# Preparing Health Professions Educators for Online and Blended Learning Environments: A Mixed Methods Study

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## Abstract

Online and blended teaching and learning (OBTL) are integral to the future and success of higher education, including health professions education. Institutions with a goal of developing high-quality online and blended programs must prioritize time and resources dedicated to professional development and training. This research study used an online professional development course as an intervention to gain deeper insights into the scope of faculty development to effectively teach in online and blended learning environments. The study, using a convergent mixed methods approach, gathered data through a pre- and post-intervention survey measuring health professions faculty readiness to teach online, a knowledge-based test, and post-intervention focus group discussions. Statistically significant differences in survey and test scores were observed between pre- and post-intervention and advantages of the intervention were highlighted in the focus group discussions. These key findings suggest the efficacy and influence of the educational intervention. Additionally, barriers and recommendations for enhancement were identified, including a notable gap between perceived importance and perceived capability among faculty members. This information pinpoints areas where professional development and support may be beneficial. Outcomes of the study provide valuable insights into health professions faculty members' knowledge, readiness, and perceptions related to teaching in online or blended educational environments.

*Keywords:* health professions education, online learning, blended learning, distance education, online teacher readiness, faculty readiness

Custer, T. (2024). Preparing health professions educators for online and blended learning environments: A mixed methods study. *Online Learning Volume, 28*(3), (263-298). DOI: 10.24059/olj.v28i3.4515.

Health professions education (HPE) encompasses the training of individuals pursuing careers in healthcare-related fields including allied health, dentistry, medicine, nursing, and pharmacy. The goal of HPE is to cultivate professionals who are skilled in providing safe and effective patient-centered care. In recent years, both higher education and health professions education have undergone significant changes. These shifts encompass a move toward competency-based learning, a heightened emphasis on interprofessional education, an increasing reliance on technology, and the need to address social determinants of health (Thibault, 2020). The COVID-19 pandemic has magnified and accelerated these shifts.

In early 2020, the COVID-19 pandemic forced over 20 million college students and faculty to abruptly transition from face-to-face learning to emergency remote teaching (ERT) representing a paradigm shift in higher education (National Center for Education Statistics, n.d.). While many academic health science centers had resources and infrastructure in place to support this transition, faculty soon discovered quality online teaching requires more than simply replicating the face-to-face classroom. As institutions moved to fully online and blended course delivery, faculty remained skeptical of the efficacy of online teaching. Online learning was a novel experience for the majority of faculty (54%) and slightly less than half (49%) of faculty believed online learning to be an effective pedagogy (Howe & Heitner, 2020; Jeffries et al., 2022).

Post-pandemic, it is apparent the migration to remote and online learning will have a lasting effect on the perceptions of students, faculty, institutions, and society in regard to higher education (Pelletier et al., 2021, 2022). Student preferences in modes of learning are shifting toward a multimodal approach including components of both online and face-to-face (F2F) methods. Data shows an increase in student preference for online and blended courses by 220% since the onset of the pandemic (Pelletier et al., 2022). Faculty preferences are shifting as well. Pre-pandemic data reported almost three-fourths of faculty in higher education preferred teaching in a completely F2F environment. Post-pandemic, a slight majority (53%) still prefer to teach courses that are completely F2F, 18% noted a preference for teaching completely online, and 20% prefer to teach using a blended approach. Faculty who prefer using an online or blended approach indicate these modes provide more flexibility for both students and faculty (Muscanell, 2023).

A blended or hybrid approach may be the most suitable option for health professions education. The approach not only provides increased flexibility and convenience for students and faculty, but the literature notes blended learning can be an effective method for improving health professions students' knowledge, skills, and clinical practice (Leidl et al., 2020). As online and blended courses and programs gain more prominence in health professions education, a need exists to expand, organize, and synthesize the scholarship related to course delivery methods (Wright et al., 2023). Literature specific to best practices in health professions education and educator readiness and perceptions regarding the online or blended educational environment are lacking (Alhasan & Al-Horani, 2021; Chandrasiri & Weerakoon, 2022; Kumar et al., 2021;

McDonald et al., 2014; Neary et al., 2020; J. W. Richardson et al., 2020; Thomas & Dello Stritto, 2021; Youngman & Vealé, 2020). Sustained investments in faculty development, along with further research on health professions educator perceptions, and perceived needs in terms of online and blended education are necessary to ensure faculty skills and literacy keep pace with ongoing changes in course delivery methods (Martin et al., 2019; McDonald et al., 2014; Wingo et al., 2017). An acknowledged deficiency also exists related to studies aimed at understanding the "why" and "how" change occurs as a result of faculty development. Current studies advocate for an increased focus on qualitative and mixed methods studies to better understand the transformation process associated with educational interventions focused on online and blended teaching and learning (OBTL) (Daniel et al., 2021; Singleton et al., 2023; Steinert et al., 2016).

The purpose of this study was to evaluate the feasibility, acceptability, and influence of an online professional development course designed to guide health professions educators in the delivery of instruction within a blended or online environment at a midwestern academic medical center. The Faculty Readiness to Teach Online (FRTO) instrument developed by Martin, Budhrani, and Wang (2019) served as the primary quantitative instrument used within the study. The FRTO instrument incorporates two constructs and four domains of teaching competence for OBTL environments identified in the literature. The first construct, attitude, measures the perceived importance instructors place on the task. The second construct, ability, measures instructors' perceived ability to complete the task. The four domains of teaching competence include course design, course communication, course management, and technical competence. Each competency plays an integral role when designing effective online and blended courses (Martin et al., 2019).

# Literature Review

To better understand the educational effects of the COVID-19 pandemic and ensure the implementation of best practices, there is a need to better understand the successes, challenges, and barriers related to implementing OBTL in health professions education. Assessment of faculty readiness is an important step in this process. Faculty readiness to teach is the state of faculty preparedness to teach in an online or blended learning environment (Martin et al., 2019). It represents a system of knowledge, skills, attitudes, beliefs, and facilitating conditions (Scherer et al., 2023). The significance of assessing preparedness for online and blended teaching stems from its crucial role in the success of the educational methods. This is due, in part, to the substantial influence perceived self-efficacy has on perceived ease of use (Hosny et al., 2021). Faculty who are adequately prepared and ready to teach possess solid pedagogical skills and are comfortable with the necessary technologies. Readiness skills equip faculty with the ability to create high-quality online and blended courses that are engaging and promote effective learning. Faculty support and development, along with faculty attitudes, play a significant role in faculty readiness and teaching competence in an online or a blended educational environment (Bolliger & Halupa, 2022; Martin et al., 2019; Richards & Sinelnikov, 2019; Wingo et al., 2017). The reluctance of faculty to adopt innovative forms of course delivery stems from factors such as fear

of change, skepticism regarding student outcomes, lack of time for proper course development, lack of knowledge related to innovation, and lack of confidence in the use of technology in the classroom (Jeffries et al., 2022; Wingo et al., 2017). Academic health science centers must develop faculty who garner the interest and skills necessary to teach in online and blended educational environments. Professional development has been shown to positively impact faculty perceptions and competence to teach (Cook & Steinert, 2013; Martin et al., 2019; McQuiggan, 2012; Williams, 2006).

Cook and Steinert (2013) reviewed the literature regarding online learning for faculty development. The study observed that research on online faculty development is limited and unsubstantial, although several themes emerged from their review. Key points identified by the study show online faculty development can be as effective as face-to-face training, online faculty development may offer a more flexible solution for training, and key factors of success include relevance to perceived needs, appropriate instructional objectives, effective communication, and sufficient time to complete the online training. The study suggests further research should include qualitative and quantitative investigations to understand better best practices related to faculty engagement and success in online faculty development programs (Cook & Steinert, 2013).

### *Faculty Readiness to Teach Online*

A study by Martin et al. (2019) sought to better understand faculty readiness to teach online based on two specific aspects of readiness: faculty attitude and perceptions. The authors developed a theoretical framework for faculty readiness to teach online based on four components: attitude (importance), ability (confidence), knowledge, and readiness. See Table 1. The authors highlight that although research has been conducted on the connections between attitude, ability, and readiness, more research is needed to examine the relationships between attitude, ability, and online teaching readiness (Martin et al., 2019).

Table 1
*Theoretical Framework Definitions for Faculty Readiness to Teach Online*

| **Term** | **Definition** |
|---|---|
| Attitude (Importance) | The viewpoint a person has about something and its personal relevance to them. |
| Ability (Confidence) | The capacity to successfully perform. |
| Knowledge | Facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject. |
| Faculty Readiness to Teach Online | A state of faculty preparation for online teaching. |

*Note.* Adapted from "Examining Faculty Perceptions of Their Readiness to Teach Online" by F. Martin et al., 2019, *Online Learning Journal, 23*(3).

Attitude

Attitude can be defined as the viewpoint a person has about something and its personal relevance to them (Krosnick & Petty, 1995). Faculty members who are new to online teaching must adapt their attitudes toward the competencies necessary for effective online instruction. Furthermore, it is essential to evaluate the importance faculty members assign to the required competencies for online teaching. Research has demonstrated that positive faculty attitudes toward online teaching and learning (OTL) have a direct influence on student outcomes (Joosten & Cusatis, 2019). Factors affecting faculty attitudes when teaching online include prior experience, availability of online courseware, improved training and facilities, student feedback, and flexibility of time and teaching schedules (Clay, 1999; Scherer et al., 2021).

Ability

Ability relates to one's capacity to successfully perform (Ferguson, 1954). Numerous studies have found instructor ability is positively associated with student achievement and engagement in the online environment (Means et al., 2009; J. C. Richardson et al., 2017; Shea & Bidjerano, 2010). Means et al. (2009) conducted a meta-analysis that concluded student outcomes in online courses were positively related to an instructor's ability to communicate, provide timely feedback, and promote active engagement in the course. Studies note the importance of both instructor presence and social presence. Instructor presence relates to the degree to which the instructor actively facilitates and guides the online course. Providing timely feedback, leading discussions, answering student questions, and providing relevant instructional content are a few ways to promote instructor presence in online learning. Social presence in an online course relates to building an online community. The degree to which students feel connected, engaged, and can interact meaningfully with the faculty and their classmates are essential aspects of social presence. The ability of instructors to demonstrate these tendencies positively affects student satisfaction and success in online courses (Means et al., 2009; J. C. Richardson et al., 2017; Shea & Bidjerano, 2010).

Knowledge

"Knowledge" can be defined as facts, information, and skills acquired through experience or education, the theoretical or practical understanding of a subject (Oxford English Dictionary, "knowledge," 2023). Regarding OTL, Scherer et al. (2021) acknowledged that faculty must know the "complex relations among technology, pedagogy, and content that enable them to develop appropriate and context-specific teaching strategies" (p. 2). Assessment of perceptions of teachers' knowledge and skills is essential when examining readiness to teach.

Previous Literature Focused on Faculty Readiness to Teach Online

Martin et al. developed and validated a Faculty Readiness to Teach Online (FRTO) instrument as part of their research. The instrument incorporates four areas of teaching competence for online and blended learning environments identified in the literature: course design, course communication, time management, and technical competence (Martin et al., 2019). The competencies play an integral role in designing effective faculty development

courses. Online or blended course development involves instructional planning to include course objectives and instructional strategies along with activities and assessments that align back to the course objectives. Providing clear expectations, applying a variety of engaging activities, and effective communication are essential components of student learning. Course design and planning for online and blended courses is time-consuming, especially for faculty using these methods for the first time. Furthermore, faculty must have the technical knowledge and proficiency to be successful in an online or blended environment (Martin et al., 2019).

Outcomes from the study were based on survey feedback from faculty with at least some experience teaching online. Significant differences were noted regarding faculty attitudes toward the importance of online teaching based on gender, years of teaching online, and delivery method. Additionally, significant differences were found in faculty perceptions of online teaching based on the number of years teaching online and the delivery method. In regard to attitudes, the attitudes of female faculty were significantly higher than male faculty based on the importance of course design, course communication, and time management. No significant differences were found between female and male faculty's attitudes on the importance of technical competence or based on the perception of their ability. Years of online teaching experience did not show a significant association with attitude, although statistically significant associations were found with their perception of the ability to teach online. As expected, faculty with less experience showed a significantly lower perception of their ability related to course design, course communication, and technical competence when compared to experienced faculty. Faculty teaching asynchronous, online courses showed a significantly lower perception of the importance of technical competence than those teaching in a blended format, and faculty teaching in mainly face-to-face courses showed a significantly lower perception of ability in course design when compared to those who teach asynchronous, online courses. A final important finding of the study was that the competencies faculty *perceive* as necessary vary from those they *believe* they can perform (Martin et al., 2019).

Neubauer and Pinto-Zipp (2023) used the FRTO to study health science faculty perceptions on readiness to teach online. The study was very small (n = 8) and included full-time faculty members from a school of health and medical sciences. Although the sample size is a significant limitation of the study and caution should be taken when making conclusions based on the experience of a small population from one single institution, the general outcomes of the study note the need for further training in OTL for health science educators and substantiates the need for further research in this area (Neubauer & Pinto-Zipp, 2023).

Only one other study has used the FRTO to study health science faculty readiness to teach online. Si, Kong, and Lee (2021) investigated the readiness of Korean medical educators to teach in an online setting. Thirty-eight pre-medical science and medical science faculty participated in the study. Faculty scores related to both perceived ability and perceived importance were found to be low revealing that the faculty were not prepared for teaching in an

online environment and reinforcing the need for further research related to health professions faculty readiness to teach in OBTL environments (Si et al., 2021).

Bolliger and Halupa (2022) investigated faculty readiness at two private universities after the universities shifted to ERT or OTL due to the pandemic. Fifty-five faculty members participated in the study with academic disciplines including arts/music/theater (2), business (7), education (9), health sciences (9), humanities (7), religion (7), sciences (9), and social science (5). The authors used only the ability construct of the FRTO to investigate the participants' perceived ability to complete tasks related to teaching online prior to the COVID-19 pandemic. Overall, the results showed that faculty were moderately prepared and confident to teach online. Significant differences in responses were noted based on the faculty's experience teaching online prior to the pandemic and the years of experience teaching online. While faculty felt comfortable with tasks such as managing grades, creating assignments, writing course objectives, and communicating with students, confidence lacked in higher order and technical abilities such as using a variety of instructional strategies, creating and editing instructional videos, applying copyright laws, knowledge of accessibility policies, using external collaboration tools, sharing open educational resources, and overall time management. The study's results reinforce the need for institutional support and professional development for faculty teaching in OTL (Bolliger & Halupa, 2022).

A study conducted by Scherer et al. (2021) expanded the research on OTL by exploring profiles of readiness related to aspects of personal and contextual readiness. Personal readiness relates to the faculty members' confidence to teach online, while contextual readiness relates to faculty perceptions of institutional preparedness to support OTL. Contextual readiness involves support structures, resources, and professional development opportunities. The study explored three dimensions of faculty readiness for OTL: technological and pedagogical content knowledge (TPACK) as an indicator of perceived OTL competence, online teaching presence as an indicator of OTL teaching practices, and institutional support as an indicator of the contextual readiness for OTL (Scherer et al., 2021).

Faculty were separated into three distinct profiles of readiness that outlined their readiness level for OTL. The authors stressed profiles are vital in providing guidance for targeted and personalized institutional support and faculty development for OTL. Profile 1 related to low readiness. Faculty who fit profile 1 scored low on personal and contextual readiness and exhibited low ratings on TPACK self-efficacy, perceived online presence during OTL, and perceived their institutional support as weak. The majority of the faculty in the study fit into this profile. Profile 2 related to inconsistent readiness. Profile 2 faculty showed little confidence in their ability (personal readiness) yet reported high support from their institution (contextual readiness). And finally, profile 3 depicted high readiness and related to faculty who exhibited high ratings of TPACK self-efficacy and perceived online presence during OTL and medium to high ratings on their perceived institutional support. Less than 12% of faculty were categorized within profile 3 (Scherer et al., 2021).

The descriptive statistics of teachers' item responses on TPACK self-efficacy, perceived online presence, and perceived institutional support did not reveal significant deviations from normality or notable trends. Key individual and contextual variables were used to explain the distinct profiles thoroughly. Regarding gender, although men were more likely to be categorized into profiles 1 and 2, and women were more likely to fall into profile 3, the gender differences did not consistently predict the profiles. Age and teaching experience were evenly distributed among the three profiles. Those with little to no experience with OTL fell into profiles 1 and 2, while faculty with experience in OTL were categorized in profile 3. The study's findings acknowledged the heterogeneity of faculty in higher education regarding their readiness for OTL. Observations into the faculty profiles of readiness for online teaching and learning were garnered, highlighting the importance of factors such as self-efficacy, perceived support, prior experience, and the context of the shift to online teaching (Scherer et al., 2021).

Scherer et al. (2023) extended their research to gain a deeper understanding of the support and professional development needs of both experienced and non-experienced faculty in relation to their experiences. The authors emphasize the dependence of teacher readiness for OTL not only on contextual characteristics but also on background characteristics, digital competence, and experience. The study's findings show a curvilinear relationship between experience and readiness for teachers' OTL experience using the dimensions of TPACK self-efficacy, perceived online teaching presence feedback, and perceived online presence cognitive activation. The authors conclude that faculty with more experience in OTL are not always better prepared, and the importance of support programs for novice and expert faculty should be maintained (Scherer et al., 2023).

## Significance of This Study

The research supports the notion that shifts in course delivery methods require institutional support and time to engage in professional development to equip faculty with information, knowledge, training, and skills related to best practices in teaching and learning methods across all modes of learning. Limited studies have focused on these topics concerning health professions education. There is a significant need for a systematic assessment of health professions educators' readiness for online teaching and educational needs (Hosny et al., 2021; Si et al., 2021). The following research questions and hypothesis guided the study:

1. Is there a statistically significant difference in health professions educators' readiness to teach in an online or blended learning environment, as measured by the pre-post FRTO survey, after completing the online professional development course?

   Hypothesis 1: Faculty who complete the online professional development course will score higher on the FRTO instrument post-survey versus the pre-survey.

2. Is there a statistically significant difference in health professions educators' knowledge related to teaching in an online or blended learning environment, as measured by the pre-post knowledge test, after completing the online professional development course?

   Hypothesis 2: Faculty who complete the online professional development course will score higher on the knowledge-based post-test versus the pre-test.

3. What are health professions faculty perceptions of using an online professional development course to improve readiness to teach and enhance teaching in an online or blended environment?

4. How did the qualitative data generated from the focus groups enhance the overall understanding of the effectiveness of the online professional development course related to teaching in an online or blended environment?

5. What conclusions can be made regarding the acceptability and the effectiveness of the online professional development course when the quantitative and qualitative data are merged?

## Methods

### Data Collection

The study used a convergent mixed methods research design with the intent of collecting different, yet complementary data on a single research problem or topic. When using a convergent mixed methods research approach, the investigator gathers both quantitative and qualitative data concurrently to research the problem. The researcher integrates the two datasets and draws on the combined strengths to better understand the research questions they are attempting to answer (Creswell & Plano Clark, 2018). Quantitative data was collected in the form of the FRTO Instrument including the demographics survey, and the knowledge test scores. Qualitative data was gathered through focus group discussions which further explored faculty perspectives and the practicability of the online professional development course.

During the initial quantitative phase of the study, a quasi-experimental design was employed to gather pre-post readiness-to-teach assessment data and knowledge measures from HPE faculty who engaged in the online professional development course. The FRTO survey instrument consists of thirty-two five-point Likert-type items that are broken down into two constructs. The first construct, attitude, measures the perceived importance instructors place on the task; scoring is based on a 1–5 scale where 1 was "Not important at all" and 5 was "Very important." The second construct, ability, measures instructors' perceived ability to complete the task; scoring is based on a 1–5 scale where 1 was "I cannot do it at all" and 5 was "I can do it well" (Martin et al., 2019). Nine demographic-based questions were added to the beginning of the survey. This allowed the researcher to collect data including age, gender, primary teaching discipline, highest level of education, academic rank, race and ethnicity, years of teaching

experience in health professions education, and years of experience teaching in an online environment in health professions education. See Appendix A.

Quantitative data was also collected through a pre- and post-knowledge test comprised of a mix of fifteen multiple-choice and short-answer questions to effectively capture a range of cognitive skills. Each item was carefully crafted to align with the specified content areas and learning objectives presented within the professional development course. Between the pre- and post-survey and knowledge test, participants were required to complete a professional development course titled *Teaching Online: Design, Delivery, and Teaching Presence* that served as the educational intervention. See Appendix B.

In the second, qualitative phase of the study, a single-site case study design was employed to collect and analyze data from focus group discussions, aiming to provide a more detailed explanation of the results from the knowledge test and the FRTO assessment. These focus group sessions were held at the end of each semester (fall, spring, and summer) following the completion of the professional development course. The discussions offered deeper insights into faculty attitudes and confidence levels regarding the competencies of course design, course communication, technical proficiency, and time management as outlined by the FRTO instrument. See Appendix C.

Study Population & Setting

The sample population for this research study consisted of faculty and instructional designers employed at a midwestern academic medical center in the United States. Faculty were recruited from each of the six colleges and one institute within the university system. A nested concurrent sampling design was used in which participants chosen for one phase form a subset of those selected for the other phase (nested), and data are collected from these two samples at approximately the same time (Creswell & Plano Clark, 2018; R. B. Johnson & Christensen, 2019). The sample for the qualitative step of the study was a volunteer sample. The sample was derived from the course participants who indicated on the post-test they would be willing to participate in the follow-up focus group. The samples allowed the researcher to obtain basic data and trends regarding the study population in a time efficient and low-cost manner. The research was classified as exempt education research and full approval was obtained from the universities' Institutional Review Board for the Protection of Human Subjects in Research (IRB). Table 2 summarizes the demographic data collected.

Table 2
*Participant Demographic Characteristics (N = 51)*

| **Variables** | **Frequency** |
|---|---|
| Gender | |
| Female | 41 (80%) |
| Male | 10 (20%) |
| Age | |

| | |
|---|---|
| 65+ | 2 (4%) |
| 50–65 | 9 (18%) |
| 35–50 | 26 (51%) |
| 20–35 | 14 (27%) |
| Less than 20 | 0 |
| Primary health professions discipline, n (%) | |
| Allied Health | 25 (49%) |
| Public Health | 8 (16%) |
| Medicine | 8 (16%) |
| Other (Psychology, nursing, instructional designer, behavior analysis, pharmacy) | 10 (19%) |
| Highest degree held, n (%) | |
| Doctorate (PhD, EdD, DMSC, MD, DO, etc.) | 34 (67%) |
| Master's | 16 (31%) |
| Bachelor's | 1 (2%) |
| Academic Rank, n (%) | |
| Professor | 3 (6%) |
| Associate professor | 8 (16%) |
| Assistant professor | 31 (61%) |
| Instructor | 5 (10%) |
| Instructional Designer | 3 (6%) |
| Other | 1 (2%) |
| Race and Ethnicity, n (%) | |
| White non-Hispanic | 42 (82%) |
| Hispanic, White | 3 (6%) |
| Hispanic, Prefer not to answer | 1 (2%) |
| Asian | 2 (4%) |
| Another category not listed here | 1 (2%) |
| Prefer not to answer | 2 (4%) |
| Years of experience teaching in health professions education, n (%) | |
| None | 5 (10%) |
| 0–5 | 17 (33%) |
| 5–10 | 13 (25%) |
| 10–15 | 8 (16%) |
| 15–20 | 2 (4%) |
| 20 years or more | 6 (12%) |
| Years of experience teaching online in health professions education, n (%) | |
| None | 16 (31%) |
| 0–5 | 17 (33%) |
| 5–10 | 15 (29%) |
| 10–15 | 2 (4%) |
| 15–20 | 1 (2%) |

## Educational Intervention

The *Teaching Online: Design, Delivery, and Teaching Presence* course was a four-week, asynchronous, online course developed to address key elements and best practices for teaching in an online or blended learning environment. Through the duration of the study, the course was offered three times; one time each semester in the fall, spring, and summer. The course was implemented through the university's learning management system (LMS). An asynchronous format was used to deliver course content in four interactive modules: Week 1 – Foundations, Week 2 – Course Design, Week 3 – Developing Course Content, and Week 4 Course Delivery and Engagement. Participants engaged in a comprehensive exploration of OBTL teaching methodologies, focusing on the complexity of designing effective courses, delivering content in an online environment, and establishing a strong teaching presence. The educational intervention was an instrumental aspect of the study equipping participants with the necessary skills and knowledge to navigate the complex framework of OBTL.

## Data Analysis

Consistent with a mixed methods convergent research design, the quantitative data underwent statistical analysis separately from the qualitative thematic analysis. Analysis of the quantitative data was conducted using the Statistical Package for the Social Sciences (SPSS) version 29.0. For the qualitative analysis, the researcher followed Creswell and Poth's procedure for data analysis and representation (Creswell & Poth, 2018). The findings from both quantitative and qualitative analyses were then integrated.

Research questions 1 and 2, as well as hypotheses 1 and 2, necessitated evaluating the significance of changes within subjects. This involved conducting Wilcoxon signed-rank tests for paired differences. Descriptive statistical analysis was also performed. Relationships between scores and custom variables (i.e., gender, age, academic rank, etc.) were examined using either the Mann-Whitney U test or the Kruskal-Wallis H test.

Research questions 3 and 4 were addressed through a qualitative thematic content analysis of the transcripts derived from the focus group discussions. Focus group sessions were administered and recorded via Zoom. The data were cleaned and organized for further analysis by checking the accuracy of the transcripts and anonymizing the participant data. Using a thematic analysis, the transcripts were then analyzed independently, first by an outside source with experience in qualitative research, and then by the primary researcher. An open-coding approach was used in which each reviewer began by reading the transcripts and taking notes to generate initial codes and patterns. A formal coding template was developed using an Excel spreadsheet that included iterative relabeling and creation of subcategories. From the coding template, themes and subthemes were identified. The thematic findings were then reviewed and discussed amongst the reviewers until a consensus was reached, thus satisfying the criteria for qualitative rigor (Creswell & Poth, 2018; Raskind et al., 2019).

For the mixed methods integration (research question 5), a joint display was developed to compare and contrast the information gathered from the literature review, the pre-post-survey, the knowledge test, and the focus group questions.

## Results

Quantitative Findings

Hypothesis 1

A statistically significant difference was observed on the FRTO instrument between the post-survey and the pre-survey among participants who completed the online professional development course.

A key advantage of the Faculty Readiness Assessment was its comprehensive evaluation of both attitude (importance) and ability (confidence) constructs across the four competency domains of teaching competence for online and blended learning (Martin et al., 2019). Scores from the pre- and post-FRTO assessments were evaluated according to the two constructs and the four competency domains.

The Wilcoxon signed rank test was conducted to determine the effect of the online professional development course on faculty readiness to teach in an online or blended learning environment. Fifty-one participants completed the online professional development course. Faculty readiness to teach was measured pre-intervention and immediately post-intervention. The differences in scores were symmetrically distributed, as assessed by a histogram with a superimposed normal curve. Both sets of scores were first analyzed by calculating the mean and median scores for each of the four competency domains within each construct. Table 3 displays the medians, interquartile ranges for each construct, means, and standard deviations both before and after course completion. The table displays the associated p-value along with the difference in ratings from pre- to post-course assessment. The standard value for statistical significance is $p < 0.05$. A statistically significant difference is noted in each domain for each construct.

Table 3
*Pre-to Post-Course Faculty Readiness Assessments (N = 51)*

| Construct/ Competency | Pre-Course Median (IQR) | Pre-Course Mean (SD) | Post-Course Median (IQR) | Post-Course Mean (SD) | p-value | Median Difference Pre-Post |
|---|---|---|---|---|---|---|
| **Attitude (importance)** | | | | | | |
| Importance of course design | 4.33 (4.11, 4.67) | 4.37 (.376) | 4.78 (4.56, 5.00) | 4.71 (.327) | <0.001 | +.45 |
| Importance of course communication | 4.40 (4.10, 4.60) | 4.33 (.443) | 4.80 (4.50, 4.90) | 4.66 (.341) | <0.001 | +.40 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Importance of time management | 4.33 (4.00, 4.83) | 4.29 (.536) | 4.83 (4.50, 5.00) | 4.67 (.362) | <0.001 | +.50 |
| Importance of technical skills | 4.00 (3.71, 4.57) | 4.07 (.601) | 4.43 (3.86, 4.86) | 4.37 (.534) | <0.001 | +.43 |
| **Ability (confidence)** | | | | | | |
| Ability to do course design | 4.00 (3.78, 4.33) | 3.92 (.599) | 4.56 (4.11, 4.78) | 4.42 (.392) | <0.001 | +.56 |
| Ability to do course communication | 4.10 (3.70, 4.40) | 4.04 (.571) | 4.60 (4.20, 4.80) | 4.50 (.360) | <0.001 | +.50 |
| Ability to do time management | 3.67 (3.33, 4.00) | 3.65 (.590) | 4.17 (4.00, 4.67) | 4.27 (.483) | <0.001 | +.50 |
| Ability to do technical skills | 4.00 (3.43, 4.29) | 3.83 (.634) | 4.43 (4.00, 4.71) | 4.30 (.525) | <0.001 | +.43 |

When evaluating general overall health professions faculty readiness to teach online using median scores, the pre-course results show participants ranked highest in course communication (*Mdn* = 4.40) and lowest in technical competence (*Mdn* = 4.00) for the attitude (importance) construct. For the ability (confidence) construct, participants again ranked highest in course communication (*Mdn* = 4.10) and ranked lowest in time management (*Mdn* = 3.67).

When evaluating post-course results, participants ranked the time management (*Mdn* = 4.83) competency the highest and ranked technical competence (*Mdn* = 4.43) as the lowest for the attitude (importance) construct. For the ability (confidence) construct, participants again ranked highest in course communication (*Mdn* = 4.60) and lowest in time management (*Mdn* = 4.17).

To better compare the results of this study with previous studies, it was also important to evaluate the mean scores. When evaluating general overall health professions faculty readiness to teach online using mean scores, the pre-course results show participants ranked highest in course design (*M* = 4.37) and lowest in technical competence (*M* = 4.07) for the attitude (importance) domain. In the ability (confidence) domain, participants ranked highest in course communication (*M* = 4.04) and ranked lowest in time management (*M* = 3.65).

When evaluating post-course results, participants again ranked highest course design (*M* = 4.71) and ranked lowest in technical competence (*M* = 4.37) for the attitude (importance)

domain. In the ability (confidence) domain, participants again ranked highest in course communication (*M* = 4.50) and lowest in time management (*M* = 4.27).

Hypothesis 2

A statistically significant difference was observed between the knowledge-based post-test as compared to the pre-test among participants who completed the online professional development course.

A Wilcoxon signed-rank test was performed to assess the impact of the online professional development course on participants' understanding of OBTL. Participants completed a pre-knowledge test prior to beginning the professional development course. At the conclusion of the course, participants completed the identical post-knowledge test. Fifty-one participants completed both the pre- and post-knowledge tests. Of the 51 educators recruited to the study, the professional development course elicited an increase in the test score for 39 participants. Seven participant scores decreased from pre- to posttest and five saw no change in scores. Table 4 displays the medians and interquartile ranges for the scores of the course knowledge quiz, both before and after course completion. The standard value for statistical significance is $p < 0.05$. The Wilcoxon signed-rank test revealed a statistically significant increase in test scores (*Mdn* = 1.500 points) when comparing the pre-test (*Mdn* = 25.000 points) to the post-test (*Mdn* = 26.500 points), $z = 4.29$, $p < .001$.

Table 4
*Pre- to Post-Course Knowledge Quiz (N = 51)*

| Domain | Pre-Course Median (IQR) | Post-Course Median (IQR) | p-value |
|---|---|---|---|
| Quiz Score | 25.00 (22.00, 26.10) | 26.50 (25.10, 28.50) | <0.001 |

Qualitative Findings

Research questions 3 and 4 explored faculty perceptions of using the online professional development course to improve their readiness to teach and enhance their teaching in OBTL environments. Transcripts from focus group discussions were the source of data collected and analyzed. A total of 19 health professions educators volunteered to participate in the focus group sessions. The transcripts from each focus group session were reviewed and individual question responses were analyzed to identify themes.

Amusement park ride

Participants were prompted to select a metaphor symbolizing their experience with online teaching using an amusement park's rides and activities. Tilt-a-whirl, bumper cars, and roller coasters were the top three responses that emerged from the discussions. The unpredictability associated with OBTL was a prevalent theme that resonated with the cohort, particularly among those lacking prior experience or training with the pedagogical methods. Participants openly

acknowledged a sense of apprehension related to the methods, highlighting the challenges faced by those unfamiliar with the instructional techniques. They acknowledged the process of implementing OBTL can be challenging and ongoing development and enhancement of skills and methodologies is key for educators. One participant noted:

> The irony is a lot of health professions educators have not gone through any type of educational training… you have your degree in whatever your specific profession is, but you are not necessarily trained to teach, you're teaching the content because you are the content expert.

Enrollment

Participants were asked to reflect on why they enrolled in the course. While one college within the university system requires the course for all faculty teaching in OBTL, the majority of the participants electively enrolled in the course to develop better teaching techniques, and to learn best practice, effective strategies, and practical application of the methods. Several individuals lacked prior experience with instructional strategies associated with OBTL, and those who did have experience acknowledged the need for a refresher to enhance their practice and refine their teaching style.

Barriers

The most significant challenge faced by participants in the faculty development course was time constraints. Although the focus group did not specifically gather this information from participating faculty, it is reasonable to assume participants were juggling numerous professional and personal responsibilities concurrently when enrolled in the course. The abundance of material provided within the course, both required and optional, was also listed as a barrier. One participant acknowledged these barriers as well as a potential advantage:

> A challenge for me was that I loved seeing all of the additional online resources, and I wanted to look at like every single one and spend time with each of them to really get an idea of what was out there. But I didn't have enough time to dedicate to the course, and the specific assignments, and also look at all of the additional, optional materials. I am grateful that we still have access to the course so I can go back and review the materials as I have a need to.

Advantages

While advantages of the course emerged within responses to other questions, in discussions regarding specific advantages of completing the course, two themes emerged. Participants were able to develop a more comprehensive framework for OBTL and they appreciated the student perspective they gained from being enrolled in the online professional development course. Participants used the feedback from instructors and peers, the modeling of and information on best practices related to OBTL, and the ability to gain a student perspective as tools for their personal framework. One participant remarked:

> I think it gives us the perspective of our students, which is always so important to understand your audience. You need to understand who you are teaching and what their problems or questions might be to anticipate and hopefully maybe mitigate some of those or commiserate with them.

Suggestions

Participants were asked about their recommendations for future course offerings. A major theme that emerged from the discussion was based on whether the course should be a requirement for new faculty or those transitioning to OBTL. Focus group participants overwhelmingly agreed with the course requirement. One participant acknowledged:

> Making this course a requirement would be very beneficial because it provides new faculty with the opportunity to think about what direction they want to go with their courses ensuring when they develop new content, they are using best practice.

Participants proposed the idea of extending the course duration, with six weeks emerging as the consensus. Additionally, they recommended maintaining the online format for the professional development course to facilitate ongoing modeling of best practices.

### *Mixed Methods Integration*

A joint display was developed to compare and contrast the information gathered from the literature review, the pre-post-survey, and the focus group questions. The side-by-side joint display helps to facilitate connections and similarities between the two sets of data. See Table 5.

**Table 5**

*Joint Display of Quantitative Outcomes and Qualitative Themes*

| **Course Design** | |
|---|---|
| Instructional design is considered a primary competency for faculty teaching online and is described as the ability to "judge the appropriateness and adequacy of materials and technology used in a course for the given audience and make materials and technology adjustments due to shifting audience needs and abilities" (Varvel, 2007, p. 13). | |
| **Highest Ranked:** Mean scores (attitude/importance) both pre-and post-intervention; highest difference in pre-post median (ability/confidence) scores | **Common themes**: Motivation for enrollment included a lack of experience and a wish to enhance OBTL teaching techniques, acquire best practices, effective strategies, and practical applications.<br>**Related quotes:**<br>"The irony is a lot of health professions educators have not gone through any type of educational training… you have your degree in whatever your specific profession is, but not necessarily, you're teaching it because you're the content expert." |

| | |
|---|---|
| | "Making this course a requirement would be very beneficial because it provides new faculty with the opportunity to think about what direction they want to go with their courses ensuring when they develop new content, they are using best practice." |
| **Course Communication** | |
| Presence relates to active communication, the interaction between learners, feedback, cognitively activating tasks, clarity of instruction, and assessment (Scherer et al., 2023). Faculty members who are prepared for online teaching can use various communication tools, discussion forums, and collaborative activities to foster student-student and student-instructor interactions. Engaged and responsive faculty provide timely feedback, answer questions, and address concerns, leading to increased student satisfaction and improved course quality. | |
| **Highest Ranked:** Mean and median scores (ability/confidence) both pre- and post-intervention | **Common themes**: Faculty understand the importance of presence and course communication in OBTL. They appreciate the individual feedback they received with the faculty development course. One change in their beliefs that emerged was that with the use of best practices, OBTL can be engaging and effective.<br>**Related Quotes:**<br>"This was the most engaging course I have ever taken; the faculty modeled best practice in engagement in an online course."<br>"This course showed me that online courses can be more than words on a page—it's possible to be interactive and engaging." |
| **Time management** | |
| Shifts in course delivery methods will require time engaging in professional development to equip faculty with information, knowledge, training, and skills related to best practices in teaching and learning methods across all modes of learning. Faculty must be committed to student success and demonstrate a high level of proficiency in technological and organizational skills, time management, and effective communication. Competent faculty members actively engage with their students, providing timely feedback and support (Pelletier et al., 2022, 2023). | |
| **Lowest Ranked:** Mean and median scores (ability/confidence) both pre- and post-intervention; highest difference in pre-post median (attitude/importance) scores | **Common themes**: Time management was expressed as the most prevalent recurring theme throughout the focus groups. Consider making the course longer (six weeks).<br>**Related Quotes:**<br>"A challenge for me was that I loved seeing all of the additional online resources, and I wanted to look at like every single one and spend time with each of them to really get an idea of what was out there. But I |

| | |
|---|---|
| | didn't have enough time to dedicate to the course, and the specific assignments, and also look at all of the additional, optional materials." |
| **Technical Competence** | |
| Online and blended courses heavily rely on technology tools and platforms. Faculty must be technically competent, meaning they should have adequate technical knowledge, skills, and the ability to troubleshoot when issues arise. Technological competence allows faculty to leverage various digital resources, multimedia elements, and interactive features to enhance student engagement and facilitate learning (Varvel, 2007). | |
| **Lowest Ranked:** Mean and median scores (attitude/importance) both pre- and post-intervention | **Common themes**: Technical competence did not emerge as a theme in the focus groups.<br>**Related Quotes:**<br>"Technology is moving forward, it's advancing. I just think when it comes to teaching or being able to integrate all of the technologies, we just aren't able to keep up because there's so there's so much, so much opportunity, so many possibilities." |

## Discussion

Regarding the feasibility of the educational intervention, 100 participants enrolled in the online professional development course during the study. Enrollment was consistent each semester, with the highest enrollment occurring in the summer semester. The study aimed to recruit a minimum of 50 participants over three semesters, with 66 consenting to participate. Approximately one-third of registered participants withdrew before or during the course, resulting in 51 individuals completing all components, yielding a 77% completion rate. Despite high initial interest, challenges such as attrition and allotted time to complete the course were noted. Reasons for withdrawal included changes in workload, lack of awareness of time commitment, and challenges for adjunct faculty/preceptors in gaining access to the LMS. The completion rates among consenting participants affirm the feasibility of the educational intervention, with qualitative findings providing further insights into cohort success.

### Quantitative Findings Discussion

The quantitative findings of the faculty readiness assessment indicate a substantial portion of the participants increased their readiness across all ratings in both domains from the pre- to the post-course assessment. Statistically significant results were identified for all ratings when comparing pre-faculty readiness to post-faculty readiness.

The pre-course assessment of health professions faculty readiness for OBTL, as indicated by the median scores for the FRTO offers valuable insights into specific areas of strength and potential areas of improvement when developing and implementing faculty development

initiatives. Within the attitude (importance) construct, participants demonstrated notably high perceived importance for the significance of all competencies. Course communication reflected the highest median score followed by course design, and time management which scored identically. The lowest, yet still highly ranked median score was noted for technical competence. When comparing the ability (confidence) construct, participants reported the most confidence in their ability to perform course communication, followed by course design, and technical competence which scored identically. The lowest mean score resulted from the time management competencies. Median scores for the ability (confidence) construct ranked lower than the median scores for the attitude (importance) construct. These results highlight that while faculty acknowledge the importance of each of the competencies, targeted educational interventions to enhance faculty's confidence in their ability to perform the competencies was needed. The results also identified faculty strengths in both the importance of and the confidence they perceived in the areas of course design and course communication. Strengths in these competencies can serve as a foundation to build upon as faculty development programs are created to address the specific needs of health professions educators.

The post-assessment of health professions faculty readiness for OBTL not only signifies the statistically significant differences in pre- to post-course assessment median scores, but also offers valuable perspective into the effectiveness of the educational intervention related to the four individual competencies within each construct. Within the attitude (importance) construct, as indicated by the median scores from the FRTO, participants again demonstrated notably high perceived importance for the significance of all competencies and each competency rating was significantly higher than the pre-assessment. The order rank for each competency with the attitude (importance) construct changed from pre- to post-course assessment. Participants ranked time management as the most important, followed by course communication, course design, and finally technical competence.

When evaluating the ability (confidence) construct, each competency rating on the post-course assessment was significantly higher than the pre-assessment. The order rank for each competency with ability (confidence) construct did not change from pre- to post-course assessment. Course communication was ranked the highest followed by course design, technical competence, and, finally, time management. There was a larger gap between the rankings of course design and technical competence that were ranked identically in the pre-assessment for this construct.

The quantitative results of the knowledge test showed most participants improved their scores from pre- to the post-test with statistically significant gains. These findings confirm the success of the educational intervention and provide guidance for refining future interventions.

Qualitative Findings Discussion

Themes and shared patterns emerged from the qualitative data collected during the focus group discussions, reflecting the experiences and perceptions of participants. When asked to choose a metaphor which reflected their experience with online teaching, the most common responses from participants included tilt-a-whirl, bumper cars, and roller-coaster. Participants

used words such as ups and downs, unpredictability, apprehension, and continually improving when describing their experiences with OBTL. This is not surprising based on the fact that 11 of 19 focus group participants had less than five years teaching in health professions education, and 13 of 19 participants had less than five years' experience with OBTL teaching. It is also important to consider the timeframe of the study, less than three years post-pandemic. The challenges and reflections encountered by faculty members amidst the pandemic, particularly concerning the abrupt shift to emergency remote teaching, were apparent in the responses received.

Throughout the course, participants encountered challenges related to time management, the perceived short duration of the course, and the overwhelming abundance of resources. However, advantages were also identified. Participants expressed the course facilitated the development of a better framework for OBTL, and their individual learning was enriched through the receipt of timely and pertinent feedback. Participants' beliefs and assumptions about OBTL shifted positively as they recognized its potential for high levels of engagement and as the effectiveness of the teaching methods was better understood and acknowledged. Suggestions for future offerings included adding the course as a requirement for new faculty and/or faculty new to OBTL, increasing the duration of the course to six weeks, and keeping the online format to better model best practice. Overall, participants agreed on the importance and future viability of OBTL, particularly in the context of its ability to increase accessibility and affordability for learning opportunities for a wide student population.

One surprising finding in the qualitative outcomes was the little to no mention of technical competence in the focus group discussions. While participants were not directly asked about technical competence, the topic of technology was only briefly mentioned in two of the three focus groups. In these instances, the discussions primarily revolved around the advancements in technology and the inability of faculty to continually keep pace with the advancements. This observation shows this to be a potentially overlooked aspect of the study, suggesting a need for further exploration into the use of technology and technical competence as it relates to OBTL.

### Merged Data

Upon examining the joint displays merging the datasets, the statistically significant difference in the pre- and post-intervention, coupled with the advantages highlighted in the focus group discussions, suggest the effectiveness and benefits of the educational intervention. Barriers and suggestions for improvement were also found. A significant finding in this research study, consistent with prior studies, was the difference in the mean and median scores between the competencies faculty perceive as most important as compared to the competencies they felt capable of performing. This suggests a notable gap between perceived importance and perceived capability among faculty members, highlighting areas where professional development and support may be beneficial.

### Course Design Domain

Course design is a key competency related to OBTL, encompassing elements including pedagogy, content development, instructional facilitation, and assessment strategies. Faculty development impacts course design and organization (Joosten & Cusatis, 2019; Martin et al., 2019; Varvel, 2007). Module 2 of the faculty development course covered essential aspects of course design, including pedagogy, content and instructional activity development, facilitation, and assessment.

The study found that participants initially valued course design and showed a significant increase in regard to the importance and their confidence in designing online or blended courses after the intervention. Their knowledge of the content also improved. Focus group discussions confirmed these findings, highlighting participants' desire to master OBTL best practices and frameworks, reinforcing the intervention's effectiveness.

### Course Communication Domain

Presence and effective communication are critical to OBTL success (Joosten & Cusatis, 2019; Martin et al., 2019; Varvel, 2007). Communication encompasses not only the quality of interaction between faculty and students but also the quality of interactions among students and their engagement with the course content. Module 4 focused on course delivery and engagement. The faculty development course modeled best practices, with directors providing timely feedback, engaging in discussions, answering questions, facilitating peer review, and offering relevant content. The use of best practices was acknowledged in the focus groups and confirmed through a significant increase in the perceived importance, ability, and knowledge of course communication from pre- to post-course assessments.

### Time Management Domain

Health professions educators juggle numerous responsibilities, including teaching, clinical duties, research, administrative tasks, professional development, continuing education, and personal obligations that can strain workload management and work-life balance. Time management was a key challenge reported in the study, a known barrier in OBTL. Faculty often resist adopting new delivery methods due to limited time for both faculty development and training. Effective course delivery requires time for professional development to master best practices in teaching across all learning modes.

Module 3 focused on course content development and time management. Pre-course assessments indicated faculty recognized the importance of time management but lacked confidence in their OBTL-related time management skills. The intervention significantly improved their perceptions and confidence, as shown by higher post-intervention scores although focus group discussions highlighted ongoing challenges with time management, the course's short duration, and the abundance of resources, underscoring the need for continued support in this area.

### Technical Competence Domain

Technology plays a vital role in health professions education, enhancing teaching, learning, communication, and resource access. Faculty must be technically proficient to ensure effective teaching (N. Johnson et al., 2022; Leidl et al., 2020). However, integrating technology poses challenges in training faculty and students. Module 3 covered course content development and using technology in OBTL. Various technology tools were used throughout the course. Additionally, participants were provided with an extensive list of technology tools with links and tutorials on their use.

Quantitative analysis showed technical skills were considered the least important competency both pre- and post-intervention. Minimal gains in confidence were observed post-intervention. Focus group discussions rarely mentioned technology, highlighting the challenge of keeping up with evolving tools but not discussing its impact in depth. This underscores the need for targeted interventions to enhance attitudes and confidence in technical skills, suggesting the professional development course was insufficient in this area.

### Study Limitations

The research study noted several limitations that warrant consideration. The sample size is small and drawn from a single university setting, which may not fully represent the diverse population of health professions faculty teaching in online or blended learning environments. While participants were recruited from various colleges and an institute within the university system, the majority were from a single college. Although efforts were made to recruit participants from different disciplines, expanding the sample size and diversity would strengthen the study.

Additionally, a mixed methods study design requires significant time, planning, and expertise to implement. Due to scheduling and time constraints, there was variation in the length of time between the educational intervention and the focus group discussions. This may have had an effect on participant recollection and perceptions. Furthermore, reliance on self-reported surveys and focus group discussions introduces potential biases, influenced by participant and researcher's reporting tendencies and interpretations. To mitigate these biases, standardized procedures to include the use of multiple independent coders to analyze the qualitative data and triangulation methods to corroborate the findings were used to reduce the impact of biases. Throughout the process, the researcher also continually reflected on their assumptions, biases, and interpretations to help to minimize the influence their biases.

Finally, as noted by the creators, the list of competencies included in the FRTO assessment is not exhaustive. Assessing the important components related to faculty readiness is a continual process. Modifications to the FRTO instrument based on a more recent revision study were published as the current dissertation study was in progress (Kim & Martin, 2023). Future studies would benefit from using the revised version of the FRTO instrument.

## Conclusion

As one of the first studies to investigate faculty development and preparedness for delivering online and blended courses in health professions education, the results of this research carry substantial implications for health professions education. The findings offer valuable insights to inform the development of future professional development interventions and guide further research in this area. The study identifies a gap in technical competence and suggests focused interventions to improve attitudes and confidence in this skill set. Future faculty development initiatives should explore the integration of technology and digital pedagogies to enhance teaching effectiveness in online and blended learning environments, including the potential benefits of emerging technologies such as virtual reality and artificial intelligence. Additionally, further research is recommended to examine the influence of institutional support structures on teaching quality and student outcomes in online teaching and learning. By addressing these areas, scholars can advance our understanding of faculty development in online and blended learning contexts and contribute to the enhancement of instructional practices in health professions education.

Health professions educators' attitudes and self-perceived abilities regarding the importance of competencies in online and blended teaching significantly influence their approach when using the educational delivery methods. By examining faculty readiness related to teaching competencies in OBTL, along with the influence of the online professional development course, this dissertation research study provides insights into how faculty can be educated and supported to enhance online and blended teaching and learning in health professions education. As defined in the literature, it is imperative to incorporate the elements of course design, course communication, technical proficiency, and time management when designing and implementing professional development programs for OBTL. Outcomes from the FRTO instrument allow for the ability to gauge special attention toward competencies faculty rate as less important and where they perceive lower levels of ability. The outcomes of this study have implications for both health professions faculty currently engaged in or preparing for OBTL as well as for institutions and administrators responsible for offering support to health professions faculty related to OBTL.

## Acknowledgements

This research study was completed as a requirement for the Doctor of Philosophy in Medical Sciences Interdepartmental Area, Health Practice & Medical Education Research degree at the University of Nebraska Medical Center (UNMC), Omaha, NE. I would like to acknowledge my dissertation committee and my statistician, Dr. Faye Haggar (chair), Dr. Karen Honeycutt (member), Dr. Michelle Howell (member), Dr. Victoria Kennel (member), Dr. Analisa McMillan (member), and Harlan Sayles (statistician). The successful completion of this project was made possible through generous funding from the UNMC Interprofessional Academy of Educators.

## Ethical Approval

This study was approved by the Institutional Review Board (IRB) at the University of Nebraska Medical Center, Omaha, Nebraska, United States (IRB#0571-22-EX).

## Disclosure Statement

The author reported no potential conflict of interest.

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**Preparing Health Professions Educators for Online and Blended Learning Environments: A Mixed Methods Study**

## Appendix A

### Pre-Post Faculty Readiness to Teach Online Survey

Thank you for taking the time to complete this brief survey. The intent of this survey is to gather your perceptions on online teaching & learning. Your feedback will help to guide the development of future resources & training for UNMC faculty & students.

**Demographic Information**

1. Please specify the primary discipline in which you teach.
    a. Allied Health
    b. Dentistry
    c. Medicine
    d. Nursing
    e. Pharmacy
    f. Public Health
    g. Graduate Student
2. Please specify the highest degree you hold.
    a. Doctorate (PhD, EdD, DMSC, MD, DO, etc.)
    b. Master's
    c. Bachelor's
    d. Certificate/Associate's
3. Please specify your academic rank.
    a. Professor
    b. Associate Professor
    c. Assistant Professor
    d. Instructor
    e. Graduate Student
4. Please specify your age.
    a. 65+
    b. 50–65
    c. 35–50
    d. 20–35
    e. Less than 20
    f. Prefer not to answer
5. To which gender identity do you most identify?
    a. Female
    b. Male
    c. Transgender Female
    d. Transgender Male
    e. Gender Variant/Non-Conforming
    f. Prefer not to answer
    g. Gender Identity not listed
6. Are you of Hispanic, Latino, or of Spanish origin?
    a. Yes
    b. No
7. Please specify your race.
    a. American Indian or Alaska Native
    b. Asian
    c. Black or African American
    d. Native Hawaiian or Other Pacific Islander
    e. White
    f. Another category not listed here
    g. Prefer not to answer
8. How many years of experience do you have in teaching in health professions education?
    a. I have no experience teaching in health professions education.

b. 0–5 years
c. 5–10 years
d. 10–15 years
e. 15–20 years
f. 20 years or more

9. How many years of experience do you have in teaching in an online environment in health professions education?
    a. I have no experience teaching in an online environment in health professions education.
    b. 0–5 years
    c. 5–10 years
    d. 10–15 years
    e. 15–20 years
    f. 20 years or more

Rate how **important these competencies are for online teaching** in your opinion. Use the following scale to answer these questions accordingly.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not Important at all | Not Important | Somewhat Important | Important | Very Important |

**Course Design**

10. Create an online course orientation (e.g., introduction section, getting started, etc.)
11. Write measurable learning objectives
12. Design learning activities that provide students opportunities for interaction (e.g., discussion forums, wikis).
13. Organize instructional materials into modules or units.
14. Create instructional videos (e.g., lecture video, demonstrations, video tutorials)
15. Use different teaching methods in the online environment (e.g., brainstorming, collaborative activities, discussions, presentations)
16. Create online quizzes and tests
17. Create online assignments
18. Manage grades online

**Course Communication**

19. Send announcements/email reminders to course participants
20. Create and moderate discussion forums
21. Use email to communicate with the learners
22. Respond to student questions promptly (e.g., 24 to 48 hours)
23. Provide feedback on assignments (e.g., 7 days from submission)
24. Use synchronous web conferencing tools (e.g., Adobe Connect, Webex, Blackboard Collaborate, Skype)
25. Communicate expectations about student behavior (e.g., netiquette)
26. Communicate compliance regarding academic integrity policies
27. Apply copyright law and Fair Use guidelines when using copyrighted materials
28. Apply accessibility policies to accommodate student needs

**Time Management**

29. Schedule time to design the course prior to delivery (e.g., a semester before delivery)
30. Schedule weekly hours to facilitate the online course
31. Use features in Learning Management System in order to manage time (e.g., online grading, rubrics, speed grader, calendar)
32. Use facilitation strategies to manage time spent on course (e.g., discussion board moderators, collective feedback, grading scales)
33. Spend weekly hours to grade assignments
34. Allocate time to learn about new strategies or tools

**Technical**

35. Complete basic computer operations (e.g., creating and editing documents, managing files and folders)

36. Navigate within the course in the Learning Management System (e.g., Moodle, Canvas, Blackboard etc.)
37. Use course roster in the Learning Management System to set up teams/groups
38. Use online collaborative tools (e.g., Google Drive, Dropbox)
39. Create and edit videos (e.g., iMovie, Movie Maker, Kaltura)
40. Share open educational resources (e.g., learning websites, web resources, games, and simulations)
41. Access online help desk/resources for assistance

Now, please rate **how well you are able to accomplish the following competencies**. Use the following scale to answer these questions accordingly.

| 1 | 2 | 2 | 3 | 4 |
|---|---|---|---|---|
| I cannot do it at all | I cannot do it | Maybe I can do it | I can do it | I can do it well |

**Course Design**

42. Create an online course orientation (e.g., introduction, getting started)
43. Write measurable learning objectives
44. Design learning activities that provide students opportunities for interaction (e.g., discussion forums, wikis).
45. Organize instructional materials into modules or units.
46. Create instructional videos (e.g., lecture video, demonstrations, video tutorials)
47. Use different teaching methods in the online environment (e.g., brainstorming, collaborative activities, discussions, presentations)
48. Create online quizzes and tests
49. Create online assignments
50. Manage grades online

**Course Communication**

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55. Provide feedback on assignments (e.g., 7 days from submission)
56. Use synchronous web conferencing tools (e.g., Adobe Connect, Webex, Blackboard Collaborate, Skype)
57. Communicate expectations about student behavior (e.g., netiquette)
58. Communicate compliance regarding academic integrity policies
59. Apply copyright law and Fair Use guidelines when using copyrighted materials
60. Apply accessibility policies to accommodate student needs

**Time Management**

61. Schedule time to design the course prior to delivery (e.g., a semester before delivery)
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63. Use features in Learning Management System in order to manage time (e.g., online grading, rubrics, speed grader, calendar)
64. Use facilitation strategies to manage time spent on course (e.g., discussion board moderators, collective feedback, grading scales)
65. Spend weekly hours to grade assignments
66. Allocate time to learn about new strategies or tools

**Technical**

67. Complete basic computer operations (e.g., creating and editing documents, managing files and folders)
68. Navigate within the course in the Learning Management System (e.g., Moodle, Canvas, Blackboard etc.)
69. Use course roster in the Learning Management System to set up teams/groups
70. Use online collaborative tools (e.g., Google Drive, Dropbox)
71. Create and edit videos (e.g., iMovie, Movie Maker, Kaltura)
72. Share open educational resources (e.g., learning websites, web resources, games, and simulations)
73. Access online help desk/resources for assistance
74. Which types of support helped you while preparing to teach online? (Check all that apply)
    a. Professional development workshops / training / webinars

b. One-on-one consultation with instructional designers
c. Seeking advice from online learning experts
d. Faculty / peer mentoring
e. Accessing web resources or tutorials for teaching online
f. Using instructional videos or other documentation (handbook) on the learning platform
g. Online helpdesk or support
h. Student teaching assistants
i. Other

75. Please explain which types of support helped you while preparing to teach online. (short answer)
76. What type of support would you have liked to have while preparing to teach online? (short answer)

Martin, F., Budhrani, K., & Wang, C. (2019). Examining Faculty Perception of their Readiness to Teach Online, *Online Learning Journal*, 23(3), 97–119.

**This survey was adapted from the reference above. Permission to use survey was granted by Dr. Martin via email June 14, 202

## Appendix B
## Pre-Post Teaching Online Knowledge Test

1. Define Distance Education using your own words. (short answer).
   Answer example: Institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, & instructors (Simonson & Schlosser, 2009)
2. Which of the following describes a teaching environment where face-to-face and online teaching are a cohesive experience with both online and on-campus sessions intertwined into a single course?
   a. Distance education
   b. Blended/hybrid*
   c. Remote
   d. Synchronous
3. Learners who are experienced, self-directed, motivated, and ready to learn are described as:
   a. Online learners
   b. Hybrid learners
   c. Adult learners*
   d. Pedagogical learners
4. Skills necessary to be a successful online learner include which of the following (select all that apply):
   a. Communication skills*
   b. Engagement*
   c. No technology skills
   d. Little patience
   e. Organization*
   f. Persistence*
   g. Initiative*
5. Which of the following is NOT considered one of the seven principles of good practice in undergraduate education (Chickering & Gamson, 1987):
   a. Encourages little contact between students and faculty*
   b. Develops reciprocity and cooperation among students.
   c. Encourages active learning.
   d. Gives prompt feedback.
   e. Emphasizes time on task.
   f. Communicates high expectations.
   g. Respects diverse talents and ways of learning.
6. Kolb defined this type of learning as the process of "learning through reflection on doing" where students develop skills, knowledge, and values from direct experiences.
   a. Transformative learning
   b. Multimedia learning
   c. Andragogy

   d. Experiential learning*
7. A framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn is the definition for which of the following:
   a. Learning accommodations
   b. Learning accessibility
   c. Universal design for learning (UDL)*
   d. Inclusive classroom
8. Which of the following is NOT considered one of the categories related to the Bloom's Taxonomy Framework?
   a. Knowledge
   b. Application
   c. Discussion*
   d. Synthesis
   e. Evaluation
9. Which of the following would be considered a poorly written learning objective?
   a. Students will discuss the elements of writing learning objectives.
   b. Students will write five learning objectives.
   c. Students will evaluate five learning objectives.
   d. Students will know five learning objects and be able to apply them to their teaching.*
10. The ADDIE instructional design model stands for:
   a. Analyze, Design, Develop, Implement, Evaluate
   b. Analyze, Discuss, Develop, Implement, Evaluate
   c. Apply, Design, Develop, Implement, Evaluate*
   d. Analyze, Discuss, Develop, Inquire, Evaluate
11. Examples of formative assessment include all of the following EXCEPT:
   a. Concept map
   b. Discussion boards
   c. Early feedback on student draft assignments
   d. End of the semester final exams*

12. Which of the following are advantages of using an analytic rubric for your online course? (check all that apply)
   a. Rubrics provide students with clear expectations for the assignment*
   b. Rubrics lead to fewer student questions regarding online assignments allowing more time for student engagement in the assignment*
   c. Rubrics assist faculty in grading online assignments objectively*
   d. Rubrics assist in providing students with general feedback criteria*
13. Creating teaching presence in an online course is as simple as (check all that apply):
   a. Providing students with thoughtful introduction of yourself*
   b. Creating a get to know you survey*
   c. Copying last year's course & opening it without updating
   d. Using the discussion board to build connections*
   e. Providing timely feedback*
14. Which of the following is TRUE regarding time management when teaching an online course?
   a. Teaching an online or blended course requires considerably less time than teaching a face-to-face course.
   b. There is no reason to block off time in your calendar for online interactions and grading when teaching an online course.
   c. When teaching an online course, all content should be original content each time the course is offered; recycling content is considered bad practice.
   d. Faculty should have a goal of replying to 5–10 percent of the class each week on the discussion board; tracking your participation helps to manage your online presence.*
15. The design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educational worthwhile learning outcomes is the definition for which of the following:

a. Direct instruction
b. Online teaching
c. Teaching presence*
d. Facilitation of discourse

## Appendix C
## Focus Group Questions

*Focus Group Questions*

| | |
|---|---|
| Q1a. | Consider your experiences with online teaching. Using an amusement park's rides and activities, choose a metaphor that reflects your online teaching. Teaching is. . . or I am. |
| Q1b. | Has this metaphor changed as a result of the faculty development program? |
| Q2. | Why did you enroll in the Teaching Online Course? |
| Q3. | Did you experience any barriers related to your ability to complete the course? |
| Q4. | Thinking about the Teaching Online course, list the specific advantages of completing the course. |
| Q5. | List the specific limitations and/or disadvantages that you have you experienced with the use of the approach. |
| Q6. | Did your prior beliefs or assumptions about teaching and learning change based on your experience in the course? |
| Q7. | If yes, how did you prior beliefs or assumptions about teaching and learning change? |
| Q8. | If you think about the future of online learning in health professions education? How would you describe it? |
| Q9. | What suggestions do you have for the next offering? |
| Q10. | Do you have any other comments or concerns about the use of this approach or the study in general? |

*Note*. Adapted from "Faculty development for online teaching as a catalyst for change," C.A. McQuiggan, 2012, *Journal of Asynchronous Learning Networks*, *16*(2), 27–6