Designing Effective Online Courses: Exploring the Relationships Amongst Online Teaching Self-efficacy, Professional Development, Online Teaching Experience, and Reported Implementation of Effective Higher Education Online Course Design Practices

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Abstract

How best to prepare and support higher education faculty to design and teach effective online courses is a topic of great significance to higher education institutional leaders and faculty developers. This study explored how hours of professional development along with online teaching and learning experiences were related to online teaching self-efficacy and the extent to which participants reported implementation of effective online course design practices. Using a non-experimental quantitative correlational explanatory research study design, data were collected using a questionnaire. Participants included 104 online faculty from a large public higher education system located in the upper Midwest that includes both community colleges and universities. The findings suggested that both online teaching self-efficacy and self-reported ratings of implementation of effective online course design practices were higher when individuals have completed at least 20 hours of professional development meant to prepare them to teach online, have experience as an online instructor and/or online learner, and have participated in a peer review of their online course. The findings offer insights into how those with varying levels of online teaching self-efficacy rate their online course design practices and suggest that faculty may not accurately self-assess their course design abilities. The results and implications for those who are planning for and providing professional development meant to prepare faculty to teach online are discussed.

Keywords

Author Bio

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Introduction

Many factors have an impact on the quality of an online course and the preparedness of faculty to create and deliver a quality learning experience is one of those factors (Ali et al., 2005; Meyer & Murrell, 2014; Stupnisky et al., 2018). Faculty may not be well prepared or supported to create and successfully deliver courses that use technology given that forty percent of United States higher education institutions do not require their faculty to complete any type of professional development to teach online (Garrett et al., 2020). Nationally and regionally, the number of online courses and programs continues to grow at institutions of various types and sizes in the United States (Garrett et al., 2019; Magda, 2019; Seaman & Seaman, 2017). Institutions are planning for accelerated growth in online programming in the aftermath of the COVID-19 pandemic that necessitated a shift from face-to-face delivery to various forms of online delivery (Garrett et al., 2021). The continued growth of online programming underscores the need for discussion about the factors that impact course design decisions made by faculty as they design and redesign their courses for online delivery.

Various studies have found that student satisfaction, student perception of learning, or the achievement of student learning outcomes are impacted by the course design and organization, course interaction and engagement, instructive feedback, clear learning objectives, and appropriate assessment strategies (Barczyk et al., 2017; Jaggars & Xu, 2016; Joosten & Cusatis, 2019). Higher education institutional leaders and faculty are interested in what is needed to best prepare and support faculty to design and teach online courses that take into consideration the many factors that contribute to a quality online learning experience.

The purpose of this study was to investigate what relationships exist between the self-efficacy ratings for online higher education faculty when compared to their teaching

experience levels, their professional development, and the degree to which they have implemented effective online course design practices. This study sought to gain an understanding about how online faculty perceive their online teaching competencies and their ability to effectively design online courses when compared to their teaching experience and professional development. The topic of this study is especially pertinent in today's higher education environment as institutions struggle to find the best approach for supporting and preparing faculty to improve their online teaching practice. Many public institutions in higher education do not have the resources, support, or professional development to provide a consistent approach to quality assurance related to the design and delivery of online courses. This may result in faculty who find themselves teaching online with limited preparation, professional development, and support. Additionally, beginning in March 2020, faculty teaching campus-based classes were forced to pivot to some version of online delivery due to the COVID-19 pandemic. This created a situation where nearly all higher education faculty were teaching some version of online courses, and many are continuing to do so. Due to the nature of this emergency, this rapid shift to online delivery or remote instruction occurred with limited time and support which highlighted and exacerbated existing gaps that in how institutions were able to prepare and support their online faculty (Hodges, 2020).

The literature includes many studies about faculty motivation to complete professional development (Hardre, 2012; Lian, 2014; Mohr & Shelton, 2017; Stupnisky et al., 2018), the role of faculty in designing online courses (*EDUCAUSE 2019 Horizon Report Preview*, 2019; Hardre, 2012; Horvitz et al., 2014), and increasingly provides insights into the role of instructional designers in supporting faculty. There have also been multiple attempts to list the competencies needed by online faculty to be successful in their efforts (Baldwin et al., 2018;

Diehl, 2016; Jaggars & Xu, 2016). Additionally, there have been many studies examining the role of self-efficacy in relation to how faculty feel about their ability to teach online courses or their willingness to move to an online delivery modality the role of self-efficacy in faculty assessment of their ability to teach online courses (Anderson et al., 2016; Corry & Stella, 2018; Fishback et al., 2015; Horvitz et al., 2014; Magda, 2019; Richter & Idleman, 2017).

This study was meant to bridge an existing gap in the literature regarding how faculty self-efficacy for online teaching and faculty experience or background, professional development completion, online teaching experience, and the implementation of effective online course design practices were related. It was also meant to provide information that might be used by institutions and/or faculty developers to consider when planning for or providing professional development or support for faculty who are or will be teaching online.

Theoretical Framework

Self-efficacy, which is based on Bandura's social cognitive theory, was used as the theoretical framework for this study. Bandura defined self-efficacy as "People's beliefs about their capabilities to produce effects" (p. 71) or in other words, the beliefs an individual has regarding their ability to perceive, regulate, and evaluate their behavior in various situations to achieve specific outcomes (Bandura, 1994). Self-efficacy beliefs affect human functioning in various ways including cognitive processes, motivational processes, affective processes, and selection processes. Cognitive processes are impacted by self-efficacy beliefs in that the ability to accurately perceive one's abilities will directly impact the type of goals or challenges that an individual is willing to pursue. According to Bandura (2009), individuals with higher self-efficacy set higher goals for themselves and are more committed to achieving them. Self-efficacy beliefs also impact motivation. Those with high self-efficacy beliefs

believe they can do something and therefore, see failure as related to the amount of effort they applied. Conversely, those with low self-efficacy beliefs may attribute failure to their lack of ability rather than to lack of effort. This motivational influence contributes to the type of goals an individual sets, the amount of effort expended towards that goal, the amount of perseverance when faced with difficulties, and how the individual deals with failure.

Corry and Stella (2018) describe teaching self-efficacy as "a measure of the degree to which a teacher believes he/she has the ability to perform correctly the tasks suggested as best practices for teaching" (p. 8). Pajares (1996) explained that outcome expectations are important in the area of academic motivation. Teachers have outcome expectations when they engage in various teaching activities. They create and implement the activities and interpret the results or outcomes. These interpretations are used to inform their beliefs about their teaching ability. If they experience success consistently, this leads to increased self-efficacy. If they determine that the activity was unsuccessful, this may lower their self-efficacy and confidence.

Methodology

This was a non-experimental quantitative correlational explanatory study that used a pragmatic approach to inquiry. The complete study, which was a sequential two-phase study, included multiple research questions and is described in the dissertation *Designing Effective Online Courses: Exploring the Relationships Amongst Teaching Self-efficacy, Professional Development, Faculty Experience, and Implementation of Effective Online Course Design Practices* (McMahon, 2021). The study methodology for the first phase is included in this article.

This study looked specifically at the relationships among online teaching self-efficacy, faculty experience, professional development, and implementation of effective course design practices among higher education faculty teaching online (or partially online) courses. The research questions were structured to identify the strength and direction of the relationship between the study variables. The primary research question (RQ1) looked specifically at the relationships among online teaching self-efficacy, higher education instructors' teaching experience, professional development, and implementation of effective online course design practices. Secondary research questions explored in more detail the extent of the relationships among these variables. The researcher received approval to conduct this study from the Minnesota State University, Moorhead (MSUM) Institutional Review Board (IRB).

Data Collection

The study used a convenience sampling method. The target population was community college and university faculty teaching online courses. The accessible population for this study was the faculty who design and teach online courses in a large public system of higher education located in the Midwest area of the United States. This system, which serves over 350,000 students each year, is the third-largest public higher education system in the United States. It consists of seven universities and thirty community colleges, including small, rural, and large, urban institutions. Statistics on the number of faculty who were currently teaching online within the system at the time of this study were not available as this is not information the system makes publicly available. At the time the data were gathered, many of the institutions in this study were not providing instructional design support and did not require any specific type of professional development before teaching online. The professional development offered by these institutions was based primarily on topics of

faculty interest or was based on what the institution leadership or faculty development personnel decide was most needed (Brown et al., 2020).

Instrumentation

Phase I of this study involved the creation and distribution of a questionnaire that was created in Qualtrics. The questionnaire included a 22-item demographics section, a 47-item section for the Online Teaching Self-Efficacy Inventory (OTSEI) instrument created by Dr. Kevin Gosselin (Gosselin, 2009), and an 11-item section based on the *Standards from the Quality Matters Higher Education Rubric, 6th Edition* that asked about effective online course design practices (EOCDP).

OTSEI. The OTSEI, which is meant to assess online teaching self-efficacy, includes 47 items organized into the following five scales: (1) Web-Based Course Structure; (2) The Online Alignment of Objectives, Instruction, and Assessment; (3) Course Content Migration; (4) Virtual Interaction; and (5) Selection of Technological Resources. According to Gosselin, 2009, the internal consistency of the five scales, established with Cronbach's alpha, ranged from .84 to .95. Gosselin also reported that analysis of construct validity concluded that the average variance accounted for across the five scales was 53.16%. Content validity was not available from the author of the OTSEI content validity analysis was included in this study using a procedure described by Lawshe (1975). A *content evaluation panel* comprised of persons knowledgeable about required competencies for online higher education instructors was convened. The panel of fourteen experts included individuals from across the United States with extensive experience teaching online, with designing effective online courses, and/or with supervising online faculty. Using the scores obtained from these content experts, a

Content Validity Ratio (CVR) and Content Validity Index (CVI) were computed. The CVI overall score was .40.

   EOCDP. The EOCDP rating scale was based on the *Standards from the Quality Matters Higher Education Rubric, 6th Edition* created by the Quality Matters (QM) organization. In this section of the questionnaire, the forty-two specific standards from the *Quality Matters Higher Education Rubric, 6th Ed.* were grouped into eleven general statements. A question about prior involvement with a QM official course peer review was also included in the questionnaire. The quality assurance tools offered by the QM program include a set of nationally recognized course design standards for higher education as well as a rigorous, peer-review process that together are used to assess the quality of an online course. The Quality Matters higher education rubric was chosen specifically for this part of the study because (a) the standards are supported by the research literature, (b) it is updated regularly to reflect new findings, and, (c) it is widely utilized in the United States (as well as many other countries). The use of the Quality Matters rubric for this purpose was approved by the Quality Matters organization. The rubric, now in its 6th edition, was first created in 2004. At that time, Legon (2006) examined the validity of the instrument by comparing it to a set of standards that were endorsed by the Council of Higher Education Accreditation (CHEA) and the eight regional accrediting agencies. Legon found that the "QM Rubric is fully consistent with published accreditation standards for online education" and went on to add that "the QM Rubric can demonstrate an institution's (or program's) commitment to quality assurance of its online offerings and its success in achieving a well-defined standard for course design" (p. 9). The QM Higher Education rubric is based on standards of best practice and instructional design principles and includes a distinct focus on the needs of the learner (Shattuck, 2015).

Data Collection

The questionnaire was broadly distributed via an email invitation that was sent to potential faculty participants using electronic communication channels routinely used within this higher education system and among institutions within the system. This included the use of various system-level listservs, institution-specific distribution lists, and personal outreach from the researcher to institution-specific contacts. Responses were accepted between July and September of 2020.

Data Analysis

Data from the Qualtrics survey were exported to SPSS for analysis. Data analysis included detailed descriptive statistics as well as multiple inferential statistics to determine the relationships among the variables. Because the assumptions for use of the Pearson Product Moment Correlation were violated, nonparametric tests were used instead to analyze the data to explore relationships among the self-perceived competency level for online teaching competencies, various demographic variables, and self-assessment of inclusion of effective course design elements. These tests included Spearman's rank-order correlations, Kendall's tau-b correlations, and Mann-Whitney U rank order correlations. The researcher looked for differences among the responses as compared to the multiple variables included in the questionnaire to determine whether or not things like previous experience, professional development, etc. show relationships of value. Effect sizes were calculated for Mann-Whitney U tests as described by Lenhard and Lenhard (2016).

Results

The questionnaire was completed by a total of 104 higher education faculty. This number of participants included seven individuals who indicated they were teaching their first

online course as a result of the COVID-19 pandemic. Of the 104 participants, the majority

were women (78.8%), White (96%), full-time (76%), community-college faculty (65%). The

ages of the participants ranged from 28 to 73 years with a mean age of 51.41 years. Higher

education teaching experience ranged from 0 – 42 years with a mean of 15.99 years. Online

teaching experience ranged from 0 – 25 years with a mean of 9.17 years. The participants

included individuals from higher education institutions of a range of sizes including small,

mid-sized, and large institutions that were all part of a system of public higher education

located in the upper Midwest. Study participant demographic information of all participants is

summarized in Table 1.

The areas of online teaching expertise of the participants included more than fourteen

areas with the following most reported: Health Sciences, Language Arts, Social Sciences,

Natural Sciences, Education, Technology/Computer Science, and Business.

Table 1

Participant Demographic Characteristics

Participant Characteristic	n	%
Gender		
Women	82	78.8
Men	20	19.2
Non-binary	1	1.0
Prefer not to answer	1	1.0
Ethnicity		
Hispanic	1	1.0
Indian	1	1.0
Multi-Ethnic	2	1.9
Native American	1	1.0
White	96	92.3
Prefer not to answer	1	1.0
Highest Education Level		
Associate's Degree	2	1.9
Bachelor's Degree	4	3.8
Master's Degree	50	48.1
Doctorate Level Degree	48	46.1
Faculty Employment Status		
Full-time (not adjunct or temporary)	79	76.0
Part-time (not adjunct or temporary)	1	1.0
Full-time (adjunct or temporary)	9	8.7
Part-time (adjunct or temporary)	15	14.4
Institution Type		
Community and/or Technical College (2-year institution)	68	65.4
State University (4-year institution)	36	34.6
Institution Size		
Less than 1,000 students	7	6.7
1,000 – 5,000 students	55	52.9
5,001 – 10,000 students	25	24.0
10,001 – 15,000 students	12	11.5
More than 15,000 students	1	1.0
Don't know	1	1.0
Experience as an online student	86	82.7
Participated in a QM official course review	33	31.7
Taught first online course due to COVID-19 pandemic	7	6.7

| Participant Characteristics	M	Mdn	SD
Age[a]	51.41	52.0	10.55
Years of Higher Education Teaching Experience	15.99	15.0	9.05
Years of Higher Education Online Teaching Experience[b]	9.17	9.0	6.38

Note. n = 104.

a. Two participants did not answer this question.

b. One participant did not answer.

The results for research question 1 demonstrated that there were statistically significant relationships between each of the primary study variables of online teaching self-efficacy, effective online course design practices, professional development, online teaching experience. The distribution of the results for the two primary study variables, online teaching self-efficacy (OTSE) and effective online course design practices (EOCDP), is presented in Figures 1 and 2. The total number of responses included for some variables is different because some participants did not answer every question on the questionnaire. Items with no answer were not included in the calculations. The OTSE and EOCDP score distributions were both negatively skewed.

Figure 1

*Online Teaching Self-Efficacy (OTSE) Score Distribution*
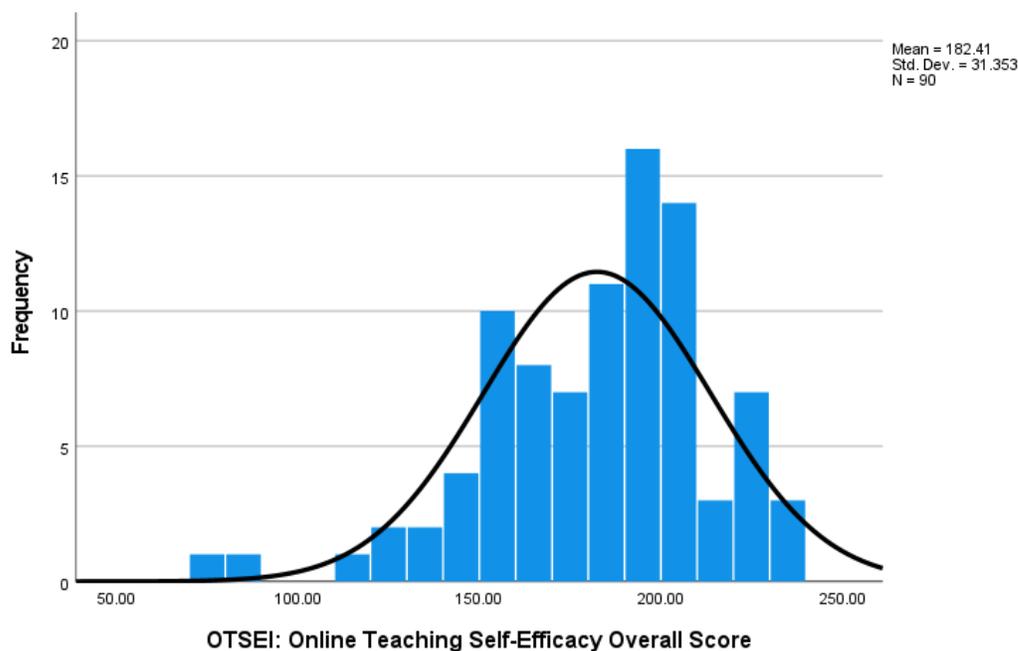
The variable *online teaching self-efficacy* was analyzed using an Online Teaching Self-Efficacy (OTSE) score for each participant which was derived by adding the scores for

the 47 Online Teaching Self-Efficacy Inventory items from the questionnaire together to

arrive at a total OTSE score. Ninety participants answered every item on the OTSE Inventory.

The highest possible score on the OTSE Inventory was 235. The lowest score reported was 75

while the highest was 235. The mean score was 182.41 (*Mdn* =188.0, *SD* = 31.35).

Figure 2

Effective Online Course Design Practices (EOCDP) Score Distribution
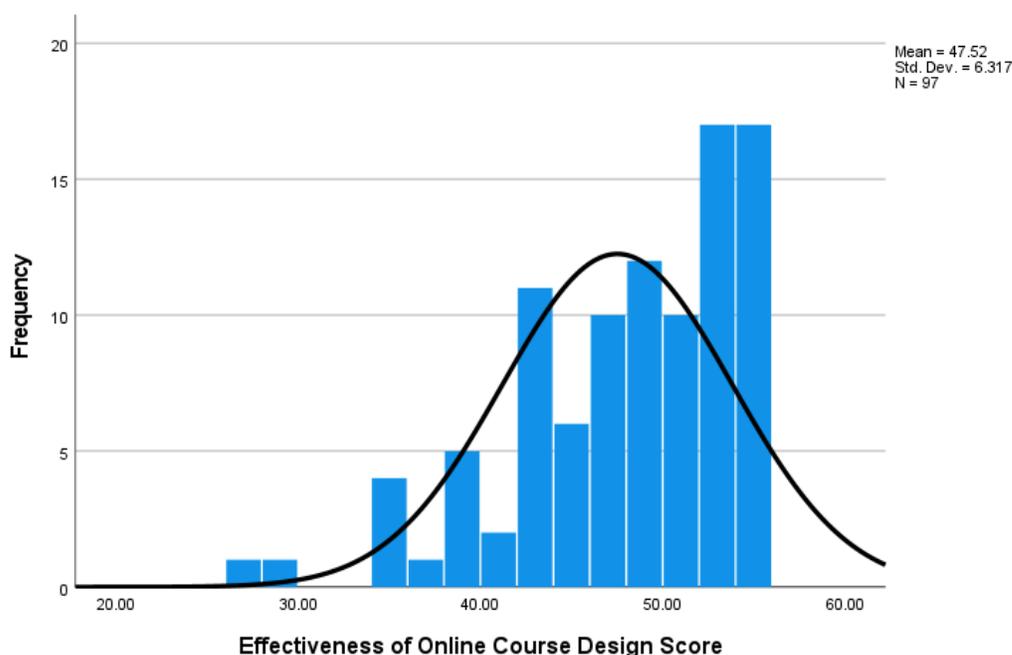
The variable of *effective online course design practices* was examined using the

EOCDP score that was based on an 11-item section on the questionnaire. Scores for this

portion of the questionnaire were added together to obtain a participant overall score. The

lowest reported score was 27 while the highest was 55. Eleven participants (11.34%) of the

total of 97 participants reported the highest possible score which was 55. The mean score was

47.52 (*Mdn* = 49.0, *SD* = 6.32).

Using Spearman's rank-order correlation to examine the relationship between OTSE and EOCDP, the results from 90 participants were compared. There was a statistically significant, strong positive correlation between the OTSE score and the EOCDP score, $r_s(88) = .758$, $p < .001$. The scatterplot in Figure 3 illustrates the relationship between these two primary study variables.

Figure 3

Scatterplot of OTSE Score by EOCDP Score
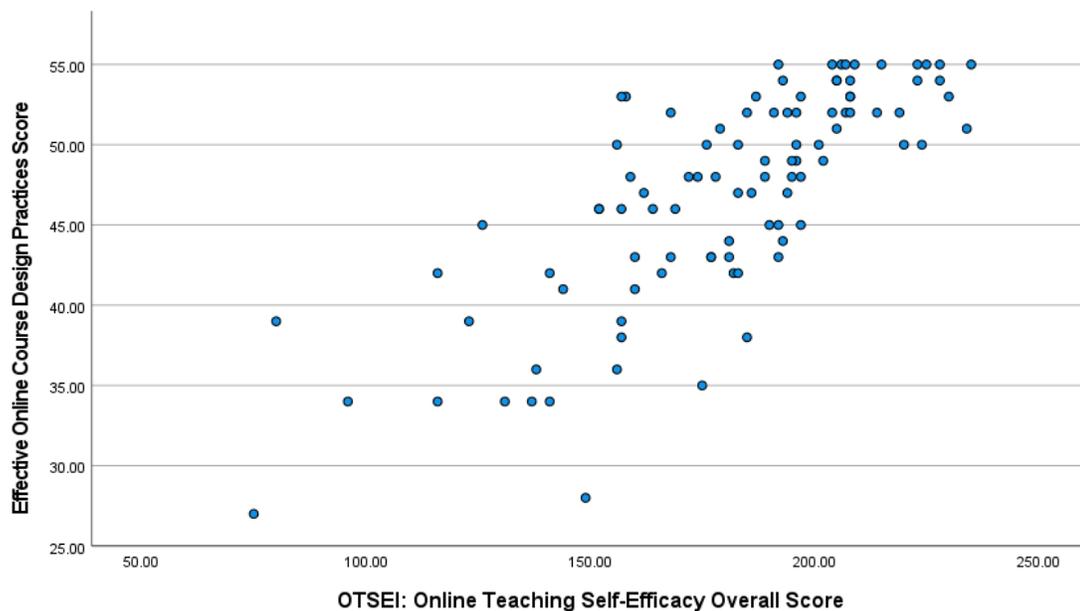
Spearman's rank-order correlation was used to explore the relationship between OTSE and years of online teaching experience using the results from 90 participants. The years of online teaching experience showed a weak association with the OTSE score, $r_s(88) = .255$, $p < .015$. Spearman's rank-order correlation was also used to explore the relationship between online teaching experience and the EOCDP scores for 97 participants. There was a

statistically significant, mild positive correlation between the years of online teaching experience and the EOCDP score, $r_s(95) = .279$, $p < .006$.

The relationship between hours of professional development completed and both EOCDP and OTSE scores were examined using Kendall's tau-b correlations. There was a moderate, positive association between hours of professional development completed and the EOCDP score, which was statistically significant, $\tau_b = .334$, $p = .000$ ($n = 97$). There was a moderate, positive association between hours of professional development completed and the OTSE score, which was statistically significant, $\tau_b = .359$, $p = .000$ ($n = 90$).

Secondary research questions were explored to further explain the relationships as well as to determine effect sizes. As each of the secondary research questions was addressed, the data were explored in various combinations using nonparametric inferential and descriptive statistics with the intent of identifying patterns or trends in how variables' relationships manifested in the data. Mann-Whitney U tests were performed to make comparisons among groups to determine impacts on OTSE scores and EOCDP scores. A summary of the results obtained after performing each Mann-Whitney U test is presented in Tables 2 and 3. Statistically significant differences with intermediate effects of practical significance on OTSE scores were found with completion of more than 20 hours of professional development and participation in an official QM course review.

Table 2

Summary of Particular Demographics on OTSE using the Mann-Whitney U test

Demographic Characteristic	Online Teaching Self-Efficacy (OTSE)					
	n	*Mean*	*SD*	*Mean Rank*	*Median*	*p* value[a]
Gender	89	182.41	31.35	--	188.0	.413
Women	72	182.76	33.02	46.09	189.0	
Men	17	179.59	24.27	40.38	178.0	
Institution Type	90	182.41	31.35	--	188.0	**.026***
2 – Year Institution	59	187.27	31.81	49.94	192.0	
4 – Year Institution	31	173.16	28.73	37.05	179.0	
Years of Online Teaching Experience	90	182.41	31.35	--	188.0	.125
0 – 5 years	27	172.56	38.48	39.06	185.0	
More 5 years	63	186.63	27.01	48.26	191.0	
Hours of Professional Development	90	182.41	31.35	--	188.0	**.000***
0 – 20 hours	39	167.31	32.65	32.95	174.0	
More than 20 hours	51	193.96	25.01	65.10	195.0	
QM Official Course Review	90	182.41	31.35	--	188.0	**.004***
Yes	31	195.52	24.91	56.45	197.0	
No	59	175.53	32.36	39.75	182.0	
Online Student Experience	90	182.41	31.35	--	188.0	.185
Yes	75	184.91	29.39	47.13	189.0	
No	15	169.93	38.51	37.33	168.0	

Note. a. Asymptotic significance is displayed for all *p* values.

* The significance level is .050.

Statistically significant differences with large effects of practical significance on EOCDP scores were found with two variables: a) completion of more than 20 hours of professional development, and b) participation in an official QM course review. Statistically significant differences with intermediate effects of practical significance on EOCDP scores were found with two variables: a) more than 5 years of online teaching experience, and b) online learner experience.

Table 3

Summary of Particular Demographics on EOCDP Scores using the Mann- Whitney U test

Demographic Characteristic	Effective Online Course Design Practices					
	n	*Mean*	*SD*	*Mean Rank*	*Median*	*p* value[a]
Gender	95	47.52	6.32	NA	49.0	.658
Women	76	47.55	6.41	48.63	49.0	
Men	19	47.16	6.23	45.50	49.0	
Institution Type	97	47.52	6.32	NA	49.0	**.037***
2 – Year Institution	65	48.22	6.52	53.17	50.0	
4 – Year Institution	32	46.09	5.72	40.53	46.0	
Years of Online Teaching Experience	97	47.52	6.32	NA	49.0	**.026***
0 – 5 years	31	45.35	7.11	39.71	47.0	
More 5 years	66	48.53	5.69	53.36	50.0	
Hours of Professional Development	97	47.52	6.32	NA	49.0	**.000***
0 – 20 hours	41	44.27	6.90	34.77	46.0	
More than 20 hours	56	49.89	4.63	59.42	51.0	
QM Official Course Review	97	47.52	6.32	NA	49.0	**.000***
Yes	33	51.52	3.73	68.67	53.0	
No	64	45.45	6.41	38.86	46.0	
Online Student Experience	97	47.52	6.32	NA	49.0	**.033***
Yes	82	48.18	5.81	51.60	49.5	
No	15	43.87	7.87	34.77	43.0	

Note. a. Asymptotic significance is displayed for all *p* values.

* The significance level is .050.

Completion of professional development was shown to have a relationship with both the EOCDP score and the OTSE score. In a multi-select question, participants were asked about their most preferred methods for improving their knowledge about designing and teaching online courses. The differences based on the frequency of responses by institution type are reported in Table 4.

Table 4

Professional Development Preferences

| Participant Preferences*	2 – Year Institution (*n* = 68)			4 – Year Institution (*n* = 36)		
	Rank	*n*	%	Rank	*n*	%
Experimenting with teaching strategies and observing results	1	52	76.5%	1	27	75%
Talking with colleagues from your own institution	1	52	76.5%	2	22	61.1%
Using Web-based resources	3	42	61.8%	7	13	36.1%
Talking with colleagues from other institutions	4	41	60.3%	7	13	36.1%
Participating in online workshops hosted by your institution	5	35	51.5%	4	18	50%
Participating in online workshops hosted outside of your institution	6	34	50%	4	18	50%
Attending face-to-face workshops and conferences outside your institution	6	34	50%	10	11	30.6%
Attending face-to-face workshops and conferences within your institution	8	33	48.5%	6	14	38.9%
Reading research literature on teaching and learning	9	27	39.7%	3	19	52.8%
Following guidance from a faculty mentor	9	27	39.7%	12	7	19%
Serving as a mentor or course peer reviewer at my institution	11	21	30.9%	13	3	8.3%
Reproducing the teaching strategies used by your instructors when you were a student	12	17	25%	14	8	22.2%
Working one-to-one with an instructional designer	13	15	22%	7	13	36.1%
Seeking new teaching strategies via social media	14	14	20.6%	13	6	16.7%

Note. n = 104 (Includes New-Online Faculty)

*This was a multi-select question.

The item *Experimenting with teaching strategies and observing results* was selected most frequently by both 2-yr faculty and 4-yr faculty (76.5% and 75%, respectively). *Talking with colleagues from your own institution* was also frequently selected with 76.5% of 2-yr faculty and 61.1% of 4-yr faculty indicating that preference. For 2-yr faculty, their next most frequently selected items were *Using web-based resources* (61.8%) and *Talking with colleagues from outside your institution* (60.3%). These items were ranked much lower by the 4-yr faculty (both items were at 36.1%). Items ranked higher by the 4-yr faculty were *Reading research literature on teaching and learning* (52.8% versus 2-yr faculty at 39.7%) and *working one-to-one with an instructional designer* (36.1% versus 2-yr faculty at 22%).

Discussion

Because the different variables were analyzed multiple times and in multiple ways, the results and discussion are presented by variable. While the results suggest correlation among several variables, the findings cannot be used to suggest causation. Figure 4 provides a summary illustration of the relationships among the variables including the strength or significance of these relationships. What the overall results indicated was that online teaching self-efficacy (OTSE) had a strong positive correlation to the self-reported implementation of effective online course design practices (EOCDP). Completion of professional development (PD) had a large effect size on both OTSE and EOCDP. Participation in course peer review activities had a large effect size on EOCDP and an intermediate effect size on OTSE. Online teaching experience and online learning experience had an intermediate effect size on EOCDP but limited effect on OTSE. No correlations with OTSE or EOCDP were found with age or gender.

Figure 4

Illustration of Effects on Self-Efficacy and Effective Online Course Design Practices

Impacts on Self-Efficacy & Course Design
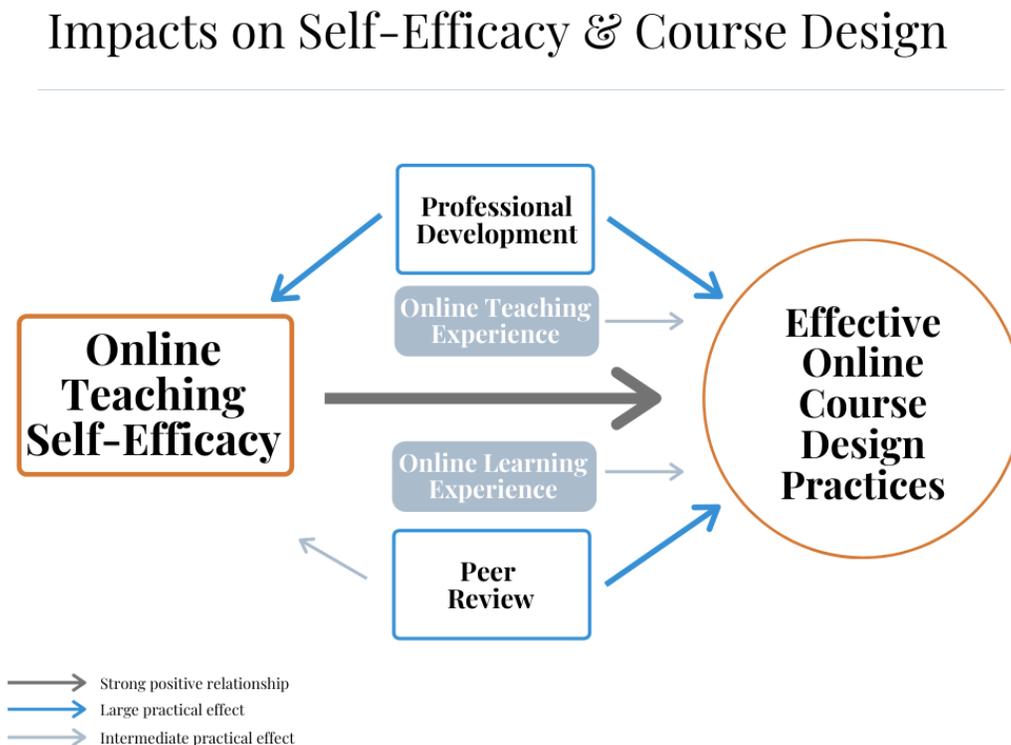
The study showed that there is wide variation in how individuals rate their OTSE and self-assess their implementation of EOCDP. The study did include a small number of individuals who were newly online due to the shift to online delivery created by the COVID-19 pandemic. Some of these individuals, as well as some of the other participants who indicated they were new online faculty and who had not completed much professional development and/or who had no experience as an online learner, reported relatively high OTSE and high ratings of implementation of EOCDP. Conversely, some of the individuals who reported lower OTSE or low ratings of EOCDP implementation had completed more significant amounts of professional development. The data gathered for this study were self-

reported data gathered using a questionnaire that required reliance on the participants to provide honest appraisals of their self-efficacy and their perceptions of course design ability. It was assumed that the participating faculty answered honestly after reflecting on their perceptions and practices however there is no way to ascertain the truthfulness of their responses.

Online Teaching Self-Efficacy

Online teaching self-efficacy (OTSE) includes knowledge, skills, and abilities needed by teachers to be effective in the online context. This study focused on the relationships among OTSE, completion of professional development (PD), online teaching experience, and the extent that the faculty implement effective online course design practices (EOCDP).

The two variables that were strongly associated with OTSE were hours of professional development completion and participation in official QM course reviews. Participants in this study, whether newer to online teaching or highly experienced with online teaching, reported generally high levels of OTSE. The finding that completion of a greater number of hours of PD was related to higher OTSE. These findings are similar to the work of Wise (2019) who also found that online faculty reported high OTSE and that completion of professional development appeared to be related to higher OTSE scores. This study did find that more years of online teaching experience were related to higher OTSE although the effect size was small. This is consistent with Anderson et al. (2016) who found that self-efficacy or confidence increases over time based on faculty experience. However, in this study, there was no statistically significant difference between the OTSE scores for novice (<5 years) versus experienced (>5 years) online instructors.

Interestingly, in this study, there were participants with high self-efficacy ratings and relatively little online (or face-to-face) teaching experience or limited professional development. The significant difference in OTSE scores became apparent when the participants had completed greater than 20 hours of PD. However, even those with fewer than 10 hours of professional development reported generally high levels of OTSE while some with a high number of hours of PD reported low OTSE. Additionally, there were individuals with lower OTSE scores who had significant amounts of online teaching experience or greater amounts of professional development. In other words, while completion of a greater number of hours of PD or having more years of online teaching experience was correlated to having higher OTSE scores, this was not consistent for all individuals. This phenomenon raises the question of whether or not some of these faculty have over-estimated or under-estimated their abilities and therefore their confidence to perform online teaching competencies. This question is supported by Pajares (1996), who indicated that faculty may not accurately perceive their abilities when appraising their self-efficacy.

Participation in an official QM course review was one of the variables related to higher OTSE. Participation in a Quality Matters official course review may lead to greater feelings of self-efficacy due to the external validation of mastery related to course design decisions that the course review experience provides. Additionally, those who completed the greatest number of hours of professional development and had successful online teaching experience over time may also have experienced mastery that led to greater self-efficacy.

Participants in this study rated their online teaching self-efficacy highest in the areas of *Course Content Migration* and *Alignment of Objectives, Instruction, and Assessment*. This would seem to indicate that these participants were confident in the foundational teaching

skills that faculty are expected to possess related to choosing and providing appropriate content and ensuring that the primary course components such as objectives, assessments, activities, and strategies for instruction were aligned. This is important to consider because faculty make decisions about where to spend limited resources (time and funds) on professional development based on their confidence in their knowledge, skill, or ability in a given area. If they are not accurately appraising their ability but are feeling confident that they are knowledgeable or skilled enough, it is possible choices regarding participation may not be based on what might be most beneficial.

Effective Online Course Design Practices

This study found that the following variables were related to EOCDP: OTSE, PD, online learning experience, online teaching experience, and participation in QM course reviews. While the findings cannot be used for prediction, they seemed to indicate that faculty with a higher sense of OTSE were more likely to report that they have implemented EOCDP in the online courses they have created. The findings also indicated that individuals who have completed more than 20 hours of PD, who had more online teaching experience, who had experience as an online student, and/or who had previously had a course reviewed using the Quality Matters course review process were more likely to report that they use EOCDP. The results showed that there were relationships among these variables, however, they were not related in an easily defined way. There was an indication that, in combination, these variables were related to the higher EOCDP scores. In other words, an individual who had more PD, had online student experience, had online teaching experience, and had participated in a QM review was likely to have a higher EOCDP score than a participant who did not have one of those experiences.

Topical areas with higher EOCDP scores were related to *course alignment*, *measurable learning objectives*, *course navigation*, *sufficient instructional materials,* and *learner engagement.* The lowest scores were for the items related to *accessible course design*. These EOCDP scores would seem to indicate that these participants were confident in both the foundational design skills (e.g., navigation) as well as the teaching skills that higher education faculty are expected to possess. It is not a surprise that these are the same areas or topics for which participants reported higher levels of OTSE. The participants who completed more PD reported generally higher EOCDP scores overall and also had a much smaller range of scores regardless of whether or not they had participated in a QM course review. This is likely because those with more PD had a better understanding of not only what each question was asking them to consider but also of what it looked like when effectively implemented in their course. However, because their courses were never evaluated there is no way to confirm whether their own beliefs are reflected in the design of their online courses.

Overall, study participants tended to rate themselves highest in the areas of *alignment*, *measurable learning objectives*, *learner interaction and engagement*, and *course navigation* while the ratings for designing for *accessibility* were the lowest. Administrators and those charged with planning for and providing faculty development meant to prepare faculty for teaching online should consider that faculty who rate their abilities higher in these areas but who have not had an opportunity for professional development or a review experience, may over-estimate or under-estimate their ability to successfully implement these skills in the online environment. There is a possibility that some faculty may choose to forego professional development related to those topics when it is provided due to inaccurate self-assessment.

Study participants did express interest in learning about effective online course design practices. For example, one said, "I would have liked to have known best practices in online teaching (rather than learning by trial and error)" (Participant 27), while another suggested that "More direction and less experimentation (although I appreciate the freedom), sometimes it hinders my teaching if there is already a best practice established that I don't know about" (Participant 103).

Faculty Online Teaching and Learning Experiences

This study found that EOCDP scores were higher for those participants who had more online teaching experience. This finding is consistent with the findings of Oleson and Hora (2013) who said, "the repertoire of teaching practices that faculty draw upon is largely developed through their own experiences in the classroom" (p. 41). They also found that faculty build their knowledge of sound practices through experimentation or testing of new techniques and then reflecting on the effectiveness of the new approaches that were attempted. The practice of experimentation to learn what works was also evident in the present study. Seventy-five percent of the participants indicated that a preferred method for improving knowledge about designing and teaching online courses was *Experimenting with teaching strategies and observing results*. *Talking with colleagues from your own institution* was also frequently selected as a method for improving knowledge. Several study participants mentioned a desire for opportunities to work with others within their discipline. For example, Participant 73 indicated a desire for "a peer group who was teaching online or developing a course to check-in with and use for support/advice." This need to interact with other faculty was described by Dhilla (2016) and McQuiggan (2012). Dhilla (2016) suggested that providing opportunities for faculty to interact with others through online discussions, online

teaching communities, or regular meetings is helpful for reducing alienation, creating community and collaboration, and for pedagogical and professional support.

The majority of the participants reported that they had experience as an online learner. This study found that having experience as an online learner had an intermediate effect on EOCDP. Oleson and Hora (2013) discovered that the experiences faculty have had in the classroom as learners do impact their teaching practices. Asked to comment on how their experiences as an online learner impacted their course design, almost all participants with online learner experience responded that the experience as an online learner did contribute to and provide them with ideas of what they did or did not want to do in the design and teaching of their online class. A common theme in the responses was that the experience as an online student showed them what *not* to do. For example, as one participant said,

> My experience as an online learner absolutely contributed to my perception of how I wanted to conduct my own online class. I intended to respond promptly to student inquiries, communicate frequently with students, offer frequent and prompt feedback on submitted work, conduct a highly organized online learning environment, and establish clear learning objectives linked to learning materials-activities-assessments. The nature of the list stems from my experience of the exact opposite happening in my experience as an online learner. (Participant 15)

Another common theme related to why it was important to have this experience in order to see first-hand how course organization and navigation impact the student learning experience. As a participant noted,

> With the online experiences I have had, it helped me with the student perception of how an online course should be constructed with the emphasis of organization!! I

think any student of any program or major expects organization. Having a course organized and easy to follow will decrease confusion. Confusion = frustration = less chances of success. And on the flip side... organized course = satisfied student = success in the course!" (Participant 84)

Professional Development and Institutional Support

There is significant variability among institutions regarding the types of resources, course design supports, and professional development that they can provide for their faculty. For institutions where training and support are limited or non-existent, Riggs (2020) pointed out that online faculty often choose to learn from written resources, colleagues, mentors, learning communities of some sort, or simply by trial and error. This is consistent with what study participants reported. For participants who did report completion of professional development, completion of greater than 20 hours was needed to create a noticeable difference on OTSE and ECODP ratings. This amount is similar to what Borup and Evmenova (2019) reported, that is, that a 6 – 7-week professional development course was effective for building faculty confidence in their ability to design and teach an online course. These authors also mentioned the importance of offering professional development using online delivery methods so that faculty are provided with an opportunity to have an online student perspective.

Peer Review of Online Courses

Participation in peer review can be an opportunity for authentic professional development and professional growth for both new and experienced faculty due to the collegial nature of discussions and exchanges among peers as the peer review process is carried out (Linton, 2014, as cited in Shattuck, 2018). Through the reflection on and

application of well-defined standards as embodied in the design of their course, faculty can build skills, knowledge, and confidence in their ability to design effective courses. Therefore, the fact that the individuals who reported having participated in an official QM course review had higher OTSE scores, as well as higher EOCDP scores, is not surprising. Several participants mentioned a desire for their institutions to provide some type of peer review as another type of institutional support. For example, Participant 64 indicated that "A review of my course would have been great!" while Participant 18 mentioned that a "review of my course for a standard format" would be helpful.

Implications for Practice

The need to prepare and support faculty to create online learning experiences and courses has been well-documented in the literature. The present study explored the relationships among several variables that were found to be related to the extent to which online faculty report implementation of effective online course design practices. The variables of professional development, online teaching self-efficacy, online learning experience, online teaching experience, and peer review all had a significant relationship to the self-reported implementation of effective online course design.

Various studies have recommended the need for providing professional development topics and delivery formats that have been carefully and strategically designed to meet the needs of the faculty (Mohr & Shelton, 2017; Dennis et al., 2017; Lian, 2014). This includes creating a pattern or plan for the offerings rather than a randomized collection of topics (Mohr & Shelton, 2017). The planned offerings must include topics to support the experienced faculty in addition to the novice faculty (Huston & Weaver, 2007, Elliott et al., 2015; Dennis et al., 2017).

There is a need for institutions to plan for and provide the support, resources, and professional development for faculty so that the online components of courses are based on sound instructional design principles and effective practices. The recommendations offered as a result of this study are meant to urge those who are planning for and providing professional development for faculty to consider a strategic multi-pronged approach that leverages the relationships among the study variables to affect improvements in the online course design practices of higher education faculty As Williams and Anderson (2020) pointed out, states and institutions must do more in terms of funding, oversight, and accountability processes to both develop and improve online learning programming. As stressed by Britto et al., (2013), "it is evident that consistently high-quality education requires shared standards, appropriate training, and adequate resources" (p. 21).

The findings of this study reinforce suggestions made by others for three broad strategies that working together would support faculty in designing effective online courses. These strategies, which will be described next, include:

- Adopting common quality assurance standards.

- Providing and requiring some type of minimum professional development that includes online delivery and opportunities for application that occurs well before teaching online.

- Providing opportunities for faculty to engage in self-review and peer review of their online courses before and on an ongoing basis to continue to fine-tune the design of their online courses.

Collectively, the recommendations to adopt quality standards, provide and require professional development, and implement processes for self-assessment and peer review are

meant to work together to support faculty in their growth towards not only continual improvement of online course design practices but also in reaching greater online teaching self-efficacy.

Adopt Shared Quality Standards at the Institution Level

To create a common foundation upon which to strategically plan for, fund, and provide professional development offerings, to create and implement self-assessment and peer review processes, and with which to determine where additional resources and supports are required, the first recommendation is to adopt shared quality assurance standards for online courses at the institutional level.

Many authors and researchers have advocated for the adoption and use of course design standards or rubrics to inform professional development efforts, guide course design decisions, and support various types of peer review or self-assessment (Kelly & Zakrajesk, 2021; Riggs, 2019; Baldwin et al., 2018; Shattuck, 2018; Hixon et al., 2015; Britto et al., 2013). Rubrics meant to improve the quality of online courses share many characteristics (Jaggars & Xu, 2016; Baldwin et al., 2018). Six of the nationally or regionally known quality assurance instruments shared the following standards:

- Objectives are available.
- Navigation is intuitive.
- Technology is used to promote learner engagement/facilitate learning.
- Student-to-student interaction is supported.
- Communication and activities are used to build community.
- Instructor contact information is stated.
- Expectations regarding quality of communication/participation are provided.
- Assessment rubrics for graded assignments are provided.
- Assessments align with objectives.
- Links to institutional services are provided.
- Course has accommodations for disabilities.
- Course policies are stated for behavior expectations. (Baldwin et al., 2018, p. 56)

This list could serve as a starting point for institutions whether they intend to adopt a currently existing set of quality standards or modify a set of standards that already exist. Involving faculty in discussions about what is needed to support the online learners at the institution would acknowledge their expertise, might minimize barriers to adoption, and would acknowledge the diversity of experience and expertise that faculty already have. The inclusion of faculty in institutional conversations about quality assurance processes is supported by Britto et al. (2013) who stressed the importance of providing faculty with an opportunity to help shape the tools and processes the institution chooses. Including a broad constituent group in conversations about quality assurance helps to build an institutional understanding of what is valued and expected in the design of an online course. It would serve to build and improve the institutional literacy around online course design and teaching across the institution. Shared standards would be useful to inform institutional policy in various areas, would provide a baseline marker of the knowledge or skills needed for entry into online teaching practice, could be used to guide faculty development planning and programming, could create a framework around which to foster and support conversations among faculty groups in sharing best practices and exemplars, and would provide the foundation upon which to create ongoing processes for self-assessment and/or peer observations.

Provide and Require Professional Development and Institutional Supports

The second recommendation is to provide a required baseline level of professional development to support faculty with creating online learning experiences that are based on effective instructional design practices. Professional development that provides opportunities for faculty to implement and practice the behaviors and skills they have observed through the learning activities will be more successful if the participants have opportunities for hands-on

practice in the learning experiences or courses they are creating or revising (Borup & Evmenova, 2019; Riggs, 2020; Kelly & Zakrajsek, 2021). Having an opportunity for hands-on mastery may also improve OTSE beliefs especially if the workshops involve not only demonstration but also application. Organizing the foundation of any professional development programming around a shared set of quality standards would ensure that all online faculty have a shared understanding of what practices will best support their online students and would enhance their ability to accurately appraise their implementation of EOCDP. Delivering all or a portion of the professional development with online modalities will provide opportunities to experience tools, strategies, design structures, and activities from a student's perspective.

Faculty who are newer to teaching online due to the COVID-19 pandemic will continue to need support with time and resources to move beyond the emergency remote instruction model and instead embrace a model that supports well-designed online learning experiences that are meant to fully support student success and learning. Faculty who teach online must be supported in exploring and implementing course design practices that are based on research. For institutions of higher education to successfully provide online learning experiences meant to support student learning and success, careful thought must be given to providing appropriate professional development that supports *all* faculty and that leverages faculty experience and expertise in ways that build a quality culture that embraces greater collaboration, peer networking, and shared examples of best practice. As noted by Dhilla (2017), there are differences in the needs of novice and experienced faculty. Novice faculty need technical training and instructional design support while faculty with more experience may need different types of "pedagogical, social, and institutional support to progress and

develop as online instructors" (p. 18). Britto et al. (2013) stressed the need for administrative support for a range of support and professional development opportunities to meet the varying and individual needs of faculty.

A third recommendation relates to providing educational supports in the form of templates and shared example courses or course components that illustrate how best to implement course design components that are congruent with the adopted quality standards. Many of the faculty in the present study had significant experience with designing and teaching online courses. Building on the expertise faculty already have by supporting and encouraging the development or collation of shared resources, templates, and best practice guides is another type of support that institutions might consider providing (Canvas, 2020; Mancilla & Frey, 2021). One of the individuals with *high* self-efficacy noted, "It would have been nice to see examples of high-quality online course structures" (Participant 47). Other participants said, "access to example courses" (Participant 95) or "examples of existing high-quality courses from others in my discipline" (Participant 73) would be helpful. Faculty appreciate seeing examples of how others approach the complexities of creating a well-designed online course. The vicarious experience of seeing good examples, of participating in professional development that is offered online and demonstrates best practices, and of having opportunities to learn with and from peers may also be a source of building greater self-efficacy.

Implement a Process for Self-Assessment and Peer Review

A final recommendation is that institutions provide support and resources for online faculty that include opportunities for self-assessment of ability, as well as options for peer review of courses. In this study, those who had participated in peer review processes reported

higher self-efficacy and were more likely to report greater implementation of effective online course design practices (EOCDP) in their courses. Riggs (2019) suggested that faculty complete a self-assessment or self-study of their online course design and teaching practices to identify strengths and competencies they possess. She suggested that knowing strengths inspires confidence and that identifying weaknesses will help provide ideas or areas where growth or improvement are needed. This idea was echoed by Kelly and Zakrajsek (2021) who suggested that a process of self-assessment be implemented on an ongoing basis that included a before and after analysis of the course to look specifically for areas of improvement related to design, accessibility, Universal Design for Learning, inclusion, and equity. A checklist based on shared institutional quality standards would provide the tools necessary for that type of self-assessment, as well as informal peer review to occur. Self-assessment including reflection on current practice can be the first step for faculty who are seeking to identify the gaps that exist in their knowledge and skills set. For example, Mancilla and Frey (2021) explain how self-assessment in the area of digital accessibility of online courses and materials provides insights that can be used by faculty to set personal and professional development goals. Dhilla (2016) echoed the importance of reflection and self-assessment in developing professional goals that lead to improved strategies for teaching in the digital learning environment.

Peer review is often mentioned as a way to assure quality in an online course (Baldwin et al., 2018; Britto et al., 2013). This can be accomplished through an external review process such as the Quality Matters review process or could be through a less formal and internal peer review process. Stupnisky et al. (2018) noted that "not all faculty members use best practices when teaching despite their well-documented effectiveness" (p. 15) in improving the quality

of teaching and improving student gains. A peer-review process, whether informal or a more formalized approach to looking at courses or course components would prompt faculty to identify and adopt the best practices that would support students in their particular discipline or context. Comments from study participants included mention of a desire for some type of peer review experience. Providing opportunities for peer review provides social persuasion and support which is another source for building self-efficacy.

Conclusion

This study sought to identify how various factors such as online teaching experience, online learning experience, or professional development completion (including participation in a Quality Matters Review) are related to online teaching self-efficacy (OTSE) and the choices a faculty makes in the design of an online learning experience. It looked at not only the levels of OTSE that faculty reported but also at the extent to which these same faculty indicated they have implemented various effective online course design practices into their online courses. The study found that higher education online faculty tended to report high OTSE and that completion of professional development and peer review experience was related to higher levels of OTSE. It also found that professional development, online teaching experience, online learning experience, and peer review experience were related to higher self-assessed scores for implementation of effective online course design practices.

The uniqueness and variety of faculty experiences and beliefs coupled with the complexities of designing effective online courses cannot be easily explained through the comparison of the variables examined in this study. In other words, even though more professional development and experiences (such as teaching experience, learner experience, or course review experience) are related to higher online teaching self-efficacy; and, high

online teaching self-efficacy is related to faculty beliefs that they are implementing effective

online course design, there is no prediction or causation implied. Based on the findings,

recommendations were included. These were: (a) adoption of quality standards at the

institutional level, (b) creating a framework for self-assessment using checklists as well as

peer review processes; and, (c) requiring and providing baseline professional development

based on the quality standards and that encourages sharing best practices and exemplars

within the institution.

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