*
22	My students use a wider range of resources in the online setting than in the traditional one.
23	Technical problems do not discourage me from teaching online.
24	I receive fair compensation for online teaching.
25	Not meeting my online students face-to-face prevents me from knowing them as well as my on-site students.*
26	I am concerned about receiving lower course evaluations in the online course as compared to the traditional one.*
27	Online teaching is gratifying because it provides me with an opportunity to reach students who otherwise would not be able to take courses.
28	It is more difficult for me to motivate my students in the online environment than in the traditional setting.*

Note: *Recoded scale item.

pertaining to satisfaction in the online environment. Additionally, four open-ended and four demographic questions were created for inclusion in the questionnaire. The first version of the survey was examined by a content and psychometric expert, who suggested several modifications that were implemented.

The instrument was administered to 25 individuals in a preservice teacher course in order to determine whether the items were clear and concise. One question was slightly modified before the questionnaire was made available in the online course management system. In order to determine the internal reliability of the questionnaire, researchers performed a reliability analysis with the use of Cronbach's alpha after the data collection phase.

Statistical assumptions

Sample size and missing data

Initially, the sample size in this study was 102 participants. One case in the data set had one-third of data missing and was deleted. Several other cases contained missing data; these cases were estimated by using mean substitution. After the initial data estimation, this assumption was considered met.

Outliers

Another assumption of the factor analysis is that there are no outliers. An examination of z scores revealed seven potential outliers, which were confirmed by a visual examination of several scatter plots. Outliers within the range of $z \pm 3.00$ were deleted from the data set. After these outliers were deleted, this assumption was met.

Linearity

In order to examine for linearity, several bivariate scatter plots were generated and examined. Because the items on the instrument are on a 4-point Likert scale, all of the scatter plots revealed abnormalities between the variables. This was an acceptable violation of the assumption and it did not adversely affect the results of the study.

Multicollinearity and singularity

In order to determine if multicollinearity existed, the Pearson correlation coefficients were examined in a correlation matrix. The three highest correlation coefficients in the matrix were between items 10 and 19 (0.64), items 21 and 28 (0.63), and items 2 and 11 (0.60). The collinearity diagnostic showed that the highest variance proportion was 0.65. Therefore, no multicollinearity existed between any of the dependent variables. Each of the dependent variables is an independent measure, therefore ruling out singularity.

Results

Descriptive statistics

Table 2 displays the mean and standard deviations for the scores. The standard deviations are relatively minor. Variables with a correlation coefficient between 0.60 and 0.80 are considered to have a strong relationship, whereas variables with a correlation coefficient between 0.80 and 1.00 have a very strong relationship.

Table 2. Means and standard deviation of scores.

Item	Student subscale	
	M	SD
Item 1	2.33	0.89
Item 2	3.53	0.60
Item 3	3.31	0.53
Item 7	2.15	0.80
Item 10	3.08	0.61
Item 11	3.65	0.58
Item 12	2.35	0.92
Item 16	3.14	0.52
Item 17	2.58	0.93
Item 19	2.93	0.73
Item 20	3.48	0.52
Item 21	3.16	0.69
Item 25	2.41	0.81
Item 27	3.33	0.64
Item 28	2.86	0.69
	Instructor subscale	
	M	SD
Item 4	3.10	0.81
Item 5	3.32	0.60
Item 8	2.81	1.01
Item 13	2.07	0.66
Item 14	3.04	0.70
Item 22	2.72	0.72
Item 23	3.19	0.76
	Institution subscale	
	M	SD
Item 6	2.15	0.77
Item 15	2.54	0.74
Item 24	2.81	0.69
Item 26	2.79	0.75

Only three relationships were at or higher than 0.60 and no relationships were above 0.80.

The OFSS includes two items that are considered general satisfaction questions. Here instructors indicated their levels of agreement or disagreement with the statements 'I look forward to teaching my next online course' (item 9) and 'I am more satisfied with teaching online as compared to other delivery methods' (item 18). The means for these items were 3.24 (SD = 0.72) and 2.29 (SD = 1.05), respectively.

Factor analysis

The construct validity was examined using a confirmatory analysis with orthogonal rotation. Based on the literature, three factors (student, instructor, and institution subscales) with high loadings were expected to be extracted. An initial examination revealed nine dimensions with eigenvalues greater than 1. The examination of the scree plot of the initial extraction (Figure 1) indicates there were three dimensions; these three components were retained.

Most of the factor loadings on the student and instructor dimensions were satisfactory and explained 32.98% of the variance. Some loadings on these subscales were complex, and five items loaded on a different factor than initially anticipated. Items 2, 11, and 16 were expected to load on the teacher-related factor but loaded on the student subscale, and items 8 and 22 loaded on the instructor instead of the student factor. Perhaps some online instructors associate some student aspects with instructor variables; these two issues might be closely related. Loadings on the institution subscale were satisfactory. Twenty-two items had loadings in excess of 0.40; other loadings were fair. The total variance explained by the three extracted factors was 40.29%. Because the constructs hold up, this analysis provides evidence that the instrument is a valid measure for faculty satisfaction constructs. A summary of factor loadings is provided in Table 3.

Reliability

In order to determine the instrument's internal consistency reliability, Cronbach's alpha coefficient was calculated. The total scale includes 28 items and its reliability

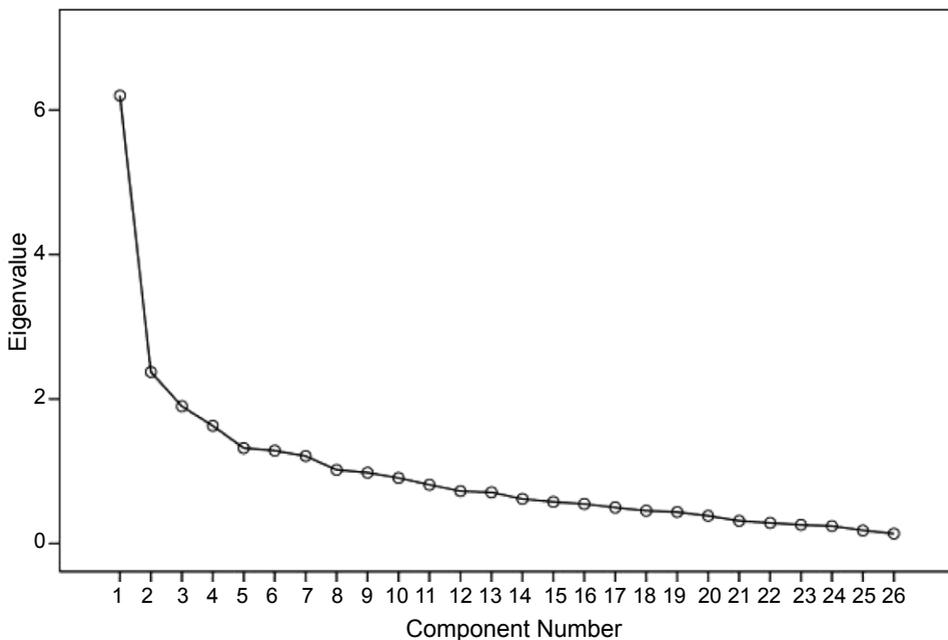


Figure 1. Scree plot of initial factor extraction.

Table 3. Rotated factor loadings for constructs.

Item	Constructs		
	Student	Instructor	Institution
1	0.56	–	–
2	0.55	–	–
3	0.57	–	–
4	–	0.41	–
5	–	0.64	–
6	–	–	0.59
7	0.56	–	–
8	–	0.58	–
9	–	–	–
10	0.61	–	–
11	0.46	–	–
12	0.39	–	–
13	–	0.52	–
14	–	0.53	–
15	–	–	0.78
16	0.37	–	–
17	0.54	–	–
18	–	–	–
19	–	–	–
20	–	–	–
21	0.65	–	–
22	–	0.60	–
23	–	0.55	–
24	–	–	0.43
25	0.59	–	–
26	–	–	0.54
27	0.35	–	–
28	0.78	–	–

was high (0.85). The subscale reliability was high for the student dimension (0.86) and only moderate for the instructor (0.55) and institution (0.55) dimensions (see Table 4).

Discussion

As previously mentioned, the literature consistently points out three elements important to faculty who teach online courses: students, the instructor, and the institution. The results of the study confirm that these three factors are important in the measurement of perceived faculty satisfaction. The student factor is the most important factor influencing satisfaction of online faculty, which is encouraging because it leads us to believe that many online instructors are student centered.

Mean scores show that participants felt most strongly about questions in this particular subscale. Student-related issues that were most valued by respondents

Table 4. Reliability statistics for each subscale.

Subscale	No. of items	Cronbach's α	95% confidence interval		Inter-item correlations	
			Lower	Upper	M	SD
Student	15	0.86	0.81	0.89	0.29	0.11
Instructor	7	0.55	0.40	0.68	0.15	0.20
Institution	4	0.55	0.38	0.69	0.23	0.15

include providing flexible and convenient access to courses. These are some of the issues related to faculty satisfaction mentioned by the Sloan Consortium (2006). Additionally, the majority of faculty believed that their online students are actively involved in their learning, participate at a good level, and communicate actively with the course instructors. These results are encouraging and reassuring for faculty who are either considering to move or expand their online course offerings or who are pressured by administrators to participate in distance education.

Not surprisingly, instructor-related issues directly impact instructor satisfaction but were less important than student-related issues. Questions that yielded the highest mean scores pertained to using reliable technology and experiencing difficulties with technology. The item with the lowest mean score overall ($M = 2.07$) addressed the instructor's creativity with providing resources in online courses. The majority of respondents (77.4%) felt that they needed to be more creative in their online courses.

Institution-related issues are also important to online faculty as they can influence satisfaction and motivation; however, none of the four subscale questions that pertain to workload, compensation, preparation, and course evaluations yielded a mean score above 3.0. The item with the lowest mean score ($M = 2.15$) in this subscale related to faculty not associating a higher workload with online courses than compared to traditional courses. The majority (59.4%) of respondents agreed or strongly agreed that they have a higher workload when teaching an online course. These findings are consistent with the literature that points out online instructors invest more time than instructors who teach face-to-face (Bender, Wood, & Vredevoogd, 2004; Cavanaugh, 2005; Conceição, 2006; Hartman, et al., 2000; Spector, 2005).

The scale's reliability is considered high and acceptable; hence results of the analysis show that the OFSS is a valid and reliable instrument for measuring perceived faculty satisfaction in the online environment. The reliability of the student subscales is acceptable; however, the reliability of the instructor and institution subscales is not as high as expected. Instructors may associate some of the institution-related aspects with instructor-related issues and vice versa because institutional policies and directives can directly impact faculty perceptions. These two subscales have a lower number of questions than the student subscale. Further research could be conducted by adding additional questions to the subscales to increase the subscales' reliability.

Some additional limitations of the study need to be pointed out. First, the data analyzed in this study is self-reported data. Second, the sample is geographically limited as only online instructors at one university participated in the study. Third, the sample was relatively small even though the response rate (83.6%) was high. These limitations could make the results particularly dependent on contextual factors. The university is the only public research university in the state, serves many rural areas, and is relatively small. Therefore, the results should be generalized with caution by

the reader. One suggestion for future researchers is to include an institution with a larger population of online faculty or to conduct a multi-institutional research study.

Conclusion

Just as we have to be concerned about appropriate levels of student satisfaction in the online environment because it can impact student motivation and therefore student success and completion rates, we need to continue to focus on faculty satisfaction because it affects faculty motivation. Student and faculty satisfaction are two critical pillars of quality (Sloan Consortium, 2002) in online education.

As mentioned, online teaching is a complex task that requires commitment from faculty and can be time consuming and demanding. As online teaching has become an expectation and an element of instructors' regular teaching loads at many colleges and universities, we should be concerned about faculty burnout. In a study conducted by Hogan and McKnight (2007), online instructors in university settings experienced average emotional burnout levels, high levels of depersonalization, and low levels of personal accomplishment. These results should be of concern to administrators because the success of online programs rests on the commitment of the faculty and their willingness to continue the development and delivery of online courses (Betts, 1998). If positive student outcomes are highly correlated with faculty satisfaction as suggested by Hartman et al. (2000), then administrators will need to pay close attention to levels of faculty satisfaction, because there may be an interaction effect.

The development, implementation, and maintenance of online courses and programs is certainly not inexpensive. Boettcher (2004) estimated that an instructor requires 10 hours to design and develop one hour of online instruction. This estimate does not include the hours instructors spend on faculty training and development. It will be costly to replace experienced instructors who choose to discontinue teaching in the online environment.

Because faculty satisfaction is one of the five pillars of quality (Sloan Consortium, 2002), it is important and needs to be continuously assessed to assure quality online educational experiences for faculty and students.

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