Faculty-Perceived Barriers of Online Education

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Abstract

At institutions of higher learning, there is an increased demand and need for online courses. However, the number of faculty developing and teaching these courses does not match the growth in online education. The purpose of this study was to determine the perceived barriers to online teaching experienced by various faculty groups at a public institution located in the southeastern United States using a new survey instrument, which was developed from recent research findings. This study sought to identify the most prevalent barriers to online instruction for the faculty group surveyed. In addition, these findings may identify prevalent barriers for faculty groups in an effort to inform administrative decisions concerning policy, training, and compensation as well as to facilitate involvement for specific types of online instruction for faculty development. A number of novel and important differences were found in the perceived barriers that exist between faculty groups on four constructs identified through an exploratory factor analysis. The factors found were: (1) interpersonal barriers; (2) institutional barriers; (3) training and technology barriers; and (4) cost/benefit analysis barriers. The results of this study may be of use to other institutions as they develop online instruction training programs.

Keywords: online education, instructional technology, perceived barriers, survey research, online faculty

Introduction

There appears to be a changing standard in the delivery of higher education, as evidenced by the increased number of online course offerings and institutions delivering them. Approximately 6.1 million students (31.3%) took at least one online course in the Fall semester of 2010, which is up considerably from the 4.6 million students (25.3%) enrolled in online courses in the Fall semester of 2008 (Allen & Seaman, 2011; Parsad & Lewis, 2008). In addition, 66% of the Title IV degree-granting postsecondary institutions in the U.S. offered college level distance education during 2006-2007 and the majority of schools (65%) reported that online learning is critical to their long-term strategy (Allen & Seaman, 2011; Parsad & Lewis, 2008). According to institutional chief academic officers, there is also a large perceived demand for (69% of students) and potential for enrollment in (83% of students) online courses in the

coming years (Allen & Seaman, 2007). These data match the recent trends in growth rates for online enrollments (10.1%), especially when compared to stagnant growth rates in the overall higher education student population (0.6%) (Allen & Seaman, 2011). Finally, 96% of large institutions (enrollment of 15,000 or greater) offer fully online programs, usually taught by core faculty (Allen & Seaman, 2006).

Current estimates suggest that between one-third and one-fourth of all post-secondary faculty are engaged in online teaching (Mayadas, Bourne, & Bacsich, 2009; Seaman, 2009). Despite this high rate of faculty involvement in online education and a growth in the demand for online courses and online course offerings, faculty and institutional perceptions of the value, legitimacy, and learning outcomes of online education has not changed significantly in the past decade (Allen & Seaman, 2010, 2011; Totaro, Tanner, Noser, Fitzgerald, & Birch, 2005). The negative perception of online instruction may be especially relevant to particular levels and types of course offerings (Mandernach, Mason, Forrest, & Hackathorn, 2012). These findings are contrary to the evidence on learning outcomes, economic feasibility, and student satisfaction, which support the use of online courses when compared to traditional course offerings (Allen & Seaman, 2010; Means, Toyama, Murphy, Bakia, & Jones, 2010; Tanner, Noser, & Totaro, 2009). Over 80% of faculty with no experience in online teaching or course development and one-third of all chief academic officers believe that online courses are inferior to face-to-face offerings (Allen & Seaman, 2011; Seaman 2009). One potential explanation for this disconnect is that there is an overlap of approximately 80% in the faculty that are both developing and teaching online courses. In fact, only 9.3% of faculty surveyed were currently developing online courses (Seaman, 2009). These data suggest that faculty involvement in and perception of online education are dangerously low. Clearly, faculty will need to evolve their teaching practices to address the increased demand for online course offerings, while the shifting paradigm of higher education must tackle the barriers that impede such faculty involvement. The development of online courses and integration of technology require support at the institutional, departmental, and program levels concomitant with pertinent training, assessment, and regulation (LeBlanc, Pruchnicki, Rohdieck, Khurma, & Dasta, 2007). Several issues could be further explored from this topic, which include: (1) what types of intrinsic and extrinsic factors influence faculty involvement in online instruction; (2) what types of factors influence faculty perceptions of online instruction; and (3) how we can increase faculty participation in online instruction. A large body of literature suggests there are numerous facilitators and barriers to faculty involvement in online education.

Literature Survey

Of the eight conditions that facilitate faculty involvement in online education identified by Ely (1999), the three conditions that are perceived by faculty to have the greatest impact on the implementation of new online programs include adequate institutional resources, appropriate knowledge and skills, and a general dissatisfaction with the status quo (Ensminger & Surry, 2002). Instructors' willingness to participate in distance education is positively impacted by increased training, an expectation of high student evaluation scores, and comfort with the technology, while negatively impacted by communication issues such as lack of visual cues and other forms of social contact (Lee & Busch, 2005). However, faculty-perceived barriers to teaching online also include: a lack of compensation for time and class sizes; added responsibilities; inability to grasp visual cues from students; concerns about the quality of the content; concerns about the ownership of courses developed; inadequate training and resources; increased workload; the value toward promotion and tenure; a lack of administrative and technical support; a lack of experience with online teaching; and a change in the faculty's institutional role (Bower, 2001; Haber & Mills, 2008; Johnson, 2008; Lyons, 2004; Panda & Mishra, 2007; Ryan, Hodson-Carlton, & Ali, 2004, 2005; Schifter, 2002; Seaman, 2009; Shea, 2007; Singh & Pan, 2004). Maguire (2005) identified additional barriers, which include: increased workload that deterred from research time; lack of recognition in both the area of tenure and promotion and equality in regards to face-to-face instruction; and a lack of monetary compensation for developing or teaching online courses. Faculty were also concerned about lack of standards in online education, the impact that the online atmosphere would have on job security, and the quality of instruction.

In an attempt to reconcile the broad-based literature that identifies various individual barriers to online education, Muilenburg and Berge (2001, 2005) developed a comprehensive framework of barrier categories through factor analysis. They identified 10 constructs that incorporate barriers to online education and which form the basis for their framework. While this framework proves useful in reducing and combining variables into meaningful constructs so as to test individual differences, it was written to be inclusive of the perspective of distance education institutions, users, developers, policymakers, trainers, and instructors, and has been used to this end (see Cho & Berge, 2002; Muilenberg & Berge,

2005). However, it is not clear whether perceived barriers to online teaching vary among faculty groups and what role previous experience with online education might have on faculty perceptions, which has obvious implications on training and implementation strategies at institutions of higher learning.

Research Aim

Using the Muilenburg and Berge (2001, 2005) framework as a guide, a new questionnaire with a focused, faculty perspective was developed and used to survey faculty about their perceived barriers to online education. These data were subjected to factor analysis. Four constructs that comprise barriers to faculty involvement in online education were identified and used as variables to assess faculty group differences. In support of the validity of this new instrument, the factors identified in the present study were drawn from those identified by Muilenburg and Berge as well as the prior studies from which they developed their framework.

The purpose of this study, therefore, was to determine the perceived barriers to online teaching experienced by various faculty groups at one public institution located in the southeastern United States using a new survey instrument, which was developed based on recent research findings. This study sought to identify the most prevalent barriers to online instruction for the faculty as well as to identify prevalent barriers for faculty groups in an effort to inform administrative decisions concerning policy, training, and compensation as well as to facilitate involvement for specific types of online instructors. The results of this study may be of use to other institutions as they develop training programs and faculty recruitment strategies for online education in order to meet a growing demand for this type of instruction.

Methods

Participants

The sample consisted of faculty within one state university located in the southeastern U.S. with an enrollment of approximately 4,500 students. Seventy-five faculty participated in the survey, representing a 24.1% response rate. Although the convenience sample used in this study resulted in a small response rate, the sample mirrors the institution's faculty demographics (Table 1). The participants were predominantly white (96%), full-time (90.3%) faculty with an average age of 47.5 years (SD = 11.8). There was an equal distribution of men (51%) and women (49%) and all faculty ranks and tenure appointments were well represented. The participants' self-identified ranks included: adjunct/part-time (10.7%), instructor (9.3%), assistant professor (38.7%), associate professor (22.7%), or professor (18.7%). The participants also self-reported their tenure status as being non-tenure track (24.2%), tenure track (43.6%), or tenured (32.2%) (see Table 1). All four academic colleges at the University were well represented with the School of Science and Health Professions representing the highest proportion, at 31% of the sample. As noted in Table 1, the sample chosen for this study was representative of the University's faculty population.

The levels of experience with online education varied among the participants. Participants that had never taken or taught an online course totaled 33% (n = 24). Those who had taught an online course totaled 54.7%; of that, 6.7% had taught a course that was already designed, 13.3% taught a course that was already designed with modifications, and 34.7% designed their own online course. Overall, 68% of the respondents had some experience either teaching (54.7%) or taking (13.3%) an online course. Two institutionally specific variables capturing the level of online teaching experience identified that the majority of participants were not teaching a structured, pre-designed course (89%) nor had they taken a state-mandated course for faculty teaching an online course (78%), entitled *Facilitated Learning Online* (FLO). The levels of expertise, comfort, and proficiency with technology required for online teaching were also measured by self-report on a scale of 1 to 6, ranging from "not comfortable" to "very comfortable" and "novice" to "expert." In general, the participants reported being more comfortable and proficient with the technology required for online teaching (M = 3.91, SD = 1.61) than their level of expertise in the practice and pedagogy of teaching online (M = 2.92, SD = 1.64). Although many faculty (28%) rated themselves as "novice," 60% rated themselves "comfortable" to "very comfortable" and proficient with technology.

Materials and Procedure

Survey instrument. A researcher-developed questionnaire was created based upon the barriers identified in the literature. The questionnaire was pilot tested twice to assess the face validity and clarity of the questions (pilot test #1) as well as the ease of use of the web-based survey tool and reporting formats

(pilot test #2). Each pilot test used a small convenience sample of graduate students enrolled in a research methods course (n = 10). University faculty members were sent an email with general information regarding the survey, an informed consent, and the URL for accessing the online questionnaire. Three email requests for participation were sent. All procedures were conducted in accordance with and approved by the University's Institutional Review Board.

Table 1. *Faculty characteristics*

Variable	Sample		Population
	n	% of sample	% of population
Ethnicity			
Caucasian	71	96.0	89.0
African American	1	1.0	3.3
Hispanic	1	1.0	2.6
Other	1	1.0	5.3
Gender			
Male	38	51.0	45.9
Female	36	49.0	54.1
Age			
30-44 years	31	41.3	38.9
45-60 years	30	40.0	39.3
Faculty Status			
Full-time	56	90.3	91.1
Tenured	20	32.2	34.0
Tenured track	27	43.6	44.7
Faculty Rank			
Adjunct/part-time	8	10.7	9.3
Instructor	7	9.3	8.2
Assistant professor	29	38.7	42.2
Associate professor	17	22.7	23.1
Professor	14	18.7	17.2
Online Education Experience			
No online experience	24	33.0	*
Taken online course	10	13.3	*
Taught online course	41	54.7	*
- No course design	5	6.7	*
- Course modifications	10	13.3	*
- Designed course	26	34.7	*

* Institutional data not available

The 37-item questionnaire was constructed, distributed, and collected using an online survey management tool called InstantSurvey. The questionnaire consisted of seven demographic variables (academic rank, faculty status, academic school, age, gender, and ethnicity), seven variables concerned with online educational experiences (experiences with general and specific online education, and comfort and proficiency with technology), 22 variables to assess the participants' perceived barriers to online education delivered in a four point Likert-type response format (the anchors included "not a barrier," "somewhat of a barrier," "a barrier," and "a significant barrier"), and one open-ended question to identify barriers not listed in the questionnaire. The 22 barriers listed were identified from the literature review described above and were subjected to an exploratory principal components factor analysis. The other variables were used as independent variables for statistical analyses.

Exploratory factor analysis. To understand how barriers were conceptually linked and to facilitate thematic statistical analysis, an exploratory principal components factor analysis with varimax rotation was performed on the 22 questionnaire items that addressed perceived barriers. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .745 and Bartlett's test of sphericity indicated that correlations between items were sufficiently large, $X^2(231)$ = 880.33, p < .001. The following criteria were used to retain factors: (1) factors with eigenvalues > 1.0; (2) an examination of the scree plot; (3) factors containing at least three items; (4) factors with coefficients of > |.50| on at least one

factor; and (5) factors with high communalities (> .7) ([Kaiser, 1960](#); Stevens, 1986). Using these criteria, four factors were extracted, which combined to explain 59.5% of the variance. These four factors all had high reliabilities, all with Cronbach's α > .80 (Table 2).

Data analysis. Factor loadings were used as dependent variables in one-way ANOVAs or as variables for Pearson's correlations, and analyzed using Statistical Package for the Social Sciences (SPSS) version 16. Partial correlations and ANCOVA were used in some instances to explore the affect of potential mediating variables. Factor loadings were also analyzed in mixed-model repeated measures designs to examine the effects of grouping variables (e.g., gender, academic rank, and experience with online education) across all barrier subscales.

Table 2. *Factor loadings for exploratory factor analysis with varimax rotation of barriers to online teaching*

Barrier	Factor			
	1	2	3	4
Lack of personal relationship with students	.887			
Impersonal	.882			
Lack of quality of course	.592			
Lack of visual cues from students	.868			
Lack of social interaction within the class	.914			
Lack of policies or standards for online courses		.751		
Lack of control over property rights		.783		
Lack of faculty involvement in course decision making		.787		
Online work not valued for promotion and tenure		.546		
Inadequate instructor training			.733	
Inadequate technology support			.792	
Frequent technology failures			.746	
Rapidly changing software or delivery systems			.663	
Increased workload				.889
Time commitment				.914
Inadequate time for grading and feedback				.714
Inadequate compensation for instruction				.610
Eigenvalues	6.114	4.154	2.231	1.470
% of variance	18.99	13.61	13.56	13.33
α	.892	.806	.805	.870

Note. Factor 1 = Interpersonal barriers; Factor 2 = Institutional policy barriers; Factor 3 = Training and technology barriers; Factor 4 = Cost/benefit analysis barriers.

Results

Descriptive Statistics

Of the 22 questions probing for faculty-perceived barriers to online education, all but one were considered at least "somewhat of a barrier" (*M* > 2.0; see Table 3). The faculty in this study perceived the following to be the greatest barriers to online education: increased workload (*M* = 3.02, *SE* = 0.12); time commitment (*M* = 2.97, *SE* = 0.13); lack of personal relationship with students (*M* = 2.74, *SE* = 0.14); frequent technology failures (*M* = 2.74, *SE* = 0.13); and inadequate compensation for instruction (*M* = 2.72, *SE* = 0.14). Those items deemed to be less of a barrier included: lack of faculty involvement in course decision making (*M* = 2.23, *SE* = 0.12); lack of control over property rights (*M* = 2.12, *SE* = 0.13); lack of quality of course (*M* = 2.08, *SE* = 0.12); and personal anxiety/fear with technology/online teaching (*M* = 1.65, *SE* = 0.11) (Table 3).

Exploratory Factor Analysis

Four factors were obtained through exploratory factor analysis, namely: (1) interpersonal barriers (α = .892); (2) institutional barriers (α = .806); (3) training and technology barriers (α = .805); and (4) cost/benefit analyses barriers (α = .870). Table 2 shows the variables with significant loadings on each of the four factors after rotation. Using [Kaiser's (1960)](#) and Stevens' (1986) criteria, none of the variables have significant secondary loadings. The interpersonal barriers factor contains five questions concerning how the following negatively impact faculty engagement in online education: lack of personal relationship

with students; impersonal atmosphere created; impact of interpersonal barriers on course quality; lack of visual cues from students; and lack of social interaction within the class. The Institutional Policy Barriers factor contains four questions concerning how the following negatively impact faculty engagement in online education: lack of policies or standards for online courses; lack of control over property rights; lack of faculty involvement in course decision making; and the value of online work toward promotion and tenure. The Training and Technology Barriers factor contains four questions concerning how the following negatively impact faculty engagement in online education: inadequate instructor training; inadequate technology support; frequent technology failures; and rapidly changing software or delivery systems. The Cost/Benefit Analysis Barriers factor contains four questions concerning how the following negatively impact faculty engagement in online education: increased workload; increased time commitment; inadequate time for student/assignment grading and feedback; and inadequate compensation for instruction. The following variables did not load on any one factor: lack of enrollment limits; inadequate pedagogical skills for technology/online teaching; lack of DSL/fast access for students; and lack of control over student cheating/plagiarism. Therefore, these variables were analyzed individually.

Table 3. *Summary descriptive statistics for the survey questions*

	Mean	**SE**
Increased workload	3.02	±0.12
Time commitment	2.97	±0.13
Lack of personal relationship with students	2.74	±0.14
Frequent technology failures	2.74	±0.13
Inadequate compensation for instruction	2.72	±0.14
Inadequate technology support	2.62	±0.13
Inadequate time for grading & feedback	2.62	±0.13
Lack of social interaction within the class	2.51	±0.13
Inadequate instructor training	2.51	±0.11
Impersonal	2.49	±0.14
Lack of control over student cheating/plagiarism	2.48	±0.14
Online work not valued for promotion and tenure	2.45	±0.15
Rapidly changing software or delivery systems	2.45	±0.11
Lack of visual cues from students	2.40	±0.12
Lack of enrollment limits	2.34	±0.14
Lack of policies or standards for online courses	2.28	±0.13
Lack of DSL/fast access for students	2.28	±0.13
Inadequate pedagogical skills for online teaching	2.28	±0.12
Lack of faculty involvement in course decision making	2.23	±0.12
Lack of control over property rights	2.12	±0.13
Lack of quality of course	2.08	±0.12
Personal anxiety/fear with technology/online teaching	1.65	±0.11

Note. Mean values reflect participant responses to 22 examples of perceived barriers to online education ranging from 1 ("not a barrier") to 4 ("a significant barrier").

Data Analysis

A 2 (gender) x 4 (barrier subscales) ANOVA reveals a significant main effect for gender, $F(1,62) = 4.922$, $p = .03$, $\eta_p^2 = .074$. All subscale scores for males ($n = 33$) were significantly higher than for females ($n = 31$). Men perceived more interpersonal, institutional, training and technology, and cost/benefit analyses barriers to online education than women (Table 4).

A 3 (experience with online education) x 4 (barrier subscales) ANOVA reveals a significant interaction effect, $F(6,177) = 3.552$, $p = .002$, $\eta_p^2 = .107$ (Table 4). Simple effects analyses using familywise error adjustments demonstrate that the ratings on the interpersonal barriers subscale depend on levels of experience with online education, $F(2,61) = 12.049$, $p < .001$, $\eta_p^2 = .29$. Those participants who had "never taken or taught" an online course rated the interpersonal subscale items as more of a barrier than participants who had "taken or taught" an online course as well as those who had "taken and taught" an online course (Fisher's LSD; $p < .05$). Those participants who had some experience with online education (taken or taught) also rated the interpersonal barriers subscale items higher than those who had more

experience (taken and taught) (p < .05). Faculty who had previously taught an online course ranked interpersonal barriers as less of a concern than those who had not taught an online course, $F(1,64)$ = 19.396, p < .001, η_p^2 = .235, regardless of whether they had developed a course, $F(1,63)$ = 5.821, p < .019, η_p^2 = .086 or taught an existing course, $F(1,63)$ = 5.748, p < .019, η_p^2 = .084 (Table 4). Having taken a course specifically designed to facilitate online teaching (FLO) also had a positive effect on this subscale of barriers, $F(1,63)$ = 5.620, p = .021, η_p^2 = .083 (Table 4). Likewise, faculty self-report ratings of expertise with online education (a 6-point Likert scale from "novice" to "expert") and comfort and proficiency with technology required for online teaching (a 6-item Likert scale from "not comfortable" to "very comfortable") are negatively correlated with ratings of perceived barriers on the interpersonal subscale. As the level of expertise with online education, $r(64)$ = -.474, p < .001, and comfort and proficiency increase, $r(65)$ = -.335, p = .006, the items on the interpersonal subscale are rated as less of a barrier (Table 4).

Table 4. *Summary of significant differences between faculty groups on the factors extracted*

	Factor			
	Interpersonal	Institutional	Training/Tech.	Cost/Benefit
Variable	1	2	3	4
Gender	*	*	*	*
Experience with online education	**		*	
Developing course	***			
Teaching existing course	*			
Taking training course	*			
Age			*	
Faculty rank				*
Employment status				*
Tenure status				*

* p < .05. ** p < .01. *** p < .001.

The institutional policies subscale scores varied according to age group, $F(2,60)$ = 3.292, p < .044 , η_p^2 = .10 (Table 4). Faculty aged 45-60 years old rated these items as greater barriers than those in younger age groups (Fisher's LSD; p < .05).

In analyzing the cost/benefit subscale there is a relationship between faculty status and perception of, or the ranking of, cost/benefit barriers, but the barriers deemed to be most important varied as a function of faculty status. As faculty rank increases, so too does the perception of effort required for online teaching, $r(64)$ = .253, p < .042 (Table 4). This relationship is not significant after controlling for age, $r(64)$ = .029, p = .826. A difference is also noted between part-time and full-time faculty on cost/benefit subscale scores. Full-time faculty perceive these to be greater barriers than part-time faculty even after controlling for their level of online teaching experience using an ANCOVA, $F(1,52)$ = 4.442, p = .040, η_p^2 = .137. In addition, non-tenured faculty perceive the time commitment, $F(1,52)$ = 4.972, p = .03, η_p^2 = .082, and workload, $F(1,52)$ = 4.992, p < .03, η_p^2 = .085, required for online teaching to be a greater barrier, and compensation, $F(1,52)$ = 4.891, p < .031, η_p^2 = .089, to be less of a barrier than tenured faculty (Table 4).

Discussion

The findings from this study are in line with the barriers that have been previously documented in the literature, which include intrinsic and extrinsic barriers as well as institutional inhibitors to online teaching (reviewed in Maguire, 2005). The factors identified in this study map onto the conceptual framework of perceived barriers to online education developed by Muilenburg and Berge (2001). Specifically, the institutional barriers, training and technology barriers, interpersonal barriers, and cost/benefit barriers map onto the following Muilenburg and Berge barrier categories, respectively: administrative structure, organizational change, and legal issues; technical expertise, support, and infrastructure; social interaction and program quality; and faculty time and compensation (Haber & Mills, 2008; Muilenberge & Berge, 2001). However, this study also offers a number of novel and important contributions to the literature.

Those faculty who had the least experience with online education perceived the barriers as greater than those who had the most experience with online education. Actually, any type of experience led to a reduction in perceived barriers when compared to those faculty with no online experience. While a few

recent studies support the relationship between experience and support for online instruction in particular contexts (Alshangeeti, Alsaghier, & Nguyen, 2012; Manderbach et al., 2012), the current study further supports the effect of experience on resistance to online instruction. While it is certainly well established that cognitive dissonance (i.e., that negative attitudes are lessened through contrary behaviors) may play a role in this relationship, Ford, Ford, and D'Amelio (2008) suggest that both participant resistance and the use of "change agents" who understand the cognitive and emotive underpinnings of this resistance are important elements of effective change-management solutions. Finally, it is important to consider the effects of participant resistance to online instruction within an overall institutional context. Faculty who are resistant to this type of change may influence: student advisement in relation to taking online courses; the decision of other faculty to engage in online instruction; and the degree to which and quality with which they engage in online education (Ford et al., 2008; Mandernach et al., 2012). Accordingly, institutions of higher learning may increase faculty involvement in online education by providing more opportunities for: (1) resistant faculty to "try out" online instruction to varying degrees; (2) open discussion of issues surrounding online instruction; and (3) experienced online instructors to serve as facilitators for those items described above. In support of these suggestions, a small percentage of the current sample had taken a faculty development course on online teaching (*Facilitated Learning Online*) or a structured faculty certification for teaching in a state-run university system online core curriculum program (the *USG eCORE*), which appeared to significantly lessen faculty-perceived barriers in a number of important domains. An explicit goal of both training courses is to provide a structured experience interacting with and developing online materials while also simultaneously engaging in frequent directed and undirected discourse about barriers to online instruction facilitated by experienced online faculty. Another characteristic of these courses is that they are delivered in small modules. A recent study by Lareki, Martínez de Morentin, and Amenabar (2010) suggests that a modular approach to technology training provides a good framework within which to meet diverse needs of faculty. Institutions of higher learning might benefit from these combined training approaches.

The fact that experience with and the degree of experience with online education breaks down barriers to education is not thoroughly addressed elsewhere in the literature. Several avenues exist to provide exposure and experience to novice online instructors, which include peer mentoring and various training techniques. The amount, type, structure, and method of training for online faculty appear to vary greatly by the size, degree-granting status, and business model adopted by each institution. In fact, approximately 19% of all institutions do not offer any training for teaching online courses, and of those that do offer it, most provide informal and internally run programs (65%), with only a small percentage offering programs run by external agencies (15%) (Allen & Seaman, 2010). The data collected in this study support the use of formal training environments, which rely heavily on peer-mentoring interactions in breaking down barriers to online faculty engagement. The data collected further support the idea that not all faculty will respond equally to all forms of formalized training and that the needs of faculty and their antecedents to change resistance may vary across important demographic variables (e.g., age, faculty rank, tenure status, full-time status, and gender).

This study demonstrated that faculty age impacts perceived institutional barriers. Faculty participants in the older age group (45-60) rated institutional barriers greater than their younger colleagues. Additionally, increased workload, time commitment, inadequate time for student/assignment grading and feedback, and inadequate compensation for instruction were all related to faculty status. As faculty rank increased, so too did their perception of cost/benefit barriers. Older faculty also tend to be the higher-ranked faculty. Those faculty in the 45-60 year age group also rated inadequate compensation as a greater barrier than those aged 30-45 ($p < .05$). Faculty who identified themselves as non-tenured saw interpersonal, training and technology, and cost/benefit barriers as more significant than the tenured faculty, while the tenured faculty rated institutional barriers greater than their non-tenured colleagues. It is possible that the older and more experienced the faculty member, the more comfortable and socialized they are with face-to-face instruction. However, with impending fiscal constraints, all faculty, regardless of rank, may be required to teach more online classes. Therefore, faculty may need a variety of resources addressing time management, technology, and training, with ongoing recognition for the extra workload in learning the online environment.

Overall, the men surveyed documented a greater level of comfort and proficiency with technology ($p = .05$). Yet, all of the barriers were rated higher (more of a barrier) by males when compared to females. This differs from Schifter's (2002) study, in which the females rated the inhibitors in that survey greater than the males. A question-by-question analysis revealed that the men in the current study identified lack

of policies/standards and inadequate compensation ($p < .05$) as primary barriers when compared to their female counterparts. The perspective of gender and the affective issues related to online teaching is an area for additional research (Pollock, Hamann, & Wilson, 2005). Reilly, Gallagher-Lepak, and Killion (2012) conducted a qualitative study in which they identified emotional factors related to online education, which included perceptions of aloneness, anonymity, trepidation, non-verbal communication, and "unknowns." These results indicate that gender differences may impact the perceptions of barriers and benefits of online teaching and learning, suggesting that administrators may need to address group differences through specific training and resources to better meet the needs of the specific target population, and, ultimately, to facilitate online teaching. Further, evaluation tools for online teaching and learning may need to be customized to address institutional uniqueness and demographic variables of teachers and students (Aksal, 2011).

One of the most frequently cited and highly rated barriers reported in this study was time commitment. Of the many studies completed concerning online education, almost all address the barrier of time commitment, regardless of the specific focus of the study (Haber & Mills, 2008; Johnson, 2008; Maguire, 2005; Ryan et al., 2004; Schifter, 2002). Therefore, online educators need either release time or reduced workloads to offset this barrier. A major problem with this perspective is that the institutional demand for online education comes, in part, as a result of its economic benefits (Allen & Seaman, 2011), which would be offset by traditional means of compensation. However, novel means of compensation to online instructors and facilitators should be explored, such as increased valuation of online course development, instruction, training, and moderating in promotion and tenure guidelines (Green, Alejandro, & Brown, 2009; Simpson, 2010). This would help to address several major barriers identified individually and jointly in the current study. It would also address previously reported concerns that colleagues, departmental leadership, and all other promotion and tenure decision-making authorities do not value distance education, nor do they necessarily understand the effort and training needed to successfully engage in it (Green et al., 2009; Moller, Foshay, & Huett, 2008; Orr, Williams, & Pennington, 2009; Schell, 2004; Simpson, 2010).

Limitations of the Study

This study involved one university in the southeastern U.S. using a researcher-developed questionnaire, which limits the generalizability of the results. However, the questionnaire had high internal reliability and other psychometric properties, and produced subscales with questions grouped according to hypothesized factors summarized from the literature. The low response rate on the survey instrument threatens the representativeness of the sample, but the sample appears homogenous with the available population demographics (see Table 1). In addition, this study achieved good sample quality, and the response rate, although low, is in line with the literature describing the utilization of online surveys (Cook, Heath, & Thompson, 2003; Hoonakker & Carayon, 2000; Sax, Gilmartin, & Bryant, 2003). Even still, the low response rate may have introduced a selection or non-response bias by capturing data from one institution and, potentially, of faculty with strong opinions in relation to online education. The access or limitations of distance-learning resources of this university could have also influenced the perceptions of barriers to online teaching by the participants. In addition, the online survey had a 21.4 % response rate, which was likely due to the timing of survey administration (i.e., towards the end of the academic semester). It is also possible that faculty who perceived advantages to online teaching chose not to participate in a study seeking information about perceived barriers. Despite these limitations, the findings from this study are compatible with the current literature. A novel feature of this study was the exhaustive inclusion of the barriers to online teaching previously reported and the development of a survey instrument from an existing framework (Muilenburg & Berge, 2005), which addresses several important constructs not previously assessed. In addition, the points raised here speak to the need for further, expanded studies exploring the particular needs and attitudes of faculty groups in reference to online teaching and training.

Conclusion

Given the increased institutional demands for online teaching, coupled with potentially outdated technology, limited financial resources, increasing student enrollments, faculty time commitments and workloads demands, faculty and administrators face the challenge of addressing these issues so that the students' needs and learning outcomes in online environments can be better met. The results of this study suggest that the perceived barriers to online teaching vary according to faculty gender, experience, and rank. More research is needed to determine the critical intrinsic and extrinsic barriers and institutional

inhibitors to online teaching from all faculty by using a larger number of participants from a diverse sample of institutions. Future research could explore the perceived benefits and barriers as perceived by students as well as formally linking student learning outcomes with online teaching skills of faculty.

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