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Comparing Faculty Perceptions of Importance and Perceived Competencies of Online Best Practices Through the Encore Components

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COMPARING FACULTY PERCEPTIONS OF IMPORTANCE AND PERCEIVED COMPETENCIES OF ONLINE BEST PRACTICES THROUGH THE ENCORE COMPONENTS

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Abstract

The role of faculty in online education is critical to its sustainability and success. In *Time for Class: Lessons for the Future of Digital Learning in Higher Education*, Tyton Partners (2017), a strategy consulting firm, asked administrators the most important factor for successful digital learning and the top response was "support for faculty professional development" (p.14). Yet, many faculty are not trained in digital pedagogy or online best practices. The focus of this research was to understand how faculty perceived the importance of online best practices as well as how they ranked their competency in said best practices. Specifically, this research asked what are faculty perceptions of importance regarding ENCORE (**E**xperience of Students, **N**avigationally Sound Design, **C**ollaborative Learning, **O**ngoing Faculty Presence, **R**elevant Application, and **E**xperience of Students) components? What are faculty perceived competencies for the ENCORE components? How important do faculty rank each ENCORE component? It also explored what university systems (support, training, structures) could potentially increase faculty adoption of ENCORE components in online courses? To answer these questions, a needs assessment using the Borich Needs Assessment Model was conducted, along with interviews. Results emphasized the need for faculty training in areas of Navigationally Sound Design and Engaging Content as well as Relevant Application. The Diffusion of Innovation Theory was applied to understand how universities and teaching centers can better train and support faculty in online learning environments.

Keywords: online education, online best practices, faculty development, needs assessment, quality review, diffusion of innovation

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Chapter 1: Introduction

The role of faculty in online education is critical to its sustainability and success. Tyton Partners, a strategy consulting firm, released a series of reports (2015 and 2017) to "illuminate the state of digital learning in higher education and to provide recommendations to the field on opportunities to expand digital learning in service of improved student outcomes" (Tyton Partners, 2017, p. 3). The 2017 report surveyed 3500 national higher education faculty and administrators. In the 2017 report, *Time for Class: Lessons for the Future of Digital Learning in Higher Education*, Tyton Partners asked administrators to name the most important factor for successful digital learning and the top response was "support for faculty professional development" (2017, p.14). Yet only 25% felt their institutions offered effective training programs for faculty while 33% indicated they had "incomplete, inconsistent, and/or optional" training for faculty (Tyton Partners, 2017, p. 15). As technology rapidly advances, online courses and programs are increasing, even at traditional brick and mortar universities. According to *Grade Increase: Tracking Distance Education in the United States*, "distance enrollments remain local: 52.8% of all students who took at least one distance course also took an on-campus course" (Babson Survey Research Group, 2018, p. 3). As more online courses are offered at universities, there is a greater need for faculty development in online instruction. This is critical as appropriate faculty training promotes positive student experiences and effective online learning (Austin, Roepnack, & Vo as cited in Clay & Fanning, 2019; Pelham, Caudill, & Neumann as cited in Clay & Fanning, 2019).

While introducing the subject of online teaching in their book, Boettcher and Conrad (2016) note "the most important missing element in the preparation of many higher education faculty is a foundation in teaching and learning principles and practices" (p. 3). This missing element can influence, often negatively, faculty's perspective of online courses and modalities. Best practices on online instruction are well-defined in the literature yet not often employed by faculty (Tyton Partners, 2017). Tyton Partners (2017) note only 21% of faculty felt they were trained in using digital technology and only 9% were incentivized to use digital technology. There are various reasons for this. For example, in *Making Digital Learning Work*, instructional designers cited "lack of faculty buy-in as the number one barrier to successful implementation of digital learning" and felt that lack of knowledge and understanding were part of the reasons why this barrier existed (Boston Consulting Group, 2018, p. 34). Likewise, McCurry and Lampe (2019) also found faculty attitudes towards online learning and teaching to be a barrier to faculty implementation of online best practices (as cited in Clay & Fanning). Further, processes for training faculty are met with mixed emotion and may or may not be utilized by faculty, especially without incentive (Boston Consulting Group, 2018). This leads to confusion, frustration, and negative experiences for faculty and students and highlights the importance of effective faculty development in online best practices.

McClure and Woolum (2006) highlighted the importance of faculty development in their proposed model for online education based on their four-plus years of developing online courses. Faculty development is clearly identified as critical to the success of

online education, yet there is not a clear directive on how this training should be conducted — not just in the type of modality but also in the topics to be covered. For example, at Clemson University, training is optional and mainly focused on the learning management system while at North Carolina State University, faculty can participate in a fellows program to become university leaders in online education. As a final example of how training can differ, Mississippi State University offers training that varies each semester, depending on identified themes each semester. Previous studies have surveyed faculty for their input on training but there is no clear method on how the input is ranked and chosen for training topics (Austin, Roepnack, & Vo as cited in Clay & Fanning, 2019; Chapman & Neaves as cited in Clay & Fanning, 2019; Pelham, Caudill, & Neumann as cited in Clay & Fanning, 2019). Thus, faculty attitudes and lack of input in training topics can result in professional development not adequately reaching and connecting with faculty.

In an effort to address the lack of guidance on professional development for faculty, this research sought to employ a needs assessment model that has been used extensively in identifying training needs for agricultural education teachers. Agricultural innovations are often rapidly advancing, similar to online education innovations (Rogers, 1983). The Borich Needs Assessment Model (BNAM) has been in use since 1979 and has been a reliable source for identifying training needs both at the secondary and higher education levels. This model looks at the discrepancy between a participant's perception of importance and their perceived competency of a particular component. It identifies the

areas that faculty feel are important *yet* do not feel they are competent in. When this discrepancy is identified, it helps to inform a more targeted approach to faculty development for best practices in online education. Intentionally developing professional development in these identified areas will help recruit faculty for training since it would purposefully address their specific needs.

The components for the BNAM used in this dissertation study came from ENCORE, an award-winning online quality review tool developed by Clemson Online at Clemson University (Online Learning Consortium [OLC], 2015). ENCORE is an acronym that delineates six principles of online education: **E**xperience of Students, **N**avigationally Sound Design, **C**ollaborative Learning, **O**ngoing Faculty Presence, **R**elevant Application, and **E**ngaging Content. ENCORE's criteria are grounded in the best practices for online education (Salley, Shaw, Bradley, Arnold, and Perkins, as cited in Clay & Stone, 2015).

Purpose of Research

This research is intended to contribute to the literature by providing a way to measure discrepancies in faculty perceptions of importance and competencies in the six ENCORE components. Through the BNAM, a discrepancy score was used to identify those areas in which training had the highest need as well as was ranked as important among faculty, thus establishing a more desirable training for faculty. Follow-up interviews provided an opportunity for more in-depth discussion regarding perceptions of importance, competencies, and adoption/rejection of online best practices.

Research Questions

This research sought to answer the following research questions:

1. *What are faculty perceptions of the importance of best practices regarding ENCORE components?*
    1.1. *What are faculty perceived competencies for integrating the ENCORE components?*
    1.2. *How important do faculty rank each ENCORE component?*
2. *What university systems (support, training, structures) could potentially increase faculty adoption of ENCORE components in online courses?*

Delimitations

There are delimitations to this dissertation study. One is the geographic region that was selected for the study sample. There are land-grant universities in all 50 states in the United States (US). I chose to include only those land-grant universities in the southeastern part of the US. This decision was made because the southeast region of the US has similar cultural norms that would be similar to the home land-grant university. Another delimitation of this study was the timeframe in which the survey remained open. The survey remained open for approximately eight weeks. Data collection was impacted by the COVID-19 pandemic, and therefore the timeframe was limited in order to feasibly move forward in this research. Another delimitation was the survey design which did not include any open-ended responses. Due to the complexity of the survey, open-ended responses were not included because they would have lengthened an already long survey

as well as multiple-choice only questions allowed for better manageability of the survey responses. One last delimitation was the use of the ENCORE quality review tool. There are other quality review tools, but I chose to include ENCORE because it was the quality review tool of the home institution. While I have worked closely with ENCORE, I have also worked with other quality review tools, therefore, I do not consider the use of ENCORE as researcher bias.

Definition of Key Terms

Online education can be described in a number of ways, as can online best practices. Below is a list of key terms and definitions to clarify how these terms are used within this dissertation study.

Key Terms: online education, online best practices, faculty development, needs assessment, quality review, diffusion of innovation

- *Online education*: Picciano (2019) defines online education as "all forms of teaching and learning using the Internet" (p. 3). He further clarifies that a fully online course typically has "80% or more of the seat time replaced by online activity" (2019, p. 3).
- *Online best practices*: Practices that are grounded in constructivist theory; comprised of student-centered learning interactions that are collaborative and engaging; has faculty in a facilitator role; and creates an online learning space reflective of UDL principles

- *Faculty development*: Generally speaking, faculty development can have multiple paths with the ultimate goal of helping faculty in their teaching and scholarship. Specifically, in the context of faculty development in online education, it is typically associated with digital pedagogy, technical tools/support, and university policies and procedures for online teaching (Ragan & Schroeder, 2014).
- *Needs Assessment*: For the purposes of this dissertation study, training needs used the definition put forth by Borich (1979) as "a discrepancy between an educational goal and trainee performance in relation to this goal" (p. 4). The process of identifying this discrepancy is the needs assessment.
- *Quality Review*: Swan (2014) defines quality review as "rubrics for [online education] that establish standards for quality in course design across a program, college, or institution" (p. 87).
- *Diffusion of Innovation*: Rogers (2003) defines the diffusion of innovation as the "process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 11).

The literature review that follows this introductory chapter will: 1) explore the theoretical assumptions for this research; 2) present an in-depth review of best practices for online education from both a pedagogy and course design perspective; 3) describe the needs assessment tool used in this research (BNAM); and, 4) discuss the evaluation of best practices, and the Diffusion of Innovations Theory. The methods section (chapter three) outlines the development of the research tools, data collection, and analysis

procedures. Chapter four will present the results of the data analysis, and finally, the concluding chapter will review the results in relation to the literature and theories and suggests strategies for faculty development using the Diffusion of Innovation Theory. The conclusion also provides replicable steps that universities can take to identify faculty development needs in online education using the BNAM.

Chapter 2: Literature Review

According to The Distance Education Enrollment Report 2017, close to 30% of higher education students take at least one online course (Allen & Seaman, 2017). The report also notes a year-to-year increase in online education of higher education students of over 220,000 students which is 3.9% more than the increase over the past two years. There are over six million higher education students taking online education courses. With the exponential increase in student interest in online education courses, it is imperative that higher education focus on the key factors that make online education successful. While there are a number of factors that contribute to successful online education and they are all critical to its success, for the purpose of this research, the factors that are explored are faculty development and training in teaching online. Carpenter, et al. (2020) confirm this when they state, "now, maybe more than ever, faculty need support to teach online [and] function in a virtual context" (p. 13). This is also supported by VanLeeuwen, C. A., et al. (2020) when they state, "there have been continued calls for higher education institutions to provide opportunities for faculty to develop pedagogical and technical expertise in digital education" (p. 2). Specifically, this research will conduct a needs assessment of faculty perceptions of importance of online best practices which will inform faculty professional development opportunities. The literature review that follows looks at theoretical assumptions for this research, the importance of best practices in online education, the BNAM, the ENCORE quality review tool, and current faculty professional development trends in online education. It

ends with a review of the Diffusion of Innovation theory and how it will inform this research. Lastly, it looks at how the literature informs the research questions for this study.

Constructivist Paradigm

There are a number of theories that focus on best practices for online education, but constructivist theory (in some form) is consistently attributed to a successful online education course. Jean Piaget was most influential in the evolvement of the constructivist theory. In simplistic terms, the constructivist theory suggests people "construct concepts through the process of active experimentation and reasoning. [Piaget] saw humans as highly motivated to organize the experiences they have into concepts and theories of how the world works" (Larson & Walker, 2005, p. 135). Constructivist theory has been influential in the development of learning and educational philosophies and has been typically connected with other prominent learning theories, such as sociocultural theory. Sociocultural theory situates learning as an active process that is facilitated through social interaction with scaffolding that allows learners to extend beyond their zone of proximal development (ZPD) (Nathan & Sawyer, 2014; Reiser & Tabak, 2014). Online education is situated within constructivist and sociocultural theory. Both theories subscribe to the *learner* constructing their knowledge but sociocultural goes a step further noting the importance of social interaction in helping to construct knowledge. Sociocultural theory believes with scaffolding, learners can move beyond their ZPD and construct new knowledge they may not have been able to do on their own. Both of these theories align

with the *constructivist* worldview or paradigm (Creswell & Creswell, 2018). With continual advances in technology, the pendulum has swung back to a leading constructivist basis for learning in the online classroom. Online education is typically student-centered with activities that are grounded in constructivist theory such as case studies, creative inquiry, problem-solving and/or research-based projects, etc. Therefore, constructivist theory provides a helpful lens in thinking about online education and its best practices.

Theoretical assumptions

Before I embarked on this research, I sought first to understand the theoretical assumptions I adhere to in order to choose appropriate methods for the research. I am grounded in the constructivist paradigm which encompasses the constructivist and sociocultural theories. According to Packer and Goicoechea (2000), constructivist theory "employs a dualist ontology … a subject and an independent world" (p. 228). The subject represents the individual while the independent world represents "biology, physics, space and time, representation, categorization, and logic" (diSessa, 2014, p. 91). From a constructivist view, my focus is on individual learning within the situational context. Once I identified the constructivist paradigm, I continued in my exploration of constructivist theory to further refine my understanding of learning. Cohen, Manion, and Morrison (2018) discuss the epistemological assumptions for constructivist theory which focus on "the processes that lead to the construction, constitution, and character given to independent objects and the relationships between them" (p. 23). From a constructivist

theory, I sought to understand how each individual constructs their knowledge, how they view these processes, and how they show evidence of knowledge gained. The constructivist paradigm provided the lens for my interpretation of faculty perception of importance and perceived competencies of ENCORE.

Generally speaking, the literature often combines the theories, with sociocultural theory a part of constructivist theory. Packer and Goicoechea (2000) note "both perspectives tacitly assume active individual construction as well as participation in and enculturation into social practices" (p. 230). However, for the purposes of this research, the constructivist theory informed the decisions in methodological choices and data, collection, analysis, and interpretation for the constructs of inquiry (six components of ENCORE) because I sought to understand faculty and staff's individual perceptions of importance and competencies with online best practices. Best practices for online education, which are grounded in constructivist principles, are introduced in the next section, along with a definition which informs this research.

Best Practices

As online education continues to evolve with greater access to and advances in technology, online education research has shifted focus from how online education can be implemented to the best practices for pedagogy and course design in online education. In the mid- to late-1990s, multiple national organizations began to lay the foundation for best practices in online learning. Two organizations that pioneered research in learning are the Center for Applied Technology (CAST) and the Online Learning Consortium

(OLC which is formerly known as the Sloan Consortium of Colleges and Universities or Sloan-C).

CAST's largest contribution to new practices for learning is the Universal Design for Learning (UDL) framework. UDL is a set of practices to design courses that focuses on the why (engagement), the what (representation), and the how (action and expression). Engagement focuses on designing lessons which engage and motivate students. Representation focuses on sharing information in multiple ways rather than a single mode of delivery. And, Action and Expression focuses on flexibility in assessment of knowledge gained (CAST, 2018). UDL guidelines are developed for learning in all contexts: K-12, higher education, and inform online education at all levels.. UDL is a principal framework which has heavily influenced online education best practices. As Darby notes "when we reframe our thinking about how UDL can help all our learners engage and succeed, we see the value of the approach in every course design decision we make, whether teaching online or in person" (Darby & Lang, 2019, p. xxv). The latest version of UDL, v.2.2, was released in 2018.

In the mid-1990s, the Sloan Foundation launched multiple initiatives to support online education, resulting in what is known today as the OLC, a leader in online education initiatives and research. These initiatives were: the Sloan-C, a refereed journal, research base, and a framework to address quality in online education. The framework is titled The Five Pillars of Quality Online Education and focuses on the following areas of online education: learning effectiveness, access, scale, faculty satisfaction, and student

satisfaction. Learning effectiveness and faculty satisfaction both address best practices for learning in online education (OLC, 2018). Learning effectiveness focuses on "the instructional quality of online learning" and is inclusive of instructional design, faculty training, evaluation, and other factors associated with goals of learning (Chaloux & Miller, 2014, p. 10). Faculty satisfaction focuses on "broad acceptance of faculty for the use of technology and online pedagogical strategies that enhance the teaching and learning environment" and is inclusive of technology as a tool for teaching, learning interactions as well as recognition of development and teaching of online courses (Chaloux & Miller, 2014, p. 10).

In addition to OLC, two other prominent professional organizations collaborate with OLC to support research on and advancement of best practices for online learning: University Professional and Continuing Education Association (UPCEA) and Distance Learning Administration (DLA). Similar to the OLC's *5 Pillars*, UPCEA has defined hallmarks of excellence in leadership for online education. The hallmarks are designed for administration, but also mention the importance of quality online education through best practices in course design and teaching (UPCEA, 2018). An example of these hallmarks are faculty support and professionalism which focus on the importance of supporting faculty in online education and focusing on the emerging field of online education (UPCEA, 2018). Both organizations contribute to the field in online education by supporting professional development conferences and refereed journals.

Best practices in online education are typically discussed in one of two contexts: 1) best practices in pedagogy; and 2) best practices in course design. Best *pedagogical* practices are discussed from a theoretical view (how the content is developed and delivered, how knowledge is applied, and how assessment of knowledge gain is measured). Best *course design* practices are discussed from an aesthetic view (course learning environment: navigation, course organization, the *look and feel* of the course). Regardless of which lens you think about best practices, Riggs, as cited in Darby and Lang (2019), notes "good teaching in any learning environment requires careful attention to course design and facilitation" (p. xx).

Best Practices in Pedagogy

Literature has identified best practices for pedagogy in online education and most of these practices revolve around student-centered techniques that include collaboration, creative inquiry, problem-solving/research-based activities, and peer review (Bernard, et al., 2009; Cao, Q., Griffin, T., & Bai, X., 2009; Dabbagh, N., 2007; Kim, K. & Bonk, C., 2006; Pelz, B., 2004; Picciano, A., 2006; Darby & Lang, 2019). Joksimović, et al. (2015) identified best practices in their review of the history and state of online education such as: "well-designed courses with interactive and engaging content, structured collaboration between peers, flexible deadlines to allow students to pace their learning, continuous monitoring of student progress, and the provision of formative feedback when needed" (p. 118). Darby also focuses on the importance of this when she notes how

online learning environments don't have the luxury of seeing confusion on faces or being able to answer students questions in real-time (Darby & Lang, 2019).

Learning Interactions.

All of best pedagogical practices can fall into three learning interaction categories as identified by distinguished educational researcher Moore: student-student (SS), student-content (SC), and student-instructor (SI) (as cited in Bernard, et al., 2009). Moore (1989) defines SS interaction as "inter-learner interaction, between one learner and other learners, alone or in group settings, with or without the real-time presence of an instructor" (p. 2). Moore suggests SS interactions offer multiple benefits especially with application and evaluation of course content. Outside of academic benefits, SS interaction also develops soft skills for students such as collaboration, teamwork, and conflict resolution. SC interaction is defined as "interaction between the learner and the content or subject of study" (Moore, 1989, p. 1). This interaction is critical to learning as it introduces new ideas and concepts which facilitates learning and knowledge gained. SI interaction is defined as "interaction between the learner and the expert who prepared the subject material" (Moore, 1989, p. 1). Moore (1989) suggests this interaction is engaged when instructors plan content, organize student application of content, evaluate student understanding of content, and provide support to students. The three learning interactions are founded in constructivist theory as the learner is given building blocks to construct the online education experience which puts the *learner* in charge of the knowledge

gained. In this role, the professor is seen as a facilitator of knowledge and guides the students through the course.

In addition to Moore's three learning interactions, Hillman, Willis, and Gunawardena (1994) also proposed a fourth interaction, learner-interface (LI). In this interaction, the interface — or technology — becomes "the point or means of interaction" students use to engage with the content and their instructor and classmates (p. 32). This interaction has multiple layers. First, there is the decision on which interfaces will be used when developing a course. Next, there is the ability to then use those interfaces — both from an instructor and student perspective. As Hillman, Willis, and Gunawardena (1994) note that "regardless of the proficiency level of the learner, inability to interact successfully with the technology will inhibit his or her active involvement in the educational transaction" (p. 34). Therefore, it is vital that LI is considered with intentionality when deciding which technologies will be used in course design so as not to hinder the student experience. Linked with ability, another layer is on how these interfaces will be explained to the student and what instruction they will be given to successfully interact and navigate the interfaces chosen for the course. Even though LI is mostly *behind the scenes*, it is important that its role is considered in course design.

Boettcher and Conrad introduce a Learning Experience Framework that also focuses on the learning interactions defined by Moore (1989) and Hillman, Willis, and Gunawardena (1994). The Learning Experience Framework is the first principle of their 10 core learning principles (2016). In their framework, they identify four elements that

they recommend for all online learning experiences: learner, faculty, content, and environment. Boettcher and Conrad (2016) note that the "framework captures a complex set of interactions among these four elements and the roles those elements play in a learning experience" (p. 28). They also state the importance of using the framework to ensure a learner-centered environment in which the learner is able to construct their learning experiences through the interactions with the faculty, content, and learning environment.

Conrad and Donaldson (2011) note that when designing online courses, "the goal is to create activities that will engage and challenge learners while expanding their personal connections to their existing knowledge" (p. 26). And Smith (2014) notes the benefits for learners when they can actively engage with faculty and other students, absorbing the content they are learning. The instructional design of the course will dictate how faculty and students are engaged in the course, and which learning interactions are present throughout the course. Not all learning interactions are present for each activity. In consideration of best practices for pedagogy in online education, it is important to design courses that offer SS, SC, and SI interactions as well as are intentional with LI. Examples of activities for the identified best practices that incorporate SS, SC and SI are discussion boards, case studies, and group/class research projects.

Best Practices in Online Course Design

The design of an online course can contribute to student learning and satisfaction. Darby supports this when she states, "with deliberate attention to the design of your

online class, you set the stage for better teaching of it" (Darby & Lang, 2019, p. 212). Part of this design is the look and feel of the online course and how well it is organized. Best course design practices are supported in the literature. After Smith (2014) attended a learner panel in online education, one thing he noted was how learners made a decision on how good a course would be within the first few minutes of logging in. Their impression stems from how well the course was organized. So, what are the best ways to design an online learning environment? Smith (2014) offers a learning guide which outlines the main components of the online course design: dates, lesson titles and topics, learning goals/outcomes, resources, activities, assessments (both self and lesson), and grades and he stresses the importance of consistency and organization in course design.

Boettcher and Conrad (2016) point out that "online students generally expect to see a holistic view of a course right at the beginning of a course so they can plan their work and personal responsibilities around the course assignments and major projects" (pp. 107-108). To help with preparing for an online course design, Boettcher and Conrad (2016) share the following key components of course design: syllabus, content resources, assessments, assignments, schedule, teaching guides (objectives and topics), activities, and self-reflections.

Both Smith (2014) and Boettcher and Conrad (2016) recognize the importance of having a prepared and organized online course design. Smith (2014) further supports this by stating a well-designed online course "creates an environment where learners are

confident of their pathway through the course" which provides more time for content interaction rather than issues with course navigation (p. 86).

Definition of Best Practices

The literature provides a wealth of information on best practices for teaching online as do the professional organizations dedicated to advancing online teaching and learning. What they do not provide is a one size fits all definition of instructional design best practices. Joksimović, et al. (2015) note this when they say, "a set of *general guidelines*, related to particular learning contexts, needs to exist as a commencement point for supporting instructors. Here we stress the notion of general, since it is highly unlikely that there is a single best course design for any particular context for all instructors" (p. 118). Literature supports constructivist theory as the theoretical base for pedagogy in online education as well as common elements of quality online course design. For the purpose of this paper, the following definition is put forth for best practices:

Online instructional design best practices are defined as practices that: are grounded in constructivist theory; comprised of student-centered learning interactions that are collaborative and engaging; has faculty in a facilitator role; and creates an online learning space reflective of UDL principles.

Best practices in online education help ensure a positive experience for both faculty and students and they typically fall into two categories, pedagogical and course design practices. Both are influenced by UDL principles of learning as well as

frameworks put forth by leading online education organizations. The best practices are student-centered and incorporate four learning interactions to engage students with their instructor, the content, their peers as well as the technical interfaces employed in the course. Pedagogical and course design practices reflect intentional actives and organization to engage students throughout the course. This research sought to better understand how faculty perceive the importance of these practices as well as how competent they feel incorporating these practices and used the BNAM in order to capture these perceptions.

Borich Needs Assessment Model

The BNAM has been used extensively in evaluation of training programs for faculty and in-service teachers within agricultural education (Joerger, 2002; Duncan, et al., 2006; Layfield & Dobbins, 2002; Kitchel, et al., 2010; Cannon, et al., 2010; & Sorensen, et al., 2014; Waters & Haskell, 1989; Zarafshani & Baygi, 2008; & Rocca, 2010) . Technological advances and innovations in agricultural systems constitute a need for proper training for agricultural education faculty[1] (National Research Council, 2009). Since 1979, the BNAM has been used to evaluate teacher training programs.

Borich (1980) used discrepancy scores and mean weighted discrepancy scores (MWDS) to analyze the data from his NAM. Borich believed by comparing two dimensions (or polar positions), one has more useful data than simply the importance of a competency. Comparing the perceived importance and ability yields a more accurate

[1] For the remainder of this section of the literature review, faculty will be used to be inclusive of both higher ed and K-12 teachers.

picture of training needs. Waters and Haskell (1989) note the MWDS allows trainers to "develop a prioritized list of in-service needs based upon both perceived importance and knowledge of the topic" (p.27). The following studies highlight the success of the BNAM in understanding faculty perception of importance and competence of training needs and then ranking said needs to review and revise training programs to more efficiently meet training objectives.

Secondary Education

In secondary education, the BNAM has been used extensively to help determine preservice and beginning in-service training needs of agricultural education teachers. The first study looks specifically at beginning teachers (one full semester teaching) while the remainder include beginning (up to five years teaching) and experienced (five years or more teaching) teachers. The competencies researched in each of these studies were expansive, findings related to technology are highlighted.

Joerger (2002) conducted a study to understand the needs of beginning agricultural education teachers. Joerger conducted the study with two cohorts, 2000 and 2001. In addition to understanding their needs, he also sought to compare the needs within the cohorts. Each group had one full semester of teaching prior to participation in the study. Joerger used a needs assessment which was based on the BNAM. He also conducted all statistical analysis using the BNAM methods (discrepancy, MWDS, and ranking). His competency statements were divided into four categories: program design and management, teaching and classroom management, leadership and SAEP

development, and technical agriculture. Joerger found participants felt the competencies were instrumental to their success as a teacher, yet they felt only somewhat confident in the competencies. Joerger (2002) identified six competencies in which both cohorts had a need for in-service training, with one competency related to "advances in agricultural technology into the curriculum" (p. 21). The highest needs were in the program design and management and teaching and classroom management categories. Another interesting finding from Joerger's study was that the cohorts had different needs, which led Joerger to recommend surveying each new cohort rather than assume what works for one cohort will work for all. The BNAM helped to identify not only the most needed categories of training for beginning teachers but also the importance of understanding the need for each new group of beginning teachers.

Following Joerger's study in 2002, Duncan et al. (2006) conducted a similar study to identify in-service needs for agricultural education teachers in the state of Georgia. Duncan, et al. used a modified version of Joerger's needs assessment instrument. Just like Joerger, Duncan et al. analyzed the data using BNAM methods. Duncan et al. had three categories for their needs assessment: technical agricultural preparation needs, teaching and learning, and program management preparation needs. Duncan et al. found need areas for each category and made recommendations for the highest ranked competency within each category (based on MWDS). Like Joerger's study, Duncan et al. (2006) also found the "ability to integrate current advances in agricultural technology into the curriculum" as a high (important) need for training teachers (p.32). Duncan et al. also

recognized the importance for faculty in higher education to use the findings to help inform curricula for agricultural education students. The authors' suggested recommendations for in-service training, and while specific to Georgia teachers, note they can benefit other states as well -- or at the very least can help them conduct their own needs assessment to better serve their agricultural teachers.

Similar to Joerger and Duncan, et al., Layfield and Dobbins (2002), Kitchel, et al. (2010), Cannon, et al. (2010), and Sorensen, et al. (2014) conducted studies using the BNAM to identify perceived importance and level of competence for in-service teachers. Layfield and Dobbins (2002) included 50 professional competencies in their study. They found a need for using technology in the classroom with experienced teachers but not with beginning teachers. Like Duncan, et al., Layfield and Dobbins noted the importance of faculty in higher education to consider the top-ranked in-service needs in designing college curricula. Kitchel, et al. (2010) conducted a large study to investigate in-service needs of career and technical education teachers -- studies were divided by program area. This first paper focused on business teachers and included 24 competencies in their study related to teaching and learning. It also included 24 competencies about program management which were not discussed in this paper. Kitchel, et al. (2010) identified three themes from their study for in-service training needs, one of which is related to technology: "the integration of digital age educational technology into course design and delivery" (p. 145). Like Duncan, et al. and Layfield and Dobbins, Kitchel, et al. noted the benefit of university faculty to review the study results for inclusion or addition to

program curricula. In the second paper, Cannon, et al. (2010) focused on skilled and technical science teachers. The main findings from this paper were program management related and did not address technology in teaching. However, Cannon, et al. did note the relevance of their findings to higher education program planning. They also recommended the BNAM for future studies addressing faculty professional development needs. Lastly, Sorenson, et al. (2014) included 49 competencies in their study of in-service needs for Oregon agriculture teachers. Like Layfied and Dobbins, Sorenson, et al. found experienced teachers ranked technology training as a higher need than did beginning teachers. However, it was not a top ranked need (17th) as in previous studies. Sorenson, et al. also noted the differences in training needs between beginner and experienced teachers similar to the other studies.

Higher Education

The BNAM has also been successfully used in higher education to identify training needs for faculty. The higher education studies were also focused in agricultural fields.

Waters and Haskell (1989) conducted a study of Cooperative Extension faculty using a modified BNAM. In general, Waters and Haskell had participants rank their perceived levels of relevance and attainment of topics within nine groups: teaching methods, program planning, professional improvement, program funding, group process skills, marketing extension, technical training in horticulture and plant science, technical training in use of computers, and extension philosophy. However, Waters and Haskell

(1989) added a third component: “the opportunity to use information related to this topic in their present job” (p. 28). This additional component was added because the researchers felt lack of access to or resources for a topic could hinder interest in an in-service training. In other words, if a computer software was deemed to be important and faculty had little knowledge of it (how to use it), yet they did not have a budget to purchase the software, then the likelihood of attendance at a training for the software would be small. Waters and Haskell identified the top two topics within each of the nine groups. While this is an older study, it was included in the literature review for a few reasons: 1) technology is seen to be a key training need; 2) the opportunity component in the BNAM is a unique addition to how this model can be used; and 3) the authors note the validity of the BNAM over a one-factor survey.

Zarafshani and Baygi (2008) also used the BNAM to conduct their study of in-service training needs for a College of Agriculture. Zarafshani and Baygi (2008) note the expectation of faculty to “teach a more technologically advanced curriculum” as well as keep up with “rapid advances in in technology in the agriculture, food, and fiber industry”, therefore identifying training needs is critical to faculty development (p. 347). The study had 19 competency statements. Using a MWDS, the authors calculated the top needs for training, which fell into topics such as integration of sustainability in the curriculum, teaching problem-solving and decision-making skills, and teaching critical thinking and creative skills. While technology was not identified as a high need area, faculty did rank their competence with technology on the lower side of the scale,

indicating it would be useful topic for future trainings. Like Waters and Haskell, Zarafshani and Baygi also noted the validity of the Borich NAM with the additional component of perceived competence when weighted against perceived level of relevance.

Similar to Zarafshani and Baygi, Rocca (2010) conducted a needs assessment to identify professional development needs of faculty in a College of Agriculture. Rocca based his study on the BNAM but with modifications. Rather than ask participants their perceived level of relevance and level of attainment, participants were asked to rank their "level of teaching skills and interest in teaching improvement" for each skill (Rocca, 2010, p. 71). Rocca used the discrepancy score and the MWDS as the analysis method. Like many of the studies conducted, Rocca identified similar high need areas for training. However, contrary to other studies, Rocca found faculty ranked their skill level with technology and their interest in improvement as low. Rocca notes this is different from previous studies and questions the lack of interest in learning more about technology in teaching. He recommends this be further studied and taken into consideration with administration. Rocca also notes the validity of the BNAM for the basis of his study, but also points out the modifications he made will set up new opportunities to further validate the BNAM.

In both secondary and higher education, the BNAM has proven to be a reliable tool to identify high priority training needs for faculty. The BNAM has faculty rank statements on how important they perceive the statement to be as well as how competent they feel incorporating the statements. Some researchers have modified the tool by

adding additional levels for faculty to rank such as likelihood of implementing a statement or interest in receiving training on a statement. In all cases, researchers noted the reason for using the tool is because of its reliability and validity. Each of the studies reviewed recommended the BNAM as a useful tool for identifying faculty development needs, while also underlining the importance of training faculty. This research used the BNAM to identify training needs in online education, using statements from the evaluation of online education best practices.

Evaluation of Best Practices

While literature supports the best practices for pedagogical and course design, if those practices are not implemented in online education courses, they are not very useful. The leading organizations in online education recommend a quality review tool to ensure high-quality online course development. This section will identify two quality review tools used in online education and detail the ENCORE review tool used in this research.

Background of Quality Review Tools

One of the more widely accepted quality review tools is *Quality Matters* (QM). QM began in the early 2000s with the Maryland Online, Inc. group of colleagues who wanted to "ensure course quality -- that courses would be equivalent -- for their students, regardless of where the course originated" (QM, 2018, about). QM is an ongoing process; after achieving certification, it is recommended to review courses every three to five years (QM, 2018, process). The standards reviewed for higher education are course overview and introduction, learning objectives, assessment, instructional materials,

learning activities and interactions, course technology, learner support, and accessibility. Another popular quality review tool is the Open SUNY Course Quality Review (OSCQR), first launched in 2014, and is now in partnership with OLC as their quality review scorecard (OSCQR, n.d.). This scorecard reviews standards for course design, accessibility (ADA compliance and UDL), course learning outcomes, course content, assignments, instructor role, class discussion and engagement, building community, communication, and continuous course improvement.

The quality review tool used for this research in ENCORE(S). ENCORE(S) was developed in 2014 by the staff at CO at CU. CO was a new department at the time and was tasked with "… orchestrating the growth and administration of online offerings at CU" (Salley, Shaw, Bradley, Arnold, and Perkins, as cited in Clay & Stone, 2015, p. 111). As a new department on campus, CO initially used QM as their quality review tool. However, they soon found faculty did not like this tool because it was lengthy and took a lot of time to review courses. CO staff decided to create a new tool which could provide a more timely review while maintaining quality assurance standards set forth by the industry. ENCORE(S) offered a high-quality review tool which had some new features such as faculty self-review prior to peer review, valued visual design layout, accounted for course- and discipline-specific courses, recognized superior quality components of course design, was cost-effective, and included online delivery evaluation metrics (Salley, et al. as cited in Clay & Stone, 2015). ENCORE(S) has been peer-reviewed and normed for inter-rater reliability and early feedback has been positive. As with any quality review

tool, continuing assessment is essential to ensure the tool is current with the latest research and technology in online education. ENCORE(S) is no exception and has recently undergone a full review resulting in the "S" (Superior qualities which incorporate innovative technological tools within the course) being incorporated in the other components and the final version is now ENCORE.

ENCORE components.

Each letter in ENCORE stands for a particular element considered to be standard for a high-quality course. To pass ENCORE certification, ENCORE must be present. The main components of ENCORE are: **E**xperience of Students, **N**avigationally Sound Design, **C**ollaborative Learning, **O**ngoing Faculty Presence, **R**elevant Application, and **E**ngaging Content (Salley, et al., as cited in Clay & Stone, 2015). Appendix B lists the detailed criteria for each component and a short description for each component of ENCORE is briefly described below.

Experience of Students reflects course organization such as the syllabus, flexibility of course design, and responsive of the student experience (Southern Association of Colleges and Schools, 2011; Hermans, Haytko, & Mott-Stenerson, 2009). It focuses on how course organization enhances the student experience. Key criteria of this component include a detailed syllabus which incorporates flexibility in engagement of student assignments and clear deadlines and calendar. Experience of Students also focuses on the voice of students and their reflection of the course throughout the course

as well as the ability to demonstrate their knowledge both pre- and gained- (Salley, et al. as cited in Clay & Stone, 2015).

Navigationally Sound Design reflects course navigation as well as accessibility (Izzo, Murray, Novak, 2008; Milhelm, K., 2012; CAST, 2018). It focuses on universal design for learning as "accessibility is at the forefront of course design" (Salley, et al. as cited in Clay & Stone, 2015, p. 115). Navigationally Sound Design reflects thoughtful consideration to accommodate all learning styles.

Throughout the course, **C**ollaborative Learning should reflect SS, SC, SI, and LI learning interactions, opportunities for faculty and peer review/feedback, and clear guidelines for coursework (Dell, Low, & Wilker, 2010; Croxton, 2014; Solan & Linardopoulos, 2011). Collaborative Learning in online education reflects "collaboration and interaction" (Salley, et al. as cited in Clay & Stone, 2015). Courses should be intentionally developed with the four learning interactions (SS, SC, SI, and LI) incorporated in order to "maximize the effectiveness of each type of interaction" (Moore, 1989, p. 3). This includes providing multiple opportunities for student interaction with faculty, other students, and content. Faculty should vary the types and frequency of opportunities. By doing so, students can participate in ways they feel most comfortable.

Ongoing Faculty Presence reflects personalization of the course by faculty through introduction, rich and diverse presentations of content that are connected to student experiences and built on throughout the course (Hendricks & Bailey, 2014; Hibbert, 2014; Whiteside & Dikkers, 2014). It begins with faculty "creating an

approachable welcome" to the course and continues with content that is diverse and disseminated through multiple media (Salley, et al. as cited in Clay & Stone, 2015, p. 116). Ongoing Faculty Presence also focuses on the connections of content both from previous knowledge and newly gained knowledge in the course.

Relevant Application reflects promoting academic integrity, alignment of learning objectives with course content and activities through relevant opportunities for learning and appropriate assessment (Biggs & Tang, 2009; Stowe, von Freymann, & Schwartz, 2012; Christe, 2003). Relevant application takes ongoing faculty presence a step further by focusing on the application of course content and faculty/student knowledge. Relevant Application "demonstrates direct application to discipline studied with practical application" and provides a variety of opportunities for this direct application (Salley, et al. as cited in Clay & Stone, 2015, p. 117). Through relevant application, the importance of academic integrity is modeled by faculty and expected of students.

Engaging Content reflects a visually engaging course design that utilizes current technologies for instruction, activities, and interaction (David & Glore, 2010; Dahlstrom, Walker, & Dziuban, 2013; Kearns, 2012). Similar to Collaborative Learning, Engaging Content benefits from incorporating learning interactions. The more engaged students are, the more likely they will have success in an online learning environment (Salley, et al. as cited in Clay & Stone, 2015). Engaging Content is content that is current within the field of study, uses innovative technologies, and offers different perspectives. These best

practices provide multiple ways of information sharing which increases the likelihood of all four interactions being active and present (Moore, 1989; Hillman, et al., 1994).

Each of the components of ENCORE are student-centered which supports the constructivist paradigm. They also focus on creating a learning space in which students are encouraged to collaborate and engage through a variety of activities with the faculty, content, and each other. ENCORE supports flexibility and diverse evaluation measures, following UDL principles, while engaging the use of innovative learning tools to enrich and support learning. The best practices in both pedagogy and course design are represented in the six ENCORE components.

Diffusion of Innovation Theory

The Diffusions of Innovations theory focuses on how an innovation is communicated and accepted in a social system over time. Rogers (2003) defines four main elements in the Diffusion of Innovation process: an innovation, communication channel, time, and social system as well as five stages of the innovation-decision process. The five stages of the innovation-decision process are: *knowledge* (awareness of innovation), *persuasion* (form an opinion of the innovation), *decision* (participate in activities to decide on acceptance of innovation), *implementation* (use the innovation), and *confirmation* (cues to confirm adoption or rejection of innovation). There are five adopter categories: *innovators*, *early adopters*, *early majority*, *later majority*, and *laggards*. The adopter categories are representative of the typical timeframe in which an adopter decides to accept or reject an innovation. In general, each adopter moves through

the innovation-decision process and chooses to either adopt or reject the innovation. The Diffusion of Innovation theory has been successfully used in online education to better understand and support faculty adoption of an innovation.

Diffusion of Innovation in Faculty Support

Dooley and Murphrey (2000) conducted a study on the perceptions of administration, faculty, and support units for online education (2000). The study was conducted using a SWOT (strengths, weaknesses, opportunities, and threats) Analysis and data was collected through interviews. The main finding for each is as follows: 1) *Strengths*: enhancement of teaching and learning; 2) *Weaknesses*: lack of funding/ incentives and support for development of online courses; 3) *Opportunities*: ability to reach nontraditional students; and 4) *Threats*: job security and competition. With a focus on the Diffusion of Innovation, Dooley and Murphrey found that while online education was viewed with potential to add to teaching and learning, the lack of knowledge and incentives made it less appealing. They noted more prominence of online education in those departments that had support (i.e. technology, incentives, support for staff, etc.) measures in place. Dooley and Murphrey concluded with three recommendations for the adoption of online education: support from the administration, faculty training, and rewards/incentives for faculty teaching online.

Wilson and Stacey (2004) used the diffusion of innovation theory to suggest several faculty support training options for online education. While Dooley and Murphrey focused on recommendations for adoption of online education, Wilson and

Stacey focused on strategies specific to faculty training. Some of the strategies they suggest include offering accredited courses and/or online professional development for faculty, creation of peer support for online education, and designing training content based on the needs of faculty. In these strategies, the Diffusion of Innovation steers the development and delivery of faculty support training and in doing so, puts the focus on meeting faculty where they are in the adoption process. This can be very valuable for the adoption of the innovation as it provides validity to the process.

Tabata and Johnsrud (2008) conducted a study of faculty attitudes and perceptions of four dimensions: use of technology, attitudes toward technology and distance education, and adoption of the innovation. The study included 10 campuses of both four-year and two-year technical campuses. The focus of the study was on the likelihood or lack of for faculty to participate in teaching distance education courses. Of the four dimensions, eleven variables were found to increase the likelihood of participation in distance education. Five variables were found to decrease the likelihood of participation in distance education from three of the four dimensions (attitudes toward technology and distance education, and adoption of innovation). The authors also looked at demographic information in relation to likelihood to participate in distance education. In general, their findings were in contrast to previous studies on age, race, and institution type, indicating this area could benefit from additional study. Tabata and Johnsrud's findings are aligned with the literature on the importance of faculty support in distance education. In addition,

their use of the Diffusion of Innovation theory helps to outline the adoption process for faculty support of distance education.

All three studies used the Diffusion of Innovation theory to better understand the adoption of an innovation (online education) and the innovation-decision process. While each study had a slightly different focus (recommendations for adoption of online education, strategies for faculty training, and faculty support), their use of the Diffusion of Innovation theory helped provide a process to meet faculty where they were in the innovation-decision system. This helps to promote adoption of the innovation. For this research, the Diffusion of Innovation theory helps to provide strategies universities can use to recruit, train, and support faculty in online education best practices.

Conclusion

This literature review began with an overview of constructivist theory and its role in the foundation of online learning. Next, I examined my theoretical assumptions and how constructivist theory was a good fit for this research.

Best practices in online education are key to successful experiences for faculty and students in an online learning environment. There was a short review of the history of best practices and how they were defined by the leading online education organizations. The literature refers to best practices with pedagogy and online course design. With regards to pedagogy, the literature supports best practices which are grounded in student-centered activities that incorporate SS, SC, SI, and LI learning interactions. When considering online course design, the literature is supportive of an organized, holistic

view of a course that has a clear path for student learning and success. Lastly, a definition of best practices was put forth to guide this research.

The BNAM was defined as an evaluation of faculty training programs which is anchored by the MWDS which identifies the highest need for training. A review of how the BNAM has been used in secondary and higher education followed. In secondary education, the literature is supportive of BNAM as a tool to identify training for both pre-service and in-service teachers. It also can be a good indicator of training needs for different groups, including faculty development and college curricula. In higher education, the literature recognized how the BNAM was useful in identifying training needs for faculty as well as the validity of the BNAM in conducting needs assessments. Technology was identified as a key need in most of the studies in both secondary and higher education, thus supporting the BNAM as a tool for this research. In the one study in which technology was lower on the need scale, it prompted the authors to consider this an area for further study.

A brief background of quality review tools was discussed, which led to the introduction of the ENCORE quality review tool. ENCORE has been successfully implemented at Clemson University and faculty find the quality review tool to be user-friendly. The six components of ENCORE represent the best practices identified in the literature and by leading organizations in online education.

Lastly, the diffusion of innovations theory was introduced, highlighting the elements and adopter categories for the theory. Literature suggests the diffusion of

innovation theory is useful in identifying recommendations for faculty adoption of faculty development/training opportunities. This makes it beneficial to connecting the data from this research to a sustainable direction for faculty development in online education. The primary goal of this needs assessment was to understand the perceptions of importance and perceived competencies of faculty for the ENCORE components in an online course. The second goal of this research is to provide guidance in faculty adoption of the ENCORE components in their online courses.

Research Questions

1) *What are faculty perceptions of importance regarding ENCORE components?*

- *What are faculty perceived competencies for the ENCORE components? How important do faculty rank each ENCORE component?*

Faculty perception of importance can play a key role in adoption of best practices for online instructional design. Likewise, faculty perceived competency of said best practices can support whether they seek training for the best practices. This research sought to understand the discrepancies between faculty perception of importance and perceived competency in the six ENCORE components.

2) *What university systems (support, training, structures) could potentially increase faculty adoption of ENCORE components in online courses?*

Research supports the six components of ENCORE as best practices in online education. At the same time, research suggests faculty are not always adopting these best practices in their online courses. It is vital to understand the support faculty need in

regard to these practices especially when developing a plan for faculty development and implementation of ENCORE components.

In an effort to understand faculty needs for online education training, we can assess their perceptions of importance and perceived competency within the ENCORE components. While this is not inclusive of all faculty needs, research shows that best practices are key to successful online courses (for faculty and student experiences). Data shows that faculty training is not always a priority for universities (Tyton Partners, 2017; Boston Consulting Group, 2018). Therefore, a more focused approach for identifying training needs can be a valuable tool for online departments or teaching centers. Moreover, suggestions for adoption of ENCORE components can help sustain faculty training and implementation for more satisfactory experiences with online courses.

Chapter 3: Methods

Through the literature review, key practices in online education were identified as well as their success in creating positive online experiences for both faculty and staff. These best practices though, are often not incorporated by faculty making it vital to consider ways to better identify faculty development opportunities in online best practices. The BNAM was identified as a valuable tool to understand the discrepancy between faculty perceptions of importance with the ENCORE components as well as their perceived competency of the components. Therefore, in an effort to understand the discrepancies of these perceptions and to better understand the support systems needed for adoption of these practices, a mixed methods study was conducted. Surveys and interviews were used to collect data from the participants.

Methodological Choices

Constructivist principles are typically associated with qualitative and mixed methods research (Cohen, Manion, & Morrison, 2018; Creswell & Creswell, 2018). At the same time, quantitative methods are often used for evaluation of online education components. So, while all methods of research can be used to study best practices, the constructs of inquiry, data sources, data collection techniques, and data analysis will determine which method is best for an individual study.

Creswell and Creswell (2018) suggest the constructivist paradigm follows methodological practices for qualitative approaches that focus on individuals and the meaning and value they bring to a phenomenon in a particular context. Quantitative

practices focus data from a measurable approach, using a numerical analysis to explain the phenomena. A mixed methods approach would use aspects of both qualitative and quantitative methods to explore the phenomena. Similarly, Teddlie and Tashakkori (2009) define mixed methods as a "research design in which [qualitative] and [quantitative] approaches are mixed across the stages of a study" (p. 144).

To address the research questions, *what are faculty perceptions of the importance of best practices regarding ENCORE components? What are faculty perceived competencies for integrating the ENCORE components? How important do faculty rank each ENCORE component?* And, *what university systems (support, training, structures) could potentially increase faculty adoption of ENCORE components in online courses?*, this research followed a sequential mixed design as defined by Teddlie and Tashakkori (2009). In this design, there is a chronological process for data collection — with either qualitative or quantitative being collected first and the other following. After data analysis of both data sets, conclusions are made by integrating both quantitative and qualitative results. Figure 1 depicts the sequential mixed design as applied to this research. Teddlie and Tashakkori (2009) note that in this design, the results can be collected and analyzed independently and then used for overall comparison.

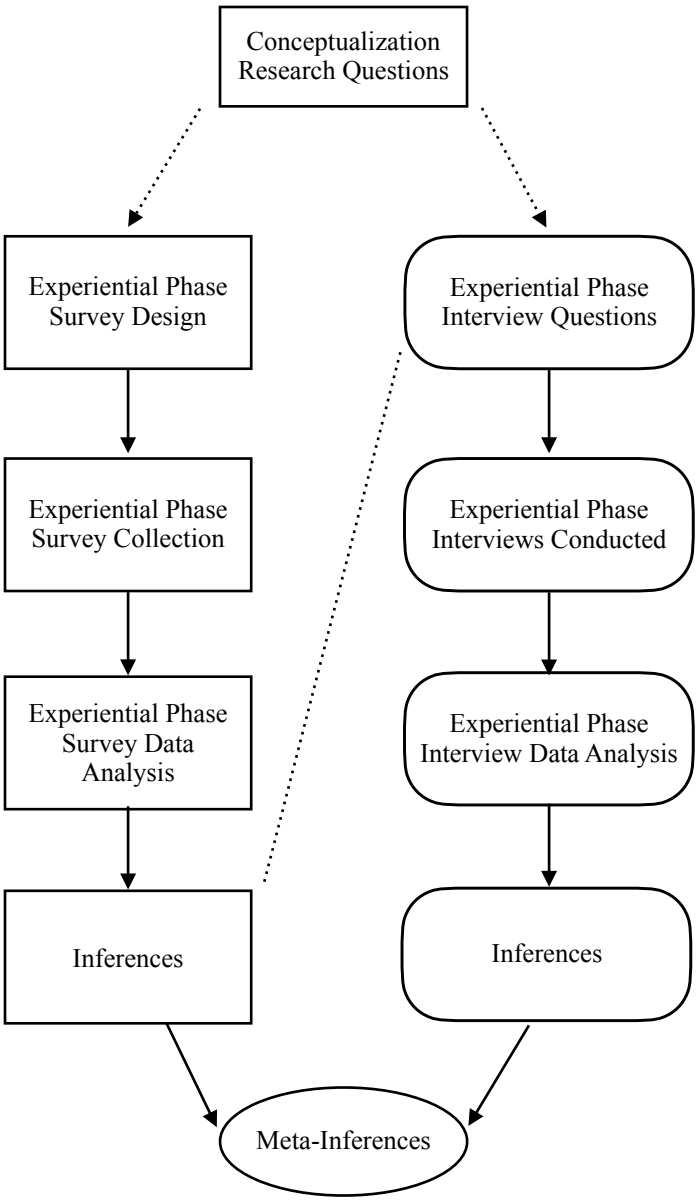

Figure 1: Sequential Mixed Design

Note. Figure adapted from Figure 7.5 in Teddlie and Tashakkori, 2009

While the quantitative data derived from the survey provided a picture of how faculty at various land-grant universities perceived their abilities and needs for support in teaching

online, the qualitative data from interviews allowed for further expansion on the perception of importance and perceived competencies of the six ENCORE components. Qualitative data also provided additional insight into university systems that can support adoption of ENCORE components. In other words, the qualitative data provided an expanded view of the ENCORE components and university support systems, which in turn, provided a helpful picture with which to understand the quantitative results.

This research collected quantitative data first, then qualitative data. The mixing occurred in multiple stages. During the first stage, interview participants were chosen from those that opted in from the survey, therefore mixing the quantitative sample with the qualitative sample. During the second stage, qualitative results were reviewed to see if there should be any changes to the preliminary interview questions. No emergent themes were identified to change the preliminary interview questions. During the third stage, inferences from both the quantitative and qualitative data sets were reviewed for commonalities and trends.

Participants

The study was conducted at three land-grant universities in the Southeast region of the United States. Land-grant universities receive federal benefits to focus on "agricultural and mechanical arts, without excluding other scientific and classical studies" (Croft, 2019, p. 2). Land-grant universities have a focus on teaching, research, and extension and were chosen for this study because they have the same mission as the researcher's home university. Seven land-grant universities in the Southeast were invited

to participate in the study: Auburn University, University of Florida, University of Georgia, Mississippi State University (MSU), North Carolina State University (NCSU), Clemson University (CU), and University of Tennessee. MSU, NSCU, and CU agreed to participate in the study.

I asked each university to provide a list of faculty names and email addresses for the study with the only criterion being inclusion of all ranks of faculty, including adjunct instructors as well as graduate teaching assistants. Each university provided the sample as an Excel file with email addresses. All participants included in the spreadsheets were invited to complete an electronic survey via email. Each participant had the opportunity to volunteer for an interview. Participants who opted-in for an interview were taken to a separate form to enter their contact information to protect the anonymity of the survey responses. All surveys were anonymous.

The survey was administered to 2,006 participants with a response rate of 180 participants (9%). The survey was sent to 300 participants at CU, returning 66 (22%); 800 participants at MSU, returning 40 (5%); and 906 participants at NCSU, returning 71 (8%). Three participants did not list the university they were affiliated with. Of the participants, the majority were professors (55, 30.6%) with associate professor and graduate teaching assistant as the next two highest categories (both at 25 each, 13.9%). The majority of the participants were ages 56-65 (42, 23.3%), with age groups 46-55 (37, 20.6%) and 36-45 (31, 17.2%) as the next two highest age groups. Appendix D lists the

breakdown of participant demographic information by university, college, department, role, and age.

Participants for interviews were selected from a convenience sample of those survey participants who opted-in for an interview. Those who opted-in were randomly selected using an Excel function that would select five in each university, totaling fifteen interviews. The interviews were conducted via Zoom (five per university) by the researcher between July 30-September 30, 2020. Participants were contacted by email to schedule a date/time for the interview. If a participant did not respond, the Excel function was used again to find a new participant.

All participants had the opportunity to opt-in for an interview. Of the 180 participants, 52 (29%) opted-in for an interview, and 15 interviews were conducted (five per university). The breakdown by university was as follows: CU: 23 (35%), MSU: 11 (28%), and NCSU: 18 (25%) [Note: Three participants did not indicate university affiliation, therefore percentages by university are calculated by identified *n* for each university, see Appendix D].

Surveys

The survey was an adaptation of the BNAM, using the steps outlined by the BNAM. These steps include listing the competencies (the statements for each criterion in ENCORE) and ranking them. Faculty rank competencies based on their perceived importance of the statements and their perceived competency with incorporating the statements in their course (Borich, 1980). The survey design was specific for online

education. The focus of the needs assessment is to identify areas of faculty development for online education. It is important to identify the need for faculty development for a range of faculty experiences. New faculty to online teaching will have different needs than those faculty who have taught a few courses as well as those who have taught online for years. Therefore, a statement at the beginning of the survey noted that if faculty had not taught online to respond to the questions as if they were preparing to teach an online course.

The survey was piloted prior to formal data collection with a convenience sample of faculty known to the researcher but not affiliated with any of the universities used in the study. No issues were identified during the pilot so the survey was administered without making any changes.

The survey was designed using Qualtrics. Electronic surveys provide a number of advantages such as being cost efficient, reduced time for distribution, easier access to sample populations, convenience, ease of completion, environmentally friendly, more flexibility in design, easy to export responses into data software, and so forth. (Cohen, Manion, & Morrison, 2018).

Survey questions focused on perception of importance and perceived competency of the six ENCORE components. All survey questions focused on the *innovation* of online best practices reflected in the six ENCORE components.[2] Perception of importance and competency questions were simple and focused on the six categories:

[2] All references to *innovation* in this chapter refer to online best practices for the six ENCORE components.

best practices in **E**xperience of Students, **N**avigationally Sound Design, **C**ollaborative Learning, **O**ngoing Faculty Presence, **R**elevant Application, and **E**ngaging Content. There were six total questions for perception of importance and perceived competency — one for each of the six components. Participants ranked each component based on its criteria, with three statements per component.

For this study, a Likert scale was used to assess faculty perception of importance and perceived competencies of the six ENCORE components. A five-point scale was used for both assessments, with faculty perception of importance ranked from "not at all important to extremely important" and perceived competencies ranked from "not at all competent to very competent". The survey also had faculty rank the level of support their university had for each statement — from "there is no support available" to "I feel very well supported".

In addition, faculty were asked to respond if they had taught an online course before. If they had, there were an additional four questions regarding their experience teaching online such as how often, how long, and if they had received formal training and in which area of ENCORE (if they had received training).

In addition, demographic information on college, department, role, and age were included. The survey consisted of 17 total questions, including an option to volunteer for an interview. Participants had six weeks to complete the survey, with reminders at weeks three and five. The complete survey is presented in Appendix B.

Interviews

Interviews expanded on the survey questions for perception of importance and perceived competency of the ENCORE components as well as the university systems to support adoption of the components (see Appendix C for full interview questions). For example, in reference to perception of importance and perceived competency, participants were asked in regard to their online courses, which of the six components they did well, where they needed improvement, and which area they would like additional training.

With regard to diffusions of innovations, the interview questions gave participants an opportunity to discuss their knowledge and feelings regarding the innovation as well as opportunities and barriers for training and implementation with the innovation. This information was useful in helping to corroborate survey results on faculty perception of importance and perceived competency of the six ENCORE components.

Interviews also allowed for faculty to share what support they needed in order to implement best practices in their online classroom. Interview data was correlated back to survey results on the perception of support from university systems. This data was useful to identify opportunities for online departments and teaching centers to better understand the systems and culture needed for adoption of online best practices.

Interviews were conducted and recorded via Zoom web-conferencing software. While the interviews were recorded, I also took hand-written notes to compare to the transcript. In addition, after each question, I summarized the participant's response and asked if the summary was correct with how they responded to the question (member-checking) to ensure I captured their authentic response. At the beginning of each

interview, the six competencies were shared, along with a brief (1-2 sentences) explanation of each, with the participants to refresh their memory of what the components meant. The explanations were taken from the survey to be consistent with definitions.

Data Analysis and Procedures

This study employed a mixed methods study using a sequential mixed design (Teddlie & Tashakkori, 2009). In this sequential mixed design, quantitative data was collected in the first phase and reviewed. Qualitative data collection occurred in the second phase. Both quantitative and qualitative data were used in the final interpretation and reporting of data. The quantitative phase of this study used an existing survey design with its own scoring method: BNAM.

Quantitative Data Procedures

The main component of the quantitative survey is a question type using the BNAM. Below is a detailed description of how each of these question types were scored. For the demographic questions, general analysis used SPSS to identify frequency of number of participants by university, participants by college and department, faculty rank, and age. Frequency was also used to identify how often certain responses were found (example: the frequency of responses that had or had not taught online). Means were calculated to look at averages within the data (example: the average age of survey participants and average support by university). Cronbach's alpha was used for reliability of survey questions. To better understand if having prior experience teaching online and/

or attending a formal training in at lease one of the six ENCORE components affected participants perceptions of importance and perceived competencies, independent samples T-tests were conducted. And, to understand if there was a correlation between MWDS and mean support, a Pearson product-moment correlation test was conducted.

Borich Needs Assessment Model Scoring.

The Borich NAM uses discrepancy scores to calculate weighted discrepancy scores which are then used to calculate the MWDS. The MWDS allows the researcher to rank the competencies, identifying the highest needs for training. To calculate the MWDS, I followed Borich's defined formula below. This was done with a custom script in SPSS.

3. Calculate the discrepancy score:
    - Importance rating (i) minus (-) ability (competency) (a) rating = discrepancy score (d)
4. Calculate the weighted discrepancy score for each competency:
    - Discrepancy score (d) multiplied by (x) mean importance rating ($\bar{y}i$) = weighted discrepancy score (wd)
5. Calculate MWDS for each competency:
    - Sum of weighted discrepancy scores (wd) divided by (/) # of observations (n) = MWDS
6. Rank competencies from highest to lowest MWDS to identify training needs.

Qualitative Data Procedures.

The qualitative phase of this study used qualitative data analysis methods which had six steps: 1) raw data organization and transcription; 2) review of all data transcripts; 3) coding data by key concepts identified during step two; 4) interpreting data within themes identified in step three; 5) relating themes with quantitative data analysis and identifying relationships; and 6) reporting conclusions (Creswell & Creswell, 2018; Cohen, Manion, & Morrison, 2018). For steps three and four, magnitude coding, code landscaping and pattern coding, all of which are appropriate for mixed methods studies (Saldaña, 2013). Finally, in an effort to ensure trustworthiness for this process, I had peers who have experience in qualitative data analysis review my coding process and provide feedback.

In *Step 1*, all data was organized by university and each interview transcription was labeled with a number for coding and analysis. In *Step 2*, transcripts and videos were reviewed multiple times to ensure accuracy as well as were reviewed against the hand-written notes taken during the interview. The recordings helped to bridge any gaps between the transcription and hand-written notes or to clarify the hand-written notes. During Step 2, the interview questions were grouped and labeled A and B; A represented questions one-three, while B represented questions four-six. Each participant provided an example of their chosen ENCORE component in Group A questions as well as provided additional comments for Group B questions. Key concepts from each of these examples and comments were recorded along with the chosen ENCORE component for Group A and the barrier, motivator, and support system for Group B. For *Step 3*, coding was

completed in two cycles and by question groups (Groups A & B). Figure 2 depicts the coding and analysis cycles of the qualitative data.

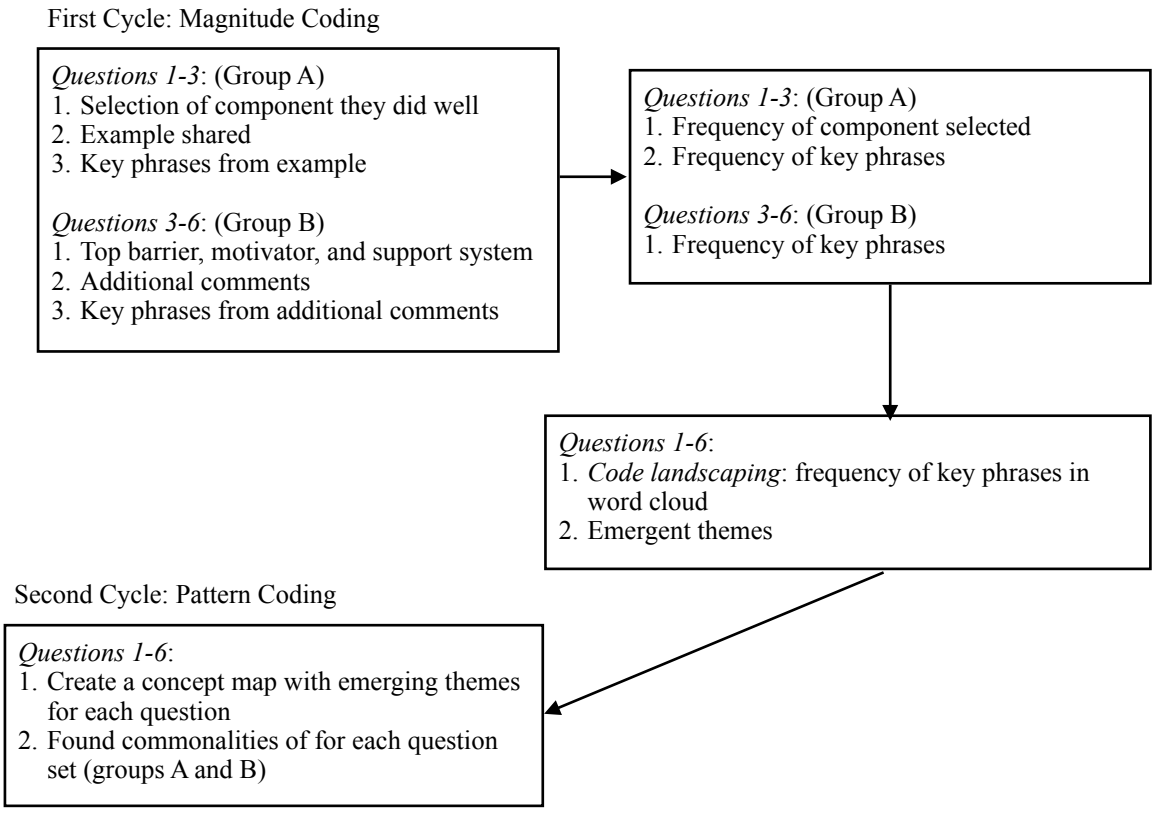

Figure 2: Qualitative Coding Cycles

Coding for Group A questions began by reviewing the selection of the ENCORE component and the examples shared. This review had multiple iterations and during this review, key phrases were identified for each response. The same process was used for Group B questions, identifying the barrier, motivator, and support systems and identifying key phrases from the additional comments for each response. I used magnitude coding to identify the frequencies within the interview responses. Magnitude coding uses alphanumeric or symbols to represent frequency or presence, among other

characteristics (Saldaña, 2013). For Group A, this meant how often each ENCORE component was chosen. For Group A, participants also shared an example of what they did well, where they could use improvement, and why they would like additional training in their chosen ENCORE components. For the examples, I used magnitude coding to look at the presence and frequency for the identified key phrases within the example such as "personal connection" or "application". With Group B, the presence and frequency of each barrier, motivator, and support system were recorded. Interview participants also shared additional comments with regard to the barriers, motivators, and support systems for each question. Similar to Group A, I used magnitude coding to look at the presence and frequency of key phrases in these comments. Examples of these include "commit to training" and "peer learning".

Before beginning the second cycle of coding, I used code landscaping to have visual of the presence and frequencies of responses in both Group A and Group B. Code landscaping "integrates textual and visual methods to see both the forest and the trees" (Saldaña, 2013, p. 199). Key phrases were entered into a word cloud generator which produced a visual representation of the frequency of each phrase. From this, emergent themes were identified. For Group A, I also included a pie chart for the frequency of each ENCORE component. The word clouds complimented the presence and frequency counts, helping to establish first-cycle emergent themes. Examples of emergent themes for Group A include "content [engaging with content, applying content]" and "communication [of content, student welfare]". Examples of emergent

themes for Group B include “training [within field, focused (not generic)]” and “time [convenient, concise, shift in job responsibilities]”.

In the second cycle of coding, pattern coding informed overall themes from the emergent themes identified in the first cycle. Pattern coding looks for commonalities of emergent themes — looking for meaning within the data (Saldaña, 2013). This was completed using a concept map to organize each question and the emergent themes identified in the first cycle. For both Groups A and B, I used pattern coding to look at commonalities within the key phrases within the emergent themes and what patterns, if any, existed. If patterns were identified, they were added to a concept map. I then reviewed the concept map using pattern coding to find commonalities which generated the overall themes for the qualitative data. Examples of overall themes include “course design [ease of use, organization]” and “peer-to-peer options”. Once the overall themes were identified, I reviewed the transcriptions and key phrases from the first cycle to ensure accuracy.

For *Step 4*, I took the emergent themes and commonalities and reviewed them in context with the literature and the research questions for this study. I also considered my own personal experience working in online education and how it did or did not fall in-line with the qualitative results. In this step, I considered the narrative of the qualitative results specifically within each theme and commonality. For *Step 5*, I compared the qualitative results with the quantitative results, looking for and identifying any commonalities and relationships. As relationships were identified during analysis of the

quantitative and qualitative results, conclusions were drawn and noted. These conclusions were then checked against the literature as well as my personal experience in working with faculty development of online education. The connections between the data sets also informed the final conclusions drawn for this research. The last step, *Step 6*, came in reporting the conclusions (found in Chapter 5).

Chapter 4: Results

Data Results

Quantitative Results

This survey had a low response rate (9%) therefore, the results should be taken with caution with regard to the generalizability to the whole population. While the low response rate limits statistical analysis, it does provide a useful base for future research on faculty development in regard to best practices in online education. The low response rate and suggestions for improvement for future research are discussed in the Lessons Learned section of the Conclusion.

Participants were asked if they had taught online and received training in at least one of the six ENCORE components. Of the 180 participants, 123 (68.3%) had taught online, with the majority of those teaching online for six+ years (49, 41.2%, n=119). However, the next highest group had only taught online for one year (33, 27.7%, n=119). The majority of faculty teach online one semester a year (59, 53.2%, n=111). Of the 123 faculty who had taught online, 72 (59%, n=122) had received training in at least one of the ENCORE components (Table 1).

Table 1: Participants Who Received Training (n=72)

Component	Received Training (%)
Experience of Students	31 (43.1%)
Navigationally Sound Design	57 (79.2%)
Collaborative Learning	41 (56.9%)
Ongoing Faculty Presence	33 (45.8%)

Component	Received Training (%)
Relevant Application	36 (50.0%)
Engaging Content	47 (65.3%)

To answer the research questions below, the BNAM was used to calculate the MWDS for each of the three statements for the six ENCORE components. A higher MWDS indicates a higher priority for training by calculating the discrepancy between the participant's perception of importance and their perceived competency in each of the statements. In other words, for those statements that have a high MWDS, the more likely faculty would attend training in that area because they rank the area as important *and* do not feel competent in it.

What are faculty perceptions of importance regarding ENCORE components? What are

faculty perceived competencies for the ENCORE components? How important do faculty rank each ENCORE component?

Results indicated that Navigationally Sound Design (specific to accessible components of course design and organization of course content), Engaging Content (incorporating current technology), Relevant Application (critical thinking and problem-solving skills), and Engaging Content (current, engaging, related to field of study) were the top five areas identified for training needs. The lowest five competencies (which indicate a low need for training) were Collaborative Learning (faculty-student interaction, at least weekly), Experience of Students (current syllabus and faculty response time, due dates that

accommodate various time zones, and feedback opportunities), Navigationally Sound Design (use of LMS), and Relevant Application (alignment with real-world applications and expectations). The full results are listed in Table 2 below. Appendix F includes the mean, standard deviation, and MWDS for all six ENCORE components.

Table 2: MWDS for All Universities

Component	Statement	Placing	MWDS
Navigationally Sound Design n=180	3: Accessibility standards are met, including but not limited to: Colors with high contrast between text and background, non-text elements (images, videos, audio) have text alternatives (alt text, captions, transcripts), course's videos have written or audible descriptions of important visual information, tables are designed for a left-to-right, top-to-bottom reading order and data tables include a caption and a header row and/or column, animations are within appropriate flash thresholds (less than 3 times per second) and can be turned off or hidden, and course's linked, embedded, and attached content meet accessibility standards or accessible alternatives are made readily available.	1	3.21
Navigationally Sound Design n=180	2: The course content is easy to navigate and is organized in a logically progressive, consistent, and clear format, and does not rely on visual cues (e.g. color, shape, size, location) or auditory cues alone to convey meaning.	2	2.01
Engaging Content n=178	3: Course content incorporates the use of appropriate, current technology.	3	1.94
Relevant Application n=178	3: Assessments and course activities encourage students to develop critical thinking and problem-solving skills through the use of various assessment types and alternate submission formats.	4	1.90
Engaging Content n=180	2: Course content is current, engaging, and related to the field of study.	5	1.86
Ongoing Faculty Presence n=179	3: The faculty make connections between student knowledge and content clear as the course progresses.	6	1.65
Relevant Application n=179	1: Assessments and course activities, appropriately rigorous, align with the course's measurable learning outcomes and are communicated with clear guidelines rubrics, and/or examples of student work.	7	1.65
Engaging Content n=180	1: Course content is well-written, adheres to copyright guidelines, and models citation practices.	8	1.20

Component	Statement	Placing	MWDS
Collaborative Learning n=176	3: The course offers opportunities for student-to-student interaction.	9	0.84
Experience of Students n=179	2: Students have access to a gradebook that aligns with the grading policy and are informed of activities that require synchronous participation and understand how to begin the course.	10	0.77
Ongoing Faculty Presence n=179	1: The faculty provides multiple means and opportunities for students to connect with the faculty member	11	0.75
Collaborative Learning n=179	1: The course clearly states expectations for faculty-student and student-student interaction.	12	0.74
Ongoing Faculty Presence n=179	2: Students are encouraged to connect with faculty throughout the course (e.g., welcome video, Q&A forum, virtual office hours).	13	0.72
Relevant Application n=179	2: Assessments and instructional activities align with real-world applications and the expectations of careers in the field of study.	14	0.71
Navigationally Sound Design n=180	1: The course uses the university's learning management system to deliver course content, grades, and instructor feedback on graded activities.	15	0.63
Experience of Students n=179	3: Student information related to faculty's anticipated response time, opportunity to complete assessments that accommodated various time zones, and forums to give feedback are utilized in the course.	16	0.52
Experience of Students n=180	1: Students are provided with a syllabus that contains all required information specific to Undergraduate or Graduate Class Regulations including information on online conduct, academic grievance procedures, academic support services, and technologies that the course utilizes.	17	0.50
Collaborative Learning n=180	2: The course offers opportunities for faculty-to-student interaction on at least a weekly basis.	18	-0.07

Further analysis calculated the MWDS by university. Both CU and NCSU had the same ENCORE components in their top five, though placement was different. MSU only had Navigationally Sound Design statements two and three in common with CU and

NCSU. The top five for each university are listed below (Table 3). The full results are in Appendix E.

Table 3: Top 5 MWDS by University

Component	Statement	n	Placing	MWDS
Clemson University				
Navigationally Sound Design	Statement 3	65	1	3.82
Navigationally Sound Design	Statement 2	66	2	2.32
Relevant Application	Statement 3	66	3	2.08
Engaging Content	Statement 3	66	4	1.96
Engaging Content	Statement 2	66	5	1.83
Mississippi State University				
Navigationally Sound Design	Statement 3	40	1	3.26
Collaborative Learning	Statement 3	38	2	2.52
Navigationally Sound Design	Statement 1	40	3	2.51
Navigationally Sound Design	Statement 2	40	4	2.48
Ongoing Faculty Presence	Statement 3	40	5	2.33
North Carolina State University				
Relevant Application	Statement 3	70	1	5.87
Navigationally Sound Design	Statement 3	71	2	2.44
Engaging Content	Statement 3	70	3	1.76
Engaging Content	Statement 2	71	4	1.59
Navigationally Sound Design	Statement 2	71	5	1.43

To better understand the correlation to the weighted discrepancy scores and whether a participant had taught online and received training in the six components, independent samples t-tests were conducted. The t-tests were conducted on a holistic

level looking at just the competency and the weighted discrepancy scores, as well as were conducted by university. The competency value was calculated using the mean of importance and ability for the three statements within each competency. Cohen's d was also calculated to assess the effect size.

The following tables (4-6) depict the results for the independent-samples t-tests by university.

For CU (Table 4) there were no significant findings for attending trainings and WDS. These results suggest the perceptions of importance and the perceived competencies for the ENCORE components are not different based on whether a CU participant received or did not receive training in this component. However, there was a significant finding for having taught online and WDS for four of the six ENCORE components (Navigationally Sound Design, Ongoing Faculty Presence, Relevant Application, and Engaging Content). These results suggest the perceptions of importance and the perceived competencies for these four ENCORE components are different based on whether a CU participant has taught online or not taught online.

Table 4: Independent-Samples T-tests for Clemson University

Clemson University	Training	Taught Online
Experience of Students	An independent-samples t-test was conducted to compare the weighted discrepancy scores for experience of students for those CU participants who had received training in experience of students and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=-.23, SD=2.7) and those who had received training (M=1.5, SD=2.9); t (38)=-1.54, p=.13, *d*=-.64 95% CI [-1.47−.19]. These results suggest the perceptions of importance and the perceived competencies for the experience of students are not different based on whether a CU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for experience of students for those CU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=1.4, SD=2.8) and those who had taught online (M=.08, SD=2.8); t (64)=1.90, p=.06, *d*=.48 95% CI [-.02−.98]. These results suggest the perceptions of importance and the perceived competencies for the experience of students are not different based on whether a CU participant has taught online or not taught online.
Navigationally Sound Design	An independent-samples t-test was conducted to compare the weighted discrepancy scores for navigationally sound design for those CU participants who had received training in navigationally sound design and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=1.5, SD=2.9) and those who had received training (M=1.7, SD=2.9); t (21)=-.233, p=.82, *d*=-.08 95% CI [-.76−.60]. These results suggest the perceptions of importance and the perceived competencies for navigationally sound design are not different based on whether a CU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for navigationally sound design for those CU participants who had taught online and those who had not taught online. There was a significant difference in the weighted discrepancy scores for those who had not taught online (M=3.6, SD=4.2) and those who had taught online (M=1.6, SD=2.8); t (64)=2.32, p=.02, *d*=.59 95% CI [.08−1.09]. These results suggest the perceptions of importance and the perceived competencies for navigationally sound design are different based on whether a CU participant has taught online or not taught online.

Clemson University	Training	Taught Online
Collaborative Learning	An independent-samples t-test was conducted to compare the weighted discrepancy scores for collaborative learning for those CU participants who had received training in collaborative learning and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=-.48, SD=2.4) and those who had received training (M=.73, SD=1.9); t (38)=-1.53, p=.13, *d*=-.53 95% CI [-1.21−.16]. These results suggest the perceptions of importance and the perceived competencies for collaborative learning are not different based on whether a CU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for collaborative learning for those CU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=.57, SD=3.0) and those who had taught online (M=-.12, SD=2.3); t (64)=1.05, p=.30, *d*=.26 95% CI [-.23−.76]. These results suggest the perceptions of importance and the perceived competencies for collaborative learning are not different based on whether a CU participant has taught online or not taught online.
Ongoing Faculty Presence	An independent-samples t-test was conducted to compare the weighted discrepancy scores for ongoing faculty presence for those CU participants who had received training in ongoing faculty presence and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=.63, SD=2.1) and those who had received training (M=.39, SD=1.4); t (38)=1.92, p=.76, *d*=.12 95% CI [-.66−.89]. These results suggest the perceptions of importance and the perceived competencies for ongoing faculty presence are not different based on whether a CU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for ongoing faculty presence for those CU participants who had taught online and those who had not taught online. There was a significant difference in the weighted discrepancy scores for those who had not taught online (M=2.2, SD=3.2) and those who had taught online (M=.58, SD=2.0); t (64)=2.44, p=.02, *d*=.62 95% CI [.11−1.12]. These results suggest the perceptions of importance and the perceived competencies for the ongoing faculty presence are different based on whether a CU participant has taught online or not taught online.

Clemson University	Training	Taught Online
Relevant Application	An independent-samples t-test was conducted to compare the weighted discrepancy scores for relevant application for those CU participants who had received training in relevant application and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=.73, SD=2.7) and those who had received training (M=1.8, SD=3.7); t (38)=-1.06, p=.30, *d*=-.39 95% CI [-1.10−.34]. These results suggest the perceptions of importance and the perceived competencies for relevant application are not different based on whether a CU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for relevant application for those CU participants who had taught online and those who had not taught online. There was a significant difference in the weighted discrepancy scores for those who had not taught online (M=2.5, SD=2.2) and those who had taught online (M=1.0, SD=3.0); t (64)=2.14, p=.04, *d*=.54 95% CI [.03−1.04]. These results suggest the perceptions of importance and the perceived competencies for relevant application are different based on whether a CU participant has taught online or not taught online.
Engaging Content	An independent-samples t-test was conducted to compare the weighted discrepancy scores for engaging content for those CU participants who had received training in engaging content and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=.77, SD=1.9) and those who had received training (M=1.3, SD=2.0); t (38)=-.845, p=.40, *d*=-.28 95% CI [-.93−.38]. These results suggest the perceptions of importance and the perceived competencies for engaging content are not different based on whether a CU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for engaging content for those CU participants who had taught online and those who had not taught online. There was a significant difference in the weighted discrepancy scores for those who had not taught online (M=2.6, SD=3.6) and those who had taught online (M=.97, SD=1.9); t (64)=2.42, p=.02, *d*=.61 95% CI [.10−1.11]. These results suggest the perceptions of importance and the perceived competencies for engaging content are different based on whether a CU participant has taught online or not taught online.

For MSU (Table 5) there were no significant findings for attending trainings and WDS. These results suggest the perceptions of importance and the perceived competencies for the ENCORE components are not different based on whether a MSU

participant received or did not receive training in this component. There were also no significant findings for having taught online and WDS for the ENCORE components. These results suggest the perceptions of importance and the perceived competencies for the ENCORE components are not different based on whether a MSU participant has taught online or not taught online.

Table 5: Independent-Samples T-tests for Mississippi State University

Mississippi State University	Training	Taught Online
Experience of Students	An independent-samples t-test was conducted to compare the weighted discrepancy scores for experience of students for those MSU participants who had received training in experience of students and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=1.36, SD=3.0) and those who had received training (M=.57, SD=1.3); t (24)=.816, p=.42, *d*=.32 95% CI [-.46−1.10]. These results suggest the perceptions of importance and the perceived competencies for the experience of students are not different based on whether a MSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for experience of students for those MSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=1.3, SD=3.1) and those who had taught online (M=.98, SD=2.4); t (38)=.201, p=.70, *d*=.13 95% CI [-.53−.79]. These results suggest the perceptions of importance and the perceived competencies for the experience of students are not different based on whether a MSU participant has taught online or not taught online.

Mississippi State University	Training	Taught Online
Navigationally Sound Design	An independent-samples t-test was conducted to compare the weighted discrepancy scores for navigationally sound design for those MSU participants who had received training in navigationally sound design and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=1.7, SD=2.0) and those who had received training (M=3.4, SD=4.7); t (24)=-1.05, p=.30, *d*=-.43 95% CI [-1.25−.39]. These results suggest the perceptions of importance and the perceived competencies for navigationally sound design are not different based on whether a MSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for navigationally sound design for those MSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=2.8, SD=3.8) and those who had taught online (M=2.7, SD=4.0); t (38)=.077, p=.94, *d*=.03 95% CI [-.64−.69]. These results suggest the perceptions of importance and the perceived competencies for navigationally sound design are not different based on whether a MSU participant has taught online or not taught online.
Collaborative Learning	An independent-samples t-test was conducted to compare the weighted discrepancy scores for collaborative learning for those MSU participants who had received training in collaborative learning and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=2.5, SD=4.0) and those who had received training (M=1.3, SD=3.6); t (24)=.773, p=.45, *d*=.32 95% CI [-.50−1.13]. These results suggest the perceptions of importance and the perceived competencies for collaborative learning are not different based on whether a MSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for collaborative learning for those MSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=1.5, SD=3.0) and those who had taught online (M=2.2, SD=3.8); t (38)=-.563, p=.58, *d*=-.19 95% CI [-.85−.47]. These results suggest the perceptions of importance and the perceived competencies for collaborative learning are not different based on whether a MSU participant has taught online or not taught online.

Mississippi State University	Training	Taught Online
Ongoing Faculty Presence	An independent-samples t-test was conducted to compare the weighted discrepancy scores for ongoing faculty presence for those MSU participants who had received training in ongoing faculty presence and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=3.0, SD=3.8) and those who had received training (M=1.4, SD=3.2); t (24)=1.13, p=.27, *d*=.46 95% CI [-.34−1.22]. These results suggest the perceptions of importance and the perceived competencies for ongoing faculty presence are not different based on whether a MSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for ongoing faculty presence for those MSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=1.4, SD=4.2) and those who had taught online (M=2.2, SD=3.5); t (21)=-.563, p=.58, *d*=-.20 95% CI [-.86−.46]. These results suggest the perceptions of importance and the perceived competencies for the ongoing faculty presence are not different based on whether a MSU participant has taught online or not taught online.
Relevant Application	An independent-samples t-test was conducted to compare the weighted discrepancy scores for relevant application for those MSU participants who had received training in relevant application and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=1.5, SD=3.7) and those who had received training (M=1.1, SD=3.8); t (11)=.264, p=.80, *d*=.12 95% CI [-.75−.98]. These results suggest the perceptions of importance and the perceived competencies for relevant application are not different based on whether a MSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for relevant application for those MSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=1.8, SD=2.8) and those who had taught online (M=1.5, SD=3.6); t (38)=.255, p=.80, *d*=.09 95% CI [-.58−.75]. These results suggest the perceptions of importance and the perceived competencies for relevant application are not different based on whether a MSU participant has taught online or not taught online.

Mississippi State University	Training	Taught Online
Engaging Content	An independent-samples t-test was conducted to compare the weighted discrepancy scores for engaging content for those MSU participants who had received training in engaging content and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=2.6, SD=2.8) and those who had received training (M=1.4, SD=2.6); t (24)=1.106, p=.28, *d*=.44 95% CI [-.35−1.22]. These results suggest the perceptions of importance and the perceived competencies for engaging content are not different based on whether a MSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for engaging content for those MSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=.49, SD=3.1) and those who had taught online (M=2.1, SD=2.8); t (38)=-1.729, p=.09, *d*=-.58 95% CI [-1.25−1.00]. These results suggest the perceptions of importance and the perceived competencies for engaging content are not different based on whether a MSU participant has taught online or not taught online.

For NCSU (Table 6) there were no significant findings for attending trainings and WDS. These results suggest the perceptions of importance and the perceived competencies for the ENCORE components are not different based on whether a NCSU participant received or did not receive training in this component. There were also no significant findings for having taught online and WDS for the ENCORE components. These results suggest the perceptions of importance and the perceived competencies for the ENCORE components are not different based on whether a NCSU participant has taught online or not taught online.

Table 6: Independent-Samples T-tests for North Carolina State University

North Carolina State University	Training	Taught Online
Experience of Students	An independent-samples t-test was conducted to compare the weighted discrepancy scores for experience of students for those NCSU participants who had received training in experience of students and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=.20, SD=3.4) and those who had received training (M=.34, SD=.65); t (52)=-.151, p=.88, *d*=-.05 95% CI [-.67−.58]. These results suggest the perceptions of importance and the perceived competencies for the experience of students are not different based on whether a NCSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for experience of students for those NCSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=.55, SD=3.0) and those who had taught online (M=.23, SD=2.9); t (68)=.377, p=.70, *d*=.11 95% CI [-.45−.67]. These results suggest the perceptions of importance and the perceived competencies for the experience of students are not different based on whether a NCSU participant has taught online or not taught online.
Navigationally Sound Design	An independent-samples t-test was conducted to compare the weighted discrepancy scores for navigationally sound design for those NCSU participants who had received training in navigationally sound design and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=.38, SD=3.6) and those who had received training (M=1.2, SD=2.9); t (52)=-.942, p=.35, *d*=-.28 95% CI [-.79−.28]. These results suggest the perceptions of importance and the perceived competencies for navigationally sound design are not different based on whether a NCSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for navigationally sound design for those NCSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=1.9, SD=4.3) and those who had taught online (M=.81, SD=3.3); t (68)=1.050, p=.30, *d*=.30 95% CI [-.26−.86]. These results suggest the perceptions of importance and the perceived competencies for navigationally sound design are not different based on whether a NCSU participant has taught online or not taught online.

North Carolina State University	Training	Taught Online
Collaborative Learning	An independent-samples t-test was conducted to compare the weighted discrepancy scores for collaborative learning for those NCSU participants who had received training in collaborative learning and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=.17, SD=2.7) and those who had received training (M=-.72, SD=3.1); t (52)=1.104, p=.28, *d*=.31 95% CI [-.25−.86]. These results suggest the perceptions of importance and the perceived competencies for collaborative learning are not different based on whether a NCSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for collaborative learning for those NCSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=.18, SD=2.6) and those who had taught online (M=-.16, SD=2.9); t (68)=.421, p=.68, *d*=.12 95% CI [-.44−.68]. These results suggest the perceptions of importance and the perceived competencies for collaborative learning are not different based on whether a NCSU participant has taught online or not taught online.
Ongoing Faculty Presence	An independent-samples t-test was conducted to compare the weighted discrepancy scores for ongoing faculty presence for those NCSU participants who had received training in ongoing faculty presence and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=.26, SD=2.7) and those who had received training (M=-.35, SD=1.6); t (52)=.761, p=.45, *d*=.24 95% CI [-.39−.87]. These results suggest the perceptions of importance and the perceived competencies for ongoing faculty presence are not different based on whether a NCSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for ongoing faculty presence for those NCSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=.28, SD=2.7) and those who had taught online (M=.11, SD=2.8); t (23)=.219, p=.83, *d*=.07 95% CI [-.49−.62]. These results suggest the perceptions of importance and the perceived competencies for the ongoing faculty presence are not different based on whether a NCSU participant has taught online or not taught online.

North Carolina State University	Training	Taught Online
Relevant Application	An independent-samples t-test was conducted to compare the weighted discrepancy scores for relevant application for those NCSU participants who had received training in relevant application and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=1.1, SD=3.0) and those who had received training (M=1.4, SD=2.9); t (38)=-.268, p=.80, *d*=-.08 95% CI [-.63−.48]. These results suggest the perceptions of importance and the perceived competencies for relevant application are not different based on whether a NCSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for relevant application for those NCSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=.38, SD=6.5) and those who had taught online (M=1.2, SD=2.9); t (68)=-.728, p=.47, *d*=-.21 95% CI [-.77−.35]. These results suggest the perceptions of importance and the perceived competencies for relevant application are not different based on whether a NCSU participant has taught online or not taught online.
Engaging Content	An independent-samples t-test was conducted to compare the weighted discrepancy scores for engaging content for those NCSU participants who had received training in engaging content and those who had not received training. There was not a significant difference in the weighted discrepancy scores for those who had not received training (M=1.4, SD=2.6) and those who had received training (M=1.6, SD=1.6); t (52)=-.479, p=.63, *d*=-.13 95% CI [-.68−.41]. These results suggest the perceptions of importance and the perceived competencies for engaging content are not different based on whether a NCSU participant received or did not receive training in this component.	An independent-samples t-test was conducted to compare the weighted discrepancy scores for engaging content for those NCSU participants who had taught online and those who had not taught online. There was not a significant difference in the weighted discrepancy scores for those who had not taught online (M=1.4, SD=3.7) and those who had taught online (M=1.5, SD=2.2); t (68)=-.155, p=.88, *d*=-.04 95% CI [-.60−.51]. These results suggest the perceptions of importance and the perceived competencies for engaging content are not different based on whether a NCSU participant has taught online or not taught online.

In addition to the MWDS, a Pearson product-moment correlation coefficient was computed to assess the relationship between the mean support for each competency and

statement and MWDS (Table 7). There was a negative correlation between the two variables, r=-.573, n=18, p=.013. A scatterplot summarizes the results (Figure 3). Overall, there was a strong, negative correlation between mean support and MWDS. Decreases in mean support were correlated with increases in MWDS.

Table 7: MWDS & Mean Support

Competency	Statement	MWDS	Mean Support
Experience of Students	1	0.50	4.18
	2	0.77	4.11
	3	0.52	3.88
Navigationally Sound Design	1	0.63	4.28
	2	2.01	3.94
	3	3.21	3.57
Collaborative Learning	1	0.74	3.89
	2	-0.07	3.98
	3	0.84	3.79
Ongoing Faculty Presence	1	0.75	3.92
	2	0.72	3.95
	3	1.65	3.66
Relevant Application	1	1.65	3.80
	2	0.71	3.54
	3	1.90	3.66
Engaging Content	1	1.20	3.71
	2	1.86	3.61
	3	1.94	3.83

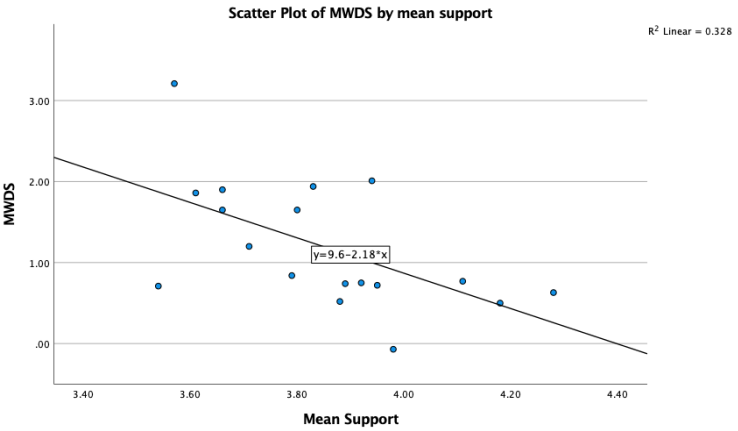

Figure 3: Scatterplot of Mean Support & MWDS

Qualitative Results

All questions revolved around teaching online. If participants were not currently teaching online, they were asked to answer the questions as if they were preparing to teach online or to relate to the last online teaching experience (including emergency

remote teaching). The first three questions focused on the six competencies and addressed the research questions:

What are faculty perceptions of importance regarding ENCORE components? What are

faculty perceived competencies for the ENCORE components? How important do

faculty rank each ENCORE component?

The first question asked participants to share which of the six competencies they did well in their online course. Of the six competencies, *Relevant Application* (5/15) and *Ongoing Faculty Presence* (3/15) were the most frequently chosen competencies. With *Relevant Application*, participants noted their use of applying content to practice and real-life. As one participant noted "I would have to say it's the relevant application because I try to use real life, practical examples to show students how this, how what they're getting out of the class is going to be used in real life situations" (Participant #9, personal communication, August 3, 2020). Another example of relevant application was using real-life speakers in class. As Participant #2 noted how he "thinks the online component allows you to bring in aspects to the course that might not occur to you if you are teaching in front of a classroom in a lecture hall. You can, it's easier to bring in, it's more convenient, I guess, or it's more straightforward to bring in guests to speak about what they do in their careers and how they apply the science that the students are learning in that particular timeframe to their day-to-day jobs (personal communication, September 17, 2020). Other examples of relevant application were ensuring content is more than the

text (impact their life/career) and having practical content. With *Ongoing Faculty Presence*, participants made efforts to create personal connections with their students. Participant #4 shared how she tried to make personal connections with her students when they were online with her students noting she has "two small dogs and so if anyone would knock on the door my dogs would bark and then I would find students that also had dogs and they would start showing me their dogs. So, then I would pick up my little dogs because they're like 15 pounds. Or otherwise, when we were in Zoom and people would set different backgrounds I could comment, 'Hey, that's Star Wars or hey, where is that picture? That's really pretty.'" (personal communication, August 10, 2020). Other areas of *Ongoing Faculty Presence* were checking-in with students outside of course content (well-being), offering synchronous sessions for live interaction, and providing quality feedback on assignments. Another notable component that participants identified as doing well in their online course was the overall organization of their course content (ease of navigation within LMS and chronological order of content).

The second question focused on which of the six competencies participants felt needed improvement in their online courses. Both *Navigationally Sound Design* and *Engaging Content* were chosen (4/15 each). For *Navigationally Sound Design*, participants felt particularly weak with accessibility measures. Participant #3 notes this when she chose Navigationally Sound Design and noted "that probably backs into the bigger picture of is what I'm doing accessible? We have a learning management system and is it accessible in a way that meets the students' needs" (personal communication,

August 12, 2020). However, the remaining responses were more reflective of Engaging Content than Navigationally Sound Design (this will be explored further in Chapter 5). With *Engaging Content*, participants struggled with finding ways to make asynchronous content and activities engaging as well as finding ways to get students to care about the content. Participant #1 shared that he "feels like [he] has a good rapport with [his] students, we have fun. I get to know them, they know me, but I always have a somewhat hard time of getting them very interested in the subject material and the concepts that we're talking about — engaging them with different applications or things of that nature. So, I always find that's where like I struggle when I teach" (personal communication, August 21, 2020). Participants also mentioned struggles with peer-to-peer learning in online courses, adding Collaborative Learning competency as another area for improvement.

The third question focused on which of the six competencies participants would be most interested in receiving additional training. For this question, *Engaging Content* (5/15) and *Navigationally Sound Design* (4/15) were the top competencies chosen. However, it is noted that typically participants did not want to choose just one competency to receive training and often noted that training for one would need to be linked with a second competency (example: Engaging Content with Relevant Application) because in their view, the two competencies were inextricably linked. With *Engaging Content*, participants wanted to learn more about good applications to engage students with content, creating a more positive student experience, finding more

interactive ways to engage with the content, use more innovative teaching methods, and finding content that is interesting for students. An example of the last one comes from Participant #10 who shared why she chose engaging content, “I think engaging content, which is kind of funny because I teach sociology courses. So, you know, that should be like, pretty easy to map on to things in the real world, but I think sometimes I have trouble finding content that the students will be interested in and not just stuff I'm interested in” (personal communication, July 30, 2020). With *Navigationally Sound Design*, participants were interested in having a more in-depth knowledge of this competency (least skilled area) as Participant #7 stated, "I really don't know how to put it together, all that well. I’m a total beginner” (personal communication, August 18, 2020). Other areas in Navigationally Sound Design were developing a more accessible course and having better course design and organization. Other notable areas were Collaborative Learning and Relevant Application (often in context with Engaging Content), where Collaborative Learning focused on peer-to-peer learning and learning communities, and Relevant Application focused on connection with content to assignments and field of study.

The last three questions focused on barriers, motivation, and support of training for the six competencies. These questions were asked to help answer the research question below.

What university systems (support, training, structures) could potentially increase faculty

adoption of ENCORE components in online courses?

The top three barriers faculty faced in attending training for teaching online were finding out about trainings that were offered, finding time to attend trainings with other job responsibilities, and committing to a training. A good example of this is when Participant #15 stated, “I think it's just hearing about the training. Sometimes I think not that it's not the marketing, but with faculty, I think, I don't know, we're just always getting so much email, like email correspondence. And so, it's not that it's not being marketed. And they use Twitter. They use all different ways to connect with folks, but I think it's just that idea that that can be a barrier of just receiving all that and figuring out, okay, how am I going to implement that into what I'm doing and how am I going to find time in my day to, you know, to kind of do what I'm supposed to do online and also attend the training at the same time” (personal communication, August 14, 2020). When thinking about what would motive participants to attend a training for teaching online, the top three motivators were having an awareness of needing training (“I don’t know how to …”), wanting to be a better instructor, and having an opportunity to interact with peers in an interactive and engaging training. The peer aspect of training is important as Participant #13 noted what would motivate her to attend a training is “it would honestly have to have at least a portion of it be synchronous so that I could interact with the person leading the training in real time. And, it would also have to have a collaborative feel in the sense that I was able to work with or talk with a subset of the individuals that were also doing the training” (personal training, August 21, 2020). Participants were asked

what support they would like to have in order to implement the six competencies. The top three support measures were access to personal/technical support. This is supported by Participant #6 when he noted that he wants “somebody to troubleshoot problems when I face them or to have an easy access to how do I get this done”. He notes this can be “IT people or [resources] online” (personal communication, August 11, 2020). Other top support systems were qualified trainers that check-in after training and having examples of online teaching strategies.

Chapter 5: Conclusion

Picciano states "a most significant issue in developing or expanding online education is the readiness and commitment of staff and faculty" (2019, p. 73). This study sought to explore this readiness and commitment by identifying faculty's perceptions of importance and perceived competencies in six online components which represent best practices in online education. By identifying the discrepancy between faculty's perceptions of importance and perceived competencies, teaching centers can better prepare professional development for faculty that is relevant to their highest areas of need. Because as Darby notes "without adequate preparation for designing and teaching an online class, [courses can be] woefully under par" even for the most well-intentioned faculty (Darby & Lang, 2019, p. 222). The first step in securing commitment for faculty and staff is to successfully prepare them for teaching in an online learning environment.

Identifying Faculty Needs for Training

This research set out to answer the questions: *What are faculty perceptions of importance regarding ENCORE components? What are faculty perceived competencies for the ENCORE components? How important do faculty rank each ENCORE component?* The BNAM was used to assess faculty's perceptions of importance and perceived competencies in six online components. The BNAM has faculty rank their perception of importance and perceived competency for a phenomenon through various statements. This yields a MWDS which identifies the statements in which faculty believe a phenomenon is important yet they do not feel confident in it. The top overall five needs

areas by MWDS are discussed in detail along with the first three interview questions which asked participants to share which of the six competencies they felt they did well, could use improvement in, and were most interested in receiving training. The interview questions did not focus on individual statements but rather the overall idea of each competency. An interesting finding with these questions were the literal interpretations of the six competencies. Even though each participant was given a brief description of each competency at the beginning of the interview, their responses to the first three questions did not necessarily match the actual characteristics of the competency. This is a critical finding because as teaching centers consider and develop faculty training, it is key to understand how the competencies are viewed/understood by faculty. An example of this is Navigationally Sound Design where often when it was chosen as an answer, participants referred to it strictly in relation to course organization which is only one of the 11 characteristics of Navigationally Sound Design. Another example of this is Experience of Students where the focus was on *actual student experience* in the course which is not measured by the ENCORE quality review tool. Rather it focuses on characteristics such as communication with students, technology used in the course, soliciting feedback from students throughout the course, among others. While these characteristics do contribute to the overall student experience, it's not what was measured in this research study. However, often when this was chosen as a response, it was framed in how the student experience was measured. The top three components by MWDS and interview responses are described below.

Navigationally Sound Design

Navigationally Sound Design was a top area of need based on MWDS and what participants felt they did not do well and would like additional training in. Navigationally Sound Design refers to intuitive, user-friendly navigation in online course design and has 11 characteristics (See Appendix A for details). In relation to this study, the two main needs areas fell in the areas of accessibility and course organization. The highest identified need for training was in the Navigationally Sound Design area which focuses on accessibility standards. This competency looks at color contrast, images, audio, video, headings, and accessible links and documents. This was not only the highest need overall, but also was #1 for CU and MSU, and #2 for NCSU. The second highest identified need for training was also in Navigationally Sound Design in the area that focuses on course organization and considers ease of navigation, logical and consistent organization of course content as well as not relying solely on visual or audio cues to convey meaning.

When asked which ENCORE component faculty felt needed improvement in their online course, *Navigationally Sound Design* was a top choice, falling in-line with the survey results identifying two of the three statements as top needs areas by MWDS. A theme related to Navigationally Sound Design that emerged from the interviews was lack of accessibility knowledge, as one participant shared, they wanted to ensure accessibility in their course, especially with videos (personal communication, participant #11, August 5, 2020). Also, supporting Navigationally Sound Design as a high need area, interview participants chose this component as a top area they were most interested in receiving

additional training. Similar to the second interview question, accessibility knowledge was a key theme for this question as well. Participant #5 felt this was their least skilled area and Participant #7 shared they were a total beginner in regard to accessibility (personal communication, September 30, 2020; August 18, 2020). Two of the participants linked Navigationally Sound Design and Engaging Content together stating they would want training with both competencies because they were inextricably linked. An interesting twist with Navigationally Sound Design is it was also chosen as an area that interview participants did well in their course. It was mostly chosen by interview participants because of their course organization, yet that placed as the second highest need for training.

Navigationally Sound Design as a high needs area falls in line with my experience as a digital learning specialist as well as the findings in previous studies (Mancilla & Frey, 2021; Boston Consulting Group, 2018). This is often the least area of focus by faculty but can have the greatest impact on student experience. This is an especially critical area as students may not have a formal, documented disability due to the cumbersome process of obtaining it at the higher education level. Often, there are three reasons why faculty do not employ this competency: lack of knowledge about accessibility requirements, perception of time and effort needed to include the accessibility requirements and perception of not having any students with disabilities (Mancilla & Frey, 2021). In relation to course organization, Navigationally Sound Design practices set the tone for a course. It's the *first impression* for students when they enter

the online course. It can greatly impact the student experience — if designed poorly, it can cause frustration, anxiety, and stress for students and if designed well, it can increase motivation and engagement with the course content (Nilson & Goodson, 2018). As Boettcher and Conrad (2016) note, “this is where the instructor and students gather, share thinking and ideas, and complete the course requirements” (p. 115) and as Nilson and Goodson (2018) state, “Indeed, clarity of structure is a hallmark of outstanding online course design” (p. 40). *Navigationally Sound Design* is a critical component to successful online education as it represents key principles of UDL and ensures accessibility for all students. Based on this study, teaching centers should focus on training that is focused specifically on introduction to accessibility measures with easy to implement strategies and support as well as providing tools, such as course maps, to help intentionally structure online course design.

Engaging Content

Another top area of need based on MWDS and what participants felt they did not do well and would like additional training in was *Engaging Content*. Engaging Content refers to course design that foregrounds students' experiences and needs at every stage of the development process and has three characteristics (see Appendix A for details). In relation to this study, the two main needs areas fell in the areas of applying appropriate and current technology and having content that is both current and relevant to the field of study and engaging. Engaging Content was not only in the top five overall, but also was in the top five for CU and NCSU. Just like with Navigationally Sound Design, *Engaging*

Content was a top choice in interviews when asked where participants needed improvement in their online course as well as which component they would like training in. This also fell in-line with survey results indicating Engaging Content as two of the top five high needs areas by MWDS. When considering areas that needed improvement in their online course, two themes emerged: asynchronous engagement and student interest in content. With asynchronous engagement, Participant #9 noted that students typically only read, listen, and follow examples in an asynchronous learning environment and they would like it to be more engaging (personal communication, August 3, 2020). While Participant #1 would like more ways to get students interested in subject material and concepts by engaging with different applications (personal communication, August 21, 2020). Participants gave similar responses when considering why they would like to attend a training on Engaging Content components. And, as noted with Navigationally Sound Design, they often linked the two in consideration of training, feeling they were connected in online education.

When considering a focus on incorporating appropriate and current technology, it's important to consider that technology is rapidly advancing — so much so that it becomes difficult for faculty to keep up with the available tools (Darby & Lang, 2019; Boettcher & Conrad, 2016; Picciano, 2019). With all the shiny new technology, it can also be deceiving — in that faculty may think they are using a great technology tool when in fact, it doesn't support their overall course goals (Darby & Lang, 2019; Boettcher &

Conrad, 2016). Both of these can contribute to faculty feeling overwhelmed and confused about which technology tools to incorporate into their online course.

Nilson and Goodson (2018) reflect on the importance of having content that is both current and relevant to the field of study and engaging when they state "you will not be able to maintain [students' attention] if they fail to see the relevance of your material to their lives. To bother to engage with the online content, they have to perceive value in it, so you have to ensure that students connect the material to their past and current experiences, their personal goals, and their visions of their future" (p. 112). Leaders in the field of scholarship of teaching and learning as well as online education also focus on the importance of connecting content to learning outcomes (Conrad & Donaldson, 2011; Darby & Lang, 2019; Fink, 2013; Hanstedt, 2018; Boettcher & Conrad, 2016). Fink (2013) describes the importance of relevant and engaging content as "novel ways to enable students to learn the important information and ideas" (p. 128) and Hanstedt (2018) notes the importance of building in time for students to learn by engaging with the content. All of this can create enormous pressure on faculty to have a learning environment that is both relevant and engaging. In an online learning environment, *Engaging Content* is key to success because it provides opportunities for students to be actively engaged with the course material, instructor, their peers, and the technology interfaces — thus incorporating the four learning interactions. Based on this study, teaching centers should consider training that emphasizes evaluation of technology in relation to overall course learning goals. Strategies for including content that is current,

relevant, and engaging, such as open education resources, podcasts, TedTalks, etc., and which are multimodal and provide opportunities to peak student interest.

Relevant Application

Rounding out the top areas of need by MWDS is *Relevant Application*. Relevant Application recognizes that learning doesn't occur in a vacuum, therefore, it is crucial to emphasize the broader applications of the principles and ideas discussed in a course and has six characteristics (see Appendix A for details). In this context, Relevant Application focuses on how critical thinking and problem-solving are encouraged through course activities and assessments. Typically, this is through a variety of assessments and assignment submission formats. In an online learning environment, a student-centered approach leads to more engaged learning — this is different than a traditional way of teaching. For many faculty who are making the transition to online teaching, this can be an area of weakness. It often requires a redesign from high-stakes assessments and activities to more authentic, higher-level assessments and activities that are flexible and focused on the course learning objectives (Darby & Lang, 2019; Boettcher & Conrad, 2016; Stein & Wanstreet, 2017; Conrad & Donaldson, 2011).

With interview data, *Relevant Application* was not a top choice for what they did not do well. While two participants selected Relevant Application as a component they would like additional training in, it was not within the context of critical thinking and problem-solving, rather it was on connecting content to course assignments to engage students. However, *Relevant Application* was a top choice for interview participants when

asked which ENCORE component they did well in their online course. In this context, Relevant Application reflected alignment of course content to real-world applications and field of study, thus not having a connection to the context of Relevant Application in the quantitative results. Two themes that emerged from this were application of content to practice and content relevant to the real-world. Participant #7 explained how they use short videos that are personal and practical for sharing course content and Participant #5 always gives their students more than they can get from a book, looking at content and how it applies to the community, family, and friends (personal communication, August 18, 2020; September 30, 2020). *Relevant Application* takes students beyond a virtual classroom, beyond a textbook, beyond a lecture and allows them to consider course content within a broader application. It also provides an opportunity for students to think critically and strengthen problem-solving skills. Based on this study, teaching centers would benefit from developing training with a focus on moving beyond simple assessments and activities to more high-impact practices in critical thinking and problem-solving. There is also opportunity to sustain good practices by building on the areas which are strengths such as applying content to practice and connecting content to real-world applications.

Another chance to build on strengths is with *Ongoing Faculty Presence*. In this context, Ongoing Faculty Presence relates to meaningful connections with students. This was a top choice in interviews for what participants did well and by MWDS (placing #11 and #13 overall). This theme is demonstrated by Participant #13 who shared their

intentional planning of synchronous sessions to connect and engage with their students (personal communication, August 21, 2020).

Outliers

What did not show up in the interviews was *Collaborative Learning*. The three statements for Collaborative Learning placed as nine, 12, and 18 (by MWDS) — indicating that statements two (#18) and one (#12) were not high needs areas (meaning faculty felt they were important *and* felt competent in these areas) yet none of the interview participants chose Collaborative Learning as something they did well. Interestingly, Collaborative Learning was mentioned as an area that needed improvement yet according to the MWDS, it was not a high needs area for training. The interview sample size was small (n=15), so this result should be taken with some caution.

Experience of Students was also mentioned as an area faculty needed improvement. However, it would not be fair to include Experience of Students here as two of the three who chose it only offered a complaint not related to Experience of Students as their example and the third response's example technically falls under Collaborative Learning.

Summary of Identified Needs

This study identified the five highest needs for training based on faculty perception of importance and perceived competency in each of the areas. Navigationally Sound Design is a high need area that focuses on accessible markers within course design as well as design and organization of the course. Engaging Content is a high need area

that focuses on appropriate technology within the course as well as relevant and engaging content. And, Relevant Application focuses on inclusion of higher-order assessments and assignments that reflect critical thinking and problem-solving skills. Each of these five areas fall into student-centered learning environments that often reflect rapidly changing tools and context. Interview data supports both Navigationally Sound Design and Engaging Content as high needs areas.

University Differences

Both CU and NCSU had the same top five as the overall sample. While they differed in placement, all five competencies were present. However, MSU only had Navigationally Sound Design Statements #2 and #3 in common with CU and NCSU. Their remaining three included:

- Navigationally Sound Design, statement #1 (indicating Navigationally Sound Design as a high need area for MSU faculty) [Ranked 13th for CU and 17th for NCSU]
- Collaborative Learning, statement #3 [Ranked 17th for CU and 13th for NCSU]
- Ongoing Faculty Presence, statement #3 [Ranked 6th for CU and 8th for NCSU]

In comparison with the overall sample, we can see there are consistent needs for navigationally sound design across all three universities. Engaging Content, Relevant Application, Collaborative Learning, and Ongoing Faculty Presence round out the other key competencies considered to be high training needs.

This study also looked at whether there was a difference in how faculty ranked the perception of importance and their perceived competency of the six components if they had received training in these areas and/or taught online. In all of the six competencies, there were no significant differences found between receiving training in at least one of the six competencies and perception of importance and perceived competency. This was true for all three universities. For both MSU and NCSU, there were no significant differences found between having taught online and perception of importance and perceived competencies. However, with CU, a significant difference was found with Navigationally Sound Design, Ongoing Faculty Presence, Relevant Application, and Engaging Content. This indicates that faulty view these competencies differently when they have experience teaching online versus not teaching online. There were also some small to moderate effects found, as indicated by Cohen's d, for some of the universities and competencies, but small sample sizes led to low power and non-significance. These are listed below in Table 8. Based on the small to moderate effects found, it would be beneficial to explore this further with a larger sample size to better understand how training and/or teaching online can affect faculty perceptions of importance and perceived competency as this could impact how training is developed and marketed to faculty as well as faculty attendance of training.

Table 8: Cohen's d Effects Found

	CU		MSU		NCSU	
	Training	**Taught Online**	**Training**	**Taught Online**	**Training**	**Taught Online**
Experience of Students	Medium effect	Medium effect	Small effect	*No effect*	*No effect*	*No effect*
Navigationally Sound Design	*No effect*	Medium effect	Small effect	*No effect*	Small effect	Small effect
Collaborative Learning	Medium effect	Small effect	Small effect	*No effect*	Small effect	*No effect*
Ongoing Faculty Presence	*No effect*	Medium effect	Small effect	Small effect	Small effect	*No effect*
Relevant Application	Small effect	Medium effect	*No effect*	*No effect*	*No effect*	Small effect
Engaging Content	Small effect	Medium effect	Small effect	Medium effect	*No effect*	*No effect*

Identifying University Systems for Support

A key component to faculty adoption of best practices for online teaching is a support system. To answer the research question below, a survey question was posed to participants as well as follow-up interviews.

What university systems (support, training, structures) could potentially increase faculty

adoption of ENCORE components in online courses?

First, participants were asked to rate the level of support for each of the competencies at their university. The majority of responses indicated their university offered average support (there was support but they had to find it). This was fairly consistent across all competencies (only three were above 4.0 out of 5.0). When considering this rating against

the MWDS, there was a negative correlation indicating that a decrease in mean support was correlated with an increase in MWDS. This is important to know when considering support systems for adopting online best practices. If faculty perceive there is no support for a best practice, they are less likely to attend a training and adopt the best practice. Therefore, it will be critical to include support options during a training session to ensure faculty feel confident there is a support system for them to implement and adopt the best practice. Picciano (2019) confirms this when he states, "investing in instructional design support services becomes a requirement for successful online and blending learning courses and programs" (p. 75).

To further explore the needs of support systems, interview participants were asked to share the barriers they faced in attending training, what would motivate them to attend a training for teaching online, as well as what support systems they would want in order to implement the six competencies.

Likely not a surprise, time was one of top barriers to attend a training in online teaching. Participants noted a few barriers with time such as not only finding time, but also committing to time for training. Other job responsibilities were one of the top reasons they could not find time for training. Time is recognized as a key need for faculty to engage in professional development as Fink (2013) notes, "The college or university as a whole and each individual academic unit need to find ways to add professional development to the traditional list of faculty expectations for teaching, research, and service" (p. 268). Another top barrier was finding out about trainings that were offered.

This is a crucial finding. If faculty are unaware of professional development opportunities, then this could increase the perception that there is little to no support for implementing the best practices for online courses.

Encouraging faculty to attend training for teaching online is more than just finding ways to mitigate the barriers. It's also important to understand what motivates faculty to seek professional development. In this study, interview participants noted one motivator for attending a training for teaching online was being aware of a need ("I don't know how to …"). A few noted that after having taught an online course (with remote emergency teaching), they are more aware of what they don't know and what they want to be better prepared for next time. Another motivator was simply wanting to be a better teacher. Darby supports this by stating, "Whether in our first semester teaching online or our fifteenth, we should challenge ourselves to keep getting better … doing so will contribute to … your students' success, and your own personal satisfaction in a job well done" (Darby & Lang, 2019, p. 220). One other top motivator was the opportunity to engage with peers through an interactive training. Interview participants noted the importance of learning alongside their peers — creating a community to help navigate online teaching. Nilson and Goodson (2018) also recognize the importance of this when they state, "faculty value opportunities to share their experiences with colleagues, and informal collegial networks embody an unofficial yet robust way of exchanging information about online teaching" (p. 209). It will benefit teaching centers to ensure

professional development includes peer-to-peer interactions, helping to establish an informal learning community.

Finally, there is value in understanding the types of support faculty would like to have in order to implement best practices for online teaching. Interview participants noted having access to personal support for pedagogy and technical support for technology were important to them. This was especially important for quick questions. Another key support was having qualified trainers that also check-in after training. In regard to qualified trainers, interview participants noted they want a trainer that models the content they are teaching. They also noted that it would be good to be able to share examples of what they did after the training in order to get feedback and additional support. A third key support was having examples of online teaching strategies. They want to know the pedagogy behind the teaching strategies but also have real-world examples that they can take back to their online courses.

The COVID-19 Pandemic

When this research was first conceptualized, university life was *normal* (i.e., pre-COVID-19 pandemic). Institutional Review Board approval was also obtained prior to the COVID-19 pandemic. Data collection was affected by the pandemic as universities requested the survey not be administered until after the Spring 2020 semester ended. It's impossible to say exactly how the pandemic affected survey and interview responses, but it would be foolish to think it did not affect responses in some way. It is important to note, though, that what happened with the abrupt shift to online classes in the Spring of

2020 is not considered online education as described in the literature and the definition put forth for this research. Rather, it was *emergency remote teaching*. One thing the pandemic did do was put a spotlight on the importance of training for online modalities of teaching. It is the hope that this research can introduce a new model to help identify high needs areas for training and the support systems needed to sustain good online teaching. By identifying the high needs areas, we can use the Diffusions of Innovations theory to help understand how to create faculty development training in which faculty will successfully adopt the best practices associated with these needs areas.

Moving Forward: Diffusions of Innovations Theory

Now that I have identified the top training needs for teaching online as well as some of the barriers, motivators, and support systems for implementing online best practices, it is important to understand how to address these areas to create beneficial, supportive, and sustaining training opportunities for faculty. The Diffusions of Innovations theory is an excellent tool to frame the next steps. It has been used successfully in online education and is founded on disseminating new innovations and helping to secure adoption of these innovations. For the purposes of this research, professional development is our innovation.

First, it's important to recognize the type of innovation-decision system we are working with — *optional innovation-decision system*. With the optional innovation-decision system, individuals make their own decision about whether to adopt or reject the innovation. Often, community norms can influence their decision, but the decision

remains with the individual. In other words, there is not a collective or authority system making the decision on adoption or rejection of the innovation-decision. Another factor to understand are the system norms which Rogers (2003) defines as "the established behavior patterns for the members of a social system" (p. 26). For the purpose of this research, academic norms would be the established patterns for faculty within the university system. The Diffusion of Innovation consists of four key elements which are identified for this research below (Figure 4).

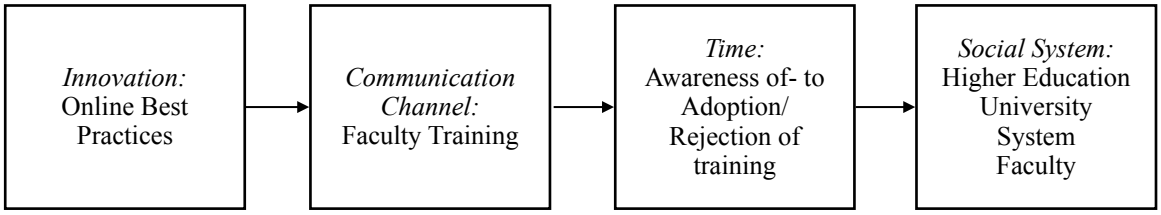

Figure 4: Elements of Diffusion of Innovation

Rogers (2013) defines the innovation-decision process as having five stages: knowledge, persuasion, decision, implementation, and confirmation. This will be helpful for teaching centers to understand as taking into account where faculty could be in this process can inform whether they will choose to adopt best practices or reject them. What does this mean for faculty development?

Knowledge: I think it's fair to say the COVID-19 pandemic has made all faculty aware of online education. Exposure to remote emergency teaching has opened a door to all of higher education. Many interview participants noted the pandemic had made them more aware of what they didn't know about teaching online. One interview participant volunteered in the hopes that she could ask questions about some of the online challenges

she faced in the fall. In relation to online best practices, the pandemic has, for lack of better words, given them a platform, thus exposing faculty to the innovation.

Persuasion: Persuasion focuses on whether faculty take a positive or negative position about the innovation. It would have been interesting to know how faculty perceived online teaching prior to the pandemic, however, it is clear the pandemic influenced how faculty thought about online teaching. Because of this, it is critical for teaching centers to consider the unexpected thrust into the world of online education for most faculty and how it likely has affected their attitudes toward online teaching. It will be important for teaching centers to understand this experience and acknowledge it while developing training for faculty. The use of opinion leaders would also benefit teaching centers at this stage. Rogers defines opinion leadership as the extent to which an individual can influence others in a particular way. Specifically, he states, "opinion leaders serve as a model for the innovation behavior of their followers ... thus exemplifying and expressing the system's structure" (2003, p. 27). Universities are typically members of professional organizations which support adoption of best practices. Organizations like the OLC, the Professional and Organizational Development (POD) Network in Higher Education, and the Association of American Colleges and Universities (AAC&U) all support higher education initiatives in online education. With the pandemic, these organizations consistently support higher education through webinars, workshops, short courses, and virtual conferences that focus on best practices in online teaching as well as peer-reviewed journals. Internally, universities in this study typically

collaborate with information technology and library systems departments — all which support best practices in online teaching. Another key component that persuasion can influence is how support is provided for faculty. Survey results indicated that overall, the average mean support was ~3.8/5. The perception of support available can also influence attitudes toward the innovation.

Decision: When faculty are in the decision stage, they are actively engaging with the innovation in order to make a choice about adopting or rejecting the innovation. This is one of the key areas in which teaching centers can really make an impact through training. One of the first steps is identifying the types of trainings that will actively engage faculty. This is where the BNAM can be a useful tool because it identifies areas of high needs that *faculty perceive are important yet do not feel competent in*. Using the identified areas of need, teaching centers can strategically develop training activities that will provide a positive experience with online best practices. For this research, these areas fall within Navigationally Sound Design, Engaging Content and Relevant Application. To help support this, interview participants indicated they would be interested in trainings that are hands-on and interactive and have peer-to-peer collaboration as well as having qualified trainers that model the practices they are teaching. It would be important to incorporate these to help positively influence faculty during the decision stage of the innovation-decision process.

The next two stages are *implementation* and *confirmation*. While these cannot be directly influenced by teaching centers, once faculty have moved through the diffusion-

innovation process, teaching centers can then ask those faculty who have chosen to adopt the innovation to become champions within the university. Rogers (2003) states that "the presence of an innovation champion contributes to the success of an innovation in an organization" (p. 414). Teaching centers can focus on faculty that have successfully adopted practices within the identified high needs areas. For this research, finding faculty that have adopted best practices within Navigationally Sound Design, Engaging Content and Relevant Application could boost the adoption of the best practices for these areas. Champions can help lead faculty development workshops, be mentors for faculty that are new to the innovation, and share examples of their work with the innovation — thus promoting the innovation through peer-to-peer interactions.

The Diffusions of Innovation Theory lends itself well to this research by clearly identifying the four main elements in the diffusion of an innovation which then can be used to structure campaigns for the adoption of online teaching best practices. Teaching Centers can follow the diffusion-innovation process by ensuring faculty are aware of the innovation [online best practices] through the *knowledge* phase; recognizing faculty's prior experiences with the innovation and how it can influence their position with the innovation while engaging opinion leaders to positively influence faculty in the *persuasion* stage; understanding the high needs areas for training as well as key motivators for professional development in the *decision* stage; and recruiting faculty champions to help "guide the new idea through to approval and implementation" (Rogers, 2013, p. 417) in the *implementation* and *confirmation* stages.

Lessons Learned

There was no way to predict a global pandemic would envelope this research. However, it does provide a bit more perspective and provides a path for online education to be at the front of higher education conversations. This research provided multiple beneficial perspectives in considering faculty development for online teaching. However, the survey was long and considered all six components plus the addition of perception of support services. This was likely a key factor in low response rates as well as the overuse of electronic surveys when the pandemic hit (many institutions were consistently surveying faculty to understand their needs with the abrupt shift to emergency remote teaching, and the pandemic delayed data collection for this research for five months). It would benefit future studies to have a more focused approach on the individual components rather than trying to attack them all at once. The more focused approach would also help mitigate the discrepancy between what the component stands for versus what the participants understand it to be. This approach would yield specific and well-defined statements to rank thus reducing the misinterpretation of the statement with a more general description like this survey used. It would also shorten the survey, resulting in less survey fatigue and likely increase survey completion and response as almost double the number of participants started the survey but did not complete and close to 20 only completed half or less of the survey (Cohen, Manion, & Morrison, 2018).

Initially when the survey was constructed, only those participants that indicated they had taught online received follow-up questions related to training. In hindsight, I

would open training questions to all participants — especially since the pandemic has pushed all faculty to an online modality in some form. But also, because it's possible faculty could have attended training on online best practices in preparation for teaching online or just out of curiosity about online teaching. It would also be beneficial to ask the type of training they had received (workshops, seminars, faculty learning communities, conferences, self-learning, faculty panel, etc.) as well as the type of training they would like to attend (in-person, online, hybrid) and the format in which they would like training (workshop, seminars, faculty learning community, conferences, self-learning, faculty panel, etc.). This research did not address these factors, mainly because the survey became too complex for additional questions. However, with a more focused approach to survey development, these question types could provide additional details to support faculty development for online teaching.

Implications for Future Research

While the study did not produce generalizable results, the data nonetheless is supportive

of current research and therefore highlights areas that could benefit from additional study. This study focused on the broad components of online best practices. It sought to contribute to the literature by providing a new model (BNAM) for assessing faculty needs in online education professional development. Specifically, for the BNAM, areas for future research include specific and focused statements that:

- Represent one best practice at a time (ex: engaging content)

- Include types of training formats
- Include additional modalities such as Hyflex and Hybrid/Blended Learning
- Represent support systems within the university and higher education systems

In order to support research with the BNAM, future research can benefit from a focus on:

- Types of training formats both previously received as well as preference for future trainings
- Marketing campaigns for faculty development opportunities in online teaching
- Overcoming barriers to faculty participation in professional development in online teaching
- Support systems needed to sustain faculty adoption of online teaching best practices
- University cultural shifts to include recognition and support for faculty development in online teaching best practices

Final Thoughts

In talking about the future of online education, Picciano (2019) states, "online education will be viewed as routine and students will have come to expect that every course will have online components" (p.147). When I first conceptualized this research, there would likely have been a number of faculty and administrators that would not have fully bought-in to that statement. As this research study progressed, the COVID-19 pandemic hit and suddenly, online education was a way to keep the academic sessions alive (though through raw emergency remote teaching). The pandemic brought to the forefront both the advantages of online education platforms as well as the large gap in the

transfer to an online modality. The face-to-face pedagogies were not an even swap in an online learning environment. Hanstedt (2018) challenges faculty to "be deliberate in designing our courses and be as thoughtful with them as we are with our own research and scholarship" (p.147). How can we, faculty developers, help faculty be deliberate in incorporating online best practices to design and teach within an online modality?

This research used an existing needs assessment model that had not previously been used in research for online education. The BNAM was used because of the reliability in successfully identifying training needs for agricultural education teachers. If anything, the pandemic has taught us that having focused and intentional trainings for faculty is critical. Faculty need to be aware of online education best practices and how to successfully integrate them into their teaching practices. If we want to answer the question of how to help faculty be deliberate in incorporating online best practices, then we need to understand how faculty perceive their importance as well as perceive their own competency with the practices. As such, using the BNAM for this research provided a solid needs assessment that identified three components to be high need areas for training: Navigationally Sound Design, Engaging Content, and Relevant Application. While the sample size was small, some effects were seen in regard to how faculty ranked perception of importance and perceived competency if they had taught online before and/ or had training in the six online components. The format of the BNAM provides a way to drill down for a more focused approach within these broad categories. Future research can drill down even more, becoming laser focused on specific practices within each of

these broader categories. This research also touched on support measures that university systems could implement to ensure online best practices are used. These results skim the surface and open the door for further research. Participants ranked current support measures as average. Interview participants further expanded on this by indicating the type of support they were looking for such as qualified trainers, interactive and engaged training, and peer-to-peer learning. Finally, the Diffusion of Innovation Theory helped provide a framework that teaching centers can use to help move faculty through the diffusion-innovation process to adoption of online best practices. Darby and Lang (2019) challenge faculty by asking them to "think critically about how to promote your own growth and development in [online teaching]. How will you keep yourself motivated? How do you plan to assess the impact of your efforts? How can you contribute to the development of online teaching excellence, both at your institution and more broadly?" (p. 225). And Boettcher and Conrad (2016) note the continuous cycle of course design but remind us that "what doesn't change is the fundamental relationship of a teacher to student or mentor to learner. That is our treasure and one we will always have" (p. 331). Through the BNAM, teaching centers can more accurately identify training areas for online best practices and focus on support measures for the high needs areas. By taking steps to understand and recognize faculty's perception of importance and perceived competencies with online best practices, teaching centers can better design trainings and support faculty. Identifying training and support needs is an important first step in ensuring quality online teaching.

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Appendices

Appendix A

ENCORE		
E	Experience of Students	1. Students have access to a syllabus containing all required information specified in the Undergraduate or Graduate Class Regulations. 2. Students are provided with information regarding online conduct, academic grievance procedures, and academic support services. 3. Students starting the course are greeted with a welcome message and clear directions on how to begin the course. 4. Students have access to a gradebook that aligns with the grading policy. 5. Students have opportunities to provide feedback on the course and its instruction (e.g. student surveys, feedback discussion forums). 6. Students are clearly informed of communication expectations and of faculty's anticipated response time. 7. Students are provided guidance on the technologies the course employs and how to receive assistance with using those technologies. 8. Students are given the opportunity to complete assessments during times that accommodate the student's schedule and/or time zone. 9. Students are clearly informed of assessments and activities that require synchronous participation.
N	Navigationally Sound Design	10. The course uses the university's learning management system to deliver course content, grades, and instructor feedback on graded activities. 11. The course content is easy to navigate and is organized in a logically progressive, consistent, and clear format. 12. The course does not rely on visual cues (e.g. color, shape, size, location) or auditory cues alone to convey meaning. 13. Colors with high contrast between text and background are used. 14. The course uses the Rich Content Editor to generate headings, lists, and math notations. 15. The course clearly describes the purpose of each link through the link text alone. 16. The course's non-text elements (images, videos, audio) have text alternatives (alt text, captions, transcripts). 17. The course's videos have written or audible descriptions of important visual information. 18. The course's tables are designed for a left-to-right, top-to-bottom reading order, and data tables include a caption and a header row and/or column. 19. The course's animations are within appropriate flash thresholds (less than 3 times per second) and can be turned off or hidden. 20. The course's linked, embedded, and attached content meet accessibility standards or accessible alternatives are made readily available.
C	Collaborative Learning	21. The course clearly states expectations for faculty-student and student-student interaction. 22. The course offers opportunities for faculty-to-student interaction on at least a weekly basis. 23. The course offers opportunities for student-to-student interaction.

ENCORE		
O	Ongoing Faculty Presence	24.The faculty provides multiple means and opportunities for students to connect with the faculty member and are encouraged to do so throughout the course (e.g. welcome video, Q&A forum, virtual office hours). 25.The faculty makes connections between student knowledge and content clear as the course progresses.
R	Relevant Application	26.Assessments and course activities align with the course's stated learning outcomes. 27.Assessments used in the course are appropriately rigorous and well-suited for measuring the course learning outcomes. 28.Assessment expectations are clearly communicated with clear guidelines, rubrics, and/or examples of student work. 29.Assessments and instructional activities align with real-world applications and the expectations of careers in the field of study. 30.Assessments and course activities allow students multiple means of achieving learning outcomes through the use of various assessment types and alternate submission formats. 31.Assessments and instructional activities encourage students to develop critical thinking and problem-solving skills.
E	Engaging Content	32.Course content is well-written, adheres to copyright guidelines, and models citation practices. 33.Course content is current, engaging, and related to the field of study. 34.Course content incorporates the use of appropriate, current technology.

Appendix B

Survey presentation can be found at this link.

The survey is replicated on 18 slides. The presentation is in the link above.

Appendix C

Interview Questions

Intro	The interview questions that follow are focused on the ENCORE components. As a quick review, ENCORE stands for: **E**xperience of Students, **N**avigationally Sound Design, **C**ollaborative Learning, **O**ngoing Faculty Presence, **R**elevant Application, and **E**ngaging Content. Questions will focus on your perceptions of the components you do well and where you need improvement. A few additional questions relate to training for teaching online with a focus on barriers, motivation, and support needed.
1a	Which component of ENCORE do you feel you do well in your online course?
1b	Please share an example of how you incorporate this component in your online course?
2a	Which component of ENCORE do you feel could use improvement in your online course?
2b	Please share an example of where you feel improvement is needed for this component in your online course?
3a	Which component(s) of ENCORE are you most interested in receiving additional training?
3b	Please share why you are interested in additional training for this component(s)?
4	What are barriers you face in training for teaching online?
5	What would motivate you to participate in a training for teaching online?
6	What support would you like to have in order to implement online best practices?
7	**Placeholder for questions that arise from quantitative data analysis**

Appendix D

Demographic Data

	CU	MSU	NCSU
Participants by University	66	40	71

* n=3: did not list university affiliation
* n=12: did not list college affiliation
* n=27: did not list department affiliation

Clemson University

Colleges	Departments	n
College of Agriculture, Forestry, and Life Sciences	Agricultural Sciences	1
	Animal and Veterinary Sciences	1
	Forestry and Environmental Conservation	2
	Plant and Environmental Sciences	1
	Cooperative Extension	1
College of Architecture, Arts, and Humanities	English	1
	Languages	1
	Performing Arts	2
College of Behavioral, Social, and Health Sciences	Communication	1
	Nursing	2
	Parks, Recreation and Tourism Management	8
	Public Health Sciences	1
	Sociology, Anthropology, and Criminal Justice	2
	Institute for Family & Neighborhood Life	1
College of Business	Economics	3
	Management	2
	Unknown	1
College of Education	Education and Human Development	3

Colleges	Departments	n
	Education and Organizational Leadership	4
	Unknown	1
College of Science	Biological Sciences	3
	Genetics and Biochemistry	1
	Mathematical and Statistical Sciences	5
College of Engineering, Computing and Applied Sciences	General Engineering Program	1
	Bioengineering	1
	Electrical and Computer Engineering	1
	Engineering and Science Education	1
	Environmental Engineering and Earth Sciences	1
	Materials Science and Engineering	1
	Mechanical Engineering	1
Division of Undergraduate Studies	Academic Success Center	1
	Honors College	1

Mississippi State University

Colleges	Departments	
College of Agriculture and Life Sciences	Agricultural and Biological Engineering	1
	Food Science and Health Promotion	1
	Plant and Soil Sciences	2
	Human Sciences	2
College of Arts and Sciences	Communication	1
	History	1
	Philosophy and Religion	1
	Physics and Astronomy	1
	Political Science and Public Administration	1

Colleges	Departments	
	English	2
	Mathematics and Statistics	1
	Psychology	2
	Chemistry	2
	MSU-Meridian	1
	Sociology	1
	GeoSciences	1
	Unknown	1
College of Education	Kinesiology	2
	Music	1
College of Veterinary Medicine	Clinical Sciences	1
	Pathobiology and Popular Medicine	1
College of Business	Finance and Economics	1
	Management and Information Systems	4
College of Engineering	Electrical and Computer Engineering	2
	Mechanical Engineering	1
College of Architecture, Art and Design	Interior Design	1

North Carolina State University

Colleges	Departments	
College of Veterinary Medicine	Population Health and Pathobiology	1
College of Agriculture and Life Sciences	Agricultural and Human Sciences	1
	Agricultural and Resource Economics	1
	Animal Science	1
	Applied Ecology	2
	Biological and Agricultural Engineering	1

Colleges	Departments	
	Crop and Soil Sciences	3
	Horticultural Sciences	2
	Plant and Microbial Biology	1
College of Design	Unknown	1
College of Education	Educational Leadership, Policy, and Human Development	4
	Science, Technology, Engineering, and Mathematics Education	1
	Teacher Education and Learning Sciences	1
College of Engineering	Civil, Construction, and Environmental Engineering	2
	Computer Science	5
	Electrical and Computer Engineering	3
	Mechanical and Aerospace Engineering	1
	Nuclear Engineering	1
	Office of Academic Affairs	1
College of Humanities and Social Sciences	Communication	2
	English	2
	Foreign Languages and Literatures	2
	Philosophy and Religious Studies	1
	Political Science	2
	Sociology and Anthropology	1
College of Natural Resources	Forest Biomaterials	1
	Forestry and Environmental Resources	2
College of Management	Management, Innovation, and Entrepreneurship	1
College of Sciences	Biological Sciences	6
	Marine, Earth, and Atmospheric Sciences	4

Colleges	Departments	
	Physics	1
	Statistics	1
College of Textiles	Textile and Apparel Technology and Management	1
	Textile Engineering, Chemistry, and Science	1
University College	Health and Exercise Studies	1
	Music	1

Role

Role	n
Professor	55
Associate Professor	25
Assistant Professor	11
Lecturer	23
Adjunct Instructor	19
Staff	10
Graduate Teacher Assistant	25
Other	8

* n=4: did not list role

Age

Age	n
35 and under	29
36-45	31
46-55	37
56-65	42
66 or above	27
Prefer not to answer	10

* n=4: did not list age

Appendix E

MWDS by University

Component	Statement	n	Placing	MWDS
Clemson University				
Navigationally Sound Design	Statement 3	65	1	3.82
Navigationally Sound Design	Statement 2	66	2	2.32
Relevant Application	Statement 3	66	3	2.08
Engaging Content	Statement 3	66	4	1.96
Engaging Content	Statement 2	66	5	1.83
Ongoing Faculty Presence	Statement 3	66	6	1.71
Relevant Application	Statement 1	66	7	1.59
Experience of Students	Statement 2	66	8	1.13
Engaging Content	Statement 1	66	9	1.08
Relevant Application	Statement 2	66	10	1.00
Ongoing Faculty Presence	Statement 1	66	11	0.98
Ongoing Faculty Presence	Statement 2	66	12	0.92
Navigationally Sound Design	Statement 1	66	13	0.88
Collaborative Learning	Statement 1	66	14	0.56
Experience of Students	Statement 3	66	15	0.55
Experience of Students	Statement 1	66	16	0.28
Collaborative Learning	Statement 3	65	17	0.13
Collaborative Learning	Statement 2	66	18	-0.28
Mississippi State University				
Navigationally Sound Design	Statement 3	40	1	3.26
Collaborative Learning	Statement 3	38	2	2.52
Navigationally Sound Design	Statement 1	40	3	2.51
Navigationally Sound Design	Statement 2	40	4	2.48

Component	Statement	n	Placing	MWDS
Ongoing Faculty Presence	Statement 3	40	5	2.33
Ongoing Faculty Presence	Statement 1	40	6	2.15
Engaging Content	Statement 3	40	7	2.09
Collaborative Learning	Statement 2	40	8	1.93
Relevant Application	Statement 3	39	9	1.80
Engaging Content	Statement 2	40	10	1.80
Ongoing Faculty Presence	Statement 2	40	11	1.76
Ongoing Faculty Presence	Statement 1	40	12	1.67
Collaborative Learning	Statement 1	40	13	1.40
Experience of Students	Statement 2	40	14	1.30
Experience of Students	Statement 3	40	15	1.04
Engaging Content	Statement 1	40	16	1.04
Experience of Students	Statement 1	40	17	0.95
Relevant Application	Statement 2	39	18	0.45
North Carolina State University				
Relevant Application	Statement 3	70	1	5.87
Navigationally Sound Design	Statement 3	71	2	2.44
Engaging Content	Statement 3	70	3	1.76
Engaging Content	Statement 2	71	4	1.59
Navigationally Sound Design	Statement 2	71	5	1.43
Engaging Content	Statement 1	71	6	1.20
Relevant Application	Statement 1	70	7	1.17
Ongoing Faculty Presence	Statement 3	71	8	0.97
Experience of Students	Statement 3	70	9	0.78
Experience of Students	Statement 1	71	10	0.53

Component	Statement	n	Placing	MWDS
Collaborative Learning	Statement 1	70	11	0.45
Relevant Application	Statement 2	71	12	0.38
Collaborative Learning	Statement 3	70	13	0.29
Experience of Students	Statement 2	70	14	0.19
Ongoing Faculty Presence	Statement 1	70	15	-0.19
Ongoing Faculty Presence	Statement 2	69	16	-0.26
Navigationally Sound Design	Statement 1	71	17	-0.51
Collaborative Learning	Statement 2	71	18	-1.09

Appendix F

The following tables include the mean, standard deviation, and MWDS for each of the six ENCORE components.

Experience of Students

Overall Placing	Competency	*M* Perception of Importance	*SD*	*M* Perceived Competency	*SD*	MWDS
17	Students are provided with a syllabus that contains all required information specific to Undergraduate or Graduate Class Regulations including information on online conduct, academic grievance procedures, academic support services, and technologies that the course utilizes.	4.69	0.68	4.58	0.73	0.50
10	Students have access to a gradebook that aligns with the grading policy and are informed of activities that require synchronous participation and understand how to begin the course.	4.57	0.85	4.40	0.84	0.77
16	Student information related to faculty's anticipated response time, opportunity to complete assessments that accommodated various time zones, and forums to give feedback are utilized in the course.	4.45	0.81	4.34	0.84	0.52

Navigationally Sound Design

Overall Placing	Competency	*M* Perception of Importance	*SD*	*M* Perceived Competency	*SD*	MWDS
15	The course uses the university's learning management system to deliver course content, grades, and instructor feedback on graded activities.	4.37	1.06	4.23	0.99	0.63
2	The course content is easy to navigate and is organized in a logically progressive, consistent, and clear format, and does not rely on visual cues (e.g. color, shape, size, location) or auditory cues alone to convey meaning.	4.64	0.67	4.21	0.96	2.01
1	Accessibility standards are met, including but not limited to: Colors with high contrast between text and background, non-text elements (images, videos, audio) have text alternatives (alt text, captions, transcripts), course's videos have written or audible descriptions of important visual information, tables are designed for a left-to-right, top-to-bottom reading order and data tables include a caption and a header row and/or column, animations are within appropriate flash thresholds (less than 3 times per second) and can be turned off or hidden, and course's linked, embedded, and attached content meet accessibility standards or accessible alternatives are made readily available.	4.22	1.00	3.46	1.16	3.21

Collaborative Learning

Overall Placing	Competency	*M* Perception of Importance	*SD*	*M* Perceived Competency	*SD*	MWDS
12	The course clearly states expectations for faculty-student and student-student interaction.	4.56	0.69	4.40	0.84	0.74
18	The course offers opportunities for faculty-to-student interaction on at least a weekly basis.	4.46	0.88	4.47	0.79	-0.07
9	The course offers opportunities for student-to-student interaction.	4.22	1.01	4.03	1.16	0.84

Ongoing Faculty Presence

Overall Placing	Competency	*M* Perception of Importance	*SD*	*M* Perceived Competency	*SD*	MWDS
11	The faculty provides multiple means and opportunities for students to connect with the faculty member	4.61	0.69	4.46	0.80	0.75
13	Students are encouraged to connect with faculty throughout the course (e.g. welcome video, Q&A forum, virtual office hours).	4.59	0.73	4.45	0.81	0.72
6	The faculty make connections between student knowledge and content clear as the course progresses.	4.65	0.65	4.29	0.84	1.65

Relevant Application

Overall Placing	Competency	*M* Perception of Importance	*SD*	*M* Perceived Competency	*SD*	MWDS
7	Assessments and course activities, appropriately rigorous, align with the course's measurable learning outcomes and are communicated with clear guidelines rubrics, and/or examples of student work.	4.69	0.62	4.35	0.83	1.65
14	Assessments and instructional activities align with real-world applications and the expectations of careers in the field of study.	4.53	0.83	4.37	0.83	0.71
4	Assessments and course activities encourage students to develop critical thinking and problem-solving skills through the use of various assessment types and alternate submission formats.	4.70	0.71	4.29	0.86	1.90

Engaging Content

Overall Placing	Competency	*M* Perception of Importance	*SD*	*M* Perceived Competency	*SD*	MWDS
8	Course content is well-written, adheres to copyright guidelines, and models citation practices.	4.60	0.68	4.34	0.83	1.20
5	Course content is current, engaging, and related to the field of study.	4.86	0.42	4.47	0.72	1.86
3	Course content incorporates the use of appropriate, current technology.	4.60	0.71	4.18	0.89	1.94