

**An Examination of the Relationship Between Online Course
Design Standards and Student Educational Experiences**

By

Amy Thornton

A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
August 8, 2020

Approved by

Dr. Maria Witte, Chair, Professor of Educational Foundations, Leadership, and Technology
Dr. Jim Witte, Co-chair, Professor of Educational Foundations, Leadership, and Technology
Dr. Leslie Cordie, Assistant Professor of Educational Foundations, Leadership, and Technology
Dr. Jane Teel, Assistant Clinical Professor of Educational Foundations, Leadership, and
Technology
Dr. Iris Saltiel, Senior Education Adviser, Johns Hopkins University

Abstract

This study investigated the perception of student learning experiences in Quality Matters (QM) certified courses. The purpose of this study was to determine what impact, if any, online course design training had on instructor teaching in the online classroom. The research study used Quality Matters (QM) certified courses as the basis for examining the instructor's use and application of the Quality Matters (QM) training they received. The Community of Inquiry (COI) framework was used to examine the perceptions of the students' online learning experience. The research design utilized a correlational non-experimental quantitative design.

Participants included undergraduate students in the fully online RN to BSN program at a mid-size university in the southeast United States in spring 2019. For analysis, descriptive statistics and the correlation test Kendall tau_b were used to determine the existence of teaching, social, and cognitive presence as well as any significant relationships between teaching, social, and cognitive presence. Results indicated a high level of existence of teaching, social, and cognitive presence in Quality Matters (QM) certified courses. There was also discovered to be a significant correlation between teaching, social, and cognitive presence in Quality Matters (QM) certified courses. The researcher provides several recommendations for future research to extend this study. A larger sample across multiple institutions and disciplines would allow for more generalizability.

Acknowledgements

During my doctoral journey I have had many great faculty who have shaped my experience. I would like to give my sincere gratitude to Drs. Maria Witte and Jim Witte, who chaired my dissertation committee for your flexibility and encouragement in this process. I would also like to thank Drs. Leslie Cordie and Jane Teel for your guidance and service on my dissertation committee. Thank you also to Dr. Asim Ali for serving as my university reader. I would also like to give a special thanks to Dr. Iris Saltiel who served as an external member on my dissertation committee. Thank you for your mentorship and guidance.

This has been a long journey to get to this point. I have had many supporters along this journey that have helped me along the way. My family and friends have given me constant encouragement and support in this process. First, I would like to thank my parents, Danny and Rita, who have been there to encourage me even when it seemed like I would be in school for life. I appreciate you letting me take that first leap that began my educational journey. I would also like to thank my friend and confidant, Mariko. Thank you for your friendship and for keeping me grounded. I owe my eternal thanks to my husband, Philip, who has been there for the tears, frustrations, laughter and celebrations and without who I would never have made it through. Thank you for being there for me to bounce ideas off of, proofread papers, rehearse presentations, and listen to me complain. I appreciate you being my biggest supporter and champion.

Lastly, I dedicate this dissertation to my son, DJ, for understanding when I had to lock myself away to work. I hope I can set an example for you that if you work hard you can accomplish anything and you should always follow your dreams.

Table of Contents

Abstract	2
Acknowledgements.....	3
List of Tables	7
List of Figures.....	8
List of Abbreviations	9
Chapter 1. Introduction.....	10
Problem Statement.....	14
Purpose of Study.....	15
Research Questions.....	15
Significance of the Study.....	16
Assumptions.....	16
Limitations	17
Definitions.....	17
Organization of Study.....	17
Chapter 2. Literature Review.....	20
Purpose of Study.....	21
Research Questions.....	21
Online Course Design Frameworks.....	22
Quality Matters	29
Faculty Development.....	31
Community of Inquiry Framework.....	37
Summary.....	51

Chapter 3. Methods.....	53
Purpose of Study.....	54
Research Questions.....	54
Overall Design.....	55
Instrumentation.....	56
Sample.....	58
Teaching Presence.....	59
Social Presence.....	60
Cognitive Presence.....	60
Data Collection.....	60
Data Analysis.....	62
Summary.....	64
Chapter 4. Findings.....	65
Introduction.....	65
Purpose of Study.....	65
Research Questions.....	65
Data Collection.....	66
Organization of the Data Analysis.....	67
Description of the Sample.....	68
Demographic Information.....	69
Research Question 1.....	71
Teaching Presence Descriptive Statistics.....	71
Social Presence Descriptive Statistics.....	74

Cognitive Presence Descriptive Statistics.....	77
Research Question 2	81
Research Question 3	82
Research Question 4	83
Summary	84
Chapter 5. Summary, Conclusions, Discussion, Implications, and Recommendations	85
Purpose of Study	86
Research Questions.....	86
Summary	87
Research Question 1	89
Research Question 2	90
Research Question 3	90
Research Question 4	91
Conclusions.....	91
Implications.....	92
Recommendations for Future Research	93
References.....	97

List of Tables

Table 1.	Descriptive Statistics of gender demographics	69
Table 2.	Descriptive Statistics of academic classification demographics.....	70
Table 3.	Descriptive Statistics of race/ethnicity demographics	70
Table 4.	Descriptive Statistics of teaching presence factors in the design and organization category	72
Table 5.	Descriptive Statistics of teaching presence factors in the facilitation category	73
Table 6.	Descriptive Statistics of teaching presence factors in the direct instruction category.....	74
Table 7.	Descriptive Statistics of social presence factors in the affective expression category.....	75
Table 8.	Descriptive Statistics of social presence factors in the open communication category	76
Table 9.	Descriptive Statistics of social presence factors in the group cohesion category	76
Table 10.	Descriptive Statistics of cognitive presence factors in the triggering event category	78
Table 11.	Descriptive Statistics of cognitive presence factors in the exploration category.....	79
Table 12.	Descriptive Statistics of cognitive presence factors in the integration category	80
Table 13.	Descriptive Statistics of cognitive presence factors in the resolution category	81
Table 14.	Results of Kendall tau_b test for relationship between teaching and social presence	82
Table 15.	Results of Kendall tau_b test for relationship between teaching and cognitive presence.....	83
Table 16.	Results of Kendall tau_b test for relationship between social and cognitive presence.....	84

List of Figures

Figure 1. Quality Matters (QM) Peer Review Process	14
Figure 2. Community of Inquiry (COI) Framework.....	38
Figure 3. Community of Inquiry (COI) Sample Question.....	57
Figure 4. Demographic Questions	63

List of Abbreviations

BSN	Bachelors of Science in Nursing
CITI	Collaborative Institutional Training Initiative
COI	Community of Inquiry
D2L	Desire2Learn
HPL	How People Learn
ICT	Information Communications Technology
IP	Internet Protocol
IRB	Institutional Review Board
PI	Principal Investigator
OLC	Online Learning Consortium
QM	Quality Matters
RAID	Reflective Action Instructional Design
RN	Registered Nurse
SPSS	Statistical Program for Social Science
TPACK	Technological Pedagogical Content Knowledge

Chapter 1

Introduction

Regardless of what rubric or standards an institution chooses to use as their framework the goal is to provide a consistent standard for designing and evaluating course quality. Online course design frameworks take a student-centered learning approach when building standards (Little, 2009; Meng-Jung, 2009; Persky, Joyner, & Cox, 2012).

One such organization that offers a rubric is Quality Matters (QM), which has gained a lot of popularity in the last 5 to 10 years in higher education due to institutions seeking out ways to standardize quality in their online courses (“Quality Matters Program,” n.d.). Quality Matters (QM) is a recognized program in the area of online course design. There are more than 800 higher education subscribers who use QM’s framework at varying levels (“Quality Matters Program,” n.d.). QM is research based and operates around the idea of faculty peer review and continuous improvement to determine whether courses meet certain design standards. The Quality Matters (QM) rubric is centered on the idea of alignment which means that all elements of the course should support the achievement of the learning objectives. Course module/unit objectives should align with course objectives; course assessments should align with module/unit objectives. Course learning activities and content should be constructed to support successful student assessment outcomes. Alignment is the foundation of a quality course (“Quality Matters Program,” n.d.).

Online courses have been used for approximately two decades (Choo, Bakir, Scagnoli, Ju, & Tong, 2020; Wicks, Craft, Mason, Gritter, & Bolding, 2015). Even so, there is still a lot to be learned about the design and delivery of online courses, how online courses can be designed

and developed in the most effective way possible. There has been a lot of discussion about the equivalency of face-to-face courses and online courses, including how we ensure the same learning outcomes are met regardless of the medium of delivery (Benson & Samarawickrema, 2009; Mo, Lee, & Kyoung, 2017; Shih & Gamon, 2003). There are many in academia who believe online learning will never be able to compete in the world of higher education when it comes to effectively educating our students and preparing them with life skills and the workforce (Drago, Peltier, & Sorensen, 2002; Garrison, 2009; Swan, Day, Bogle, & Matthews, 2014).

There have been a number of challenges identified in terms of course design that can be addressed through the use of an online course design rubric to provide consistent standards (Meyer & Murrell, 2014; Moorefield-Lang, Copeland, & Haynes, 2016). Course organization and consistency is an important component of a well-designed course. Students can become frustrated trying to look around the course organization figuring out what they are supposed to be doing in their online course. This ultimately can have an impact on the bottom line (at least to the student), their grade (Huun & Hughes, 2014; Swan et al., 2014).

As students do in their face-to-face course, they also want to be able to interact in their online course (Choo et al., 2020). Students can often become isolated in an online course, which is why it is so important for the instructor to facilitate interaction within the course between the instructor and students and between students. Many students report a feeling of isolation in online courses because there is no interaction built in. This has required instructors to rethink how they structure interaction in their online classrooms by including more direct instruction and feedback (Benson & Samarawickrema, 2009; Coogan, 2009).

The Community of Inquiry Framework (COI) illustrates the idea of an instructor being present in an online classroom is really no different than the expectation a student has that an

instructor will be present in their face-to-face classroom (Kupczynski, Ice, Wiesenmayer, Ice, & McCluskey, 2010). A component of this is timely communication, which can be even more important in an online course. Since students cannot count on the fact that they will physically see their instructor every other day to ask any questions and get clarification on assignments like they do in a face-to-face course, instructors must be present in their online course and communicate, so students feel the same support and connection with their instructor through the use of online discussions, substantive feedback, and timely response (Swan et al., 2014).

At institutions of higher education, instruction is provided by experts in their field with little emphasis on the skills and education needed to be an instructor in the classroom (Amundsen & Wilson, 2012; Blumberg, 2016). When faculty begin a career in academia they are typically asked to perform teaching duties in addition to their other faculty duties of research and service (Amundsen & Wilson, 2012). Students rely on their instructors to be able to not only be an expert in their field, but to have the ability to engage them in the content and use sound pedagogies to help students meet the student learning outcomes (Blumberg, 2016).

There are a number of online course design models available to assist instructors with the challenges in designing their online courses to include teaching, social and cognitive presence. These models can also be used by course designers to ensure the inclusion of components that contribute to the quality and success of an online course, which guarantees online students do not feel isolated and the structure of the course makes it easier for students to navigate. These models are based on research conducted throughout the years of what has worked and has not worked and based on the feedback of online students and instructors (Choo et al., 2020; Salter, Pang, & Sharma, 2009; Schmidt, 2008). Online course design models should include a rubric of standards for the online course designer and/or instructor to use as a guide to assist with the

application to their course. “Effective online teaching practices promote conditions in which online learning occurs. Such practices are strengthened by effective course design principals, structures, and practices” (Anderson, Barham, & Northcote, 2013, p. 554).

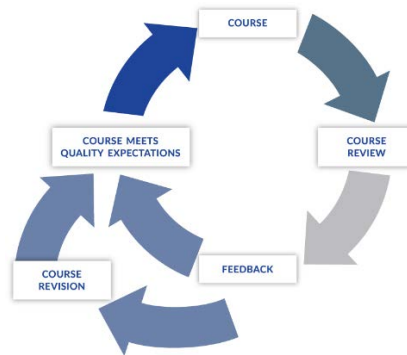
One example of an online course design model is provided by Sloan-C, now known as the Online Learning Consortium (OLC). Sloan-C (or OLC) has been around since the early 90s and became heavily involved in online education during the early 2000s. The organization established what they call their “Pillars of the Quality Framework” which includes 5 categories of standards to evaluate online programming. The 5 pillars include learning effectiveness, faculty satisfaction, student satisfaction, scale, and access (Laumakis, Graham, & Dziuban, 2009).

Another model that has been used by institutions is the How People Learn (HPL) framework, which is made up of 4 areas including making courses knowledge-centered, learner-centered, community-centered, and assessment-centered. Each of these must exist within a learning environment to ensure a quality course (Dole & Bloom, 2009).

The model used for this study is Quality Matters (QM) which offers the opportunity to submit an online course through a course review process. For a course to be QM certified, it must go through a rigorous peer review process (see Figure 1) where other faculty, as part of a peer review team and who have been certified to be peer reviewers, will do a thorough review of the course using the eight general standards and 42 specific review standards rated at different points. A course must receive an 85% or a score of 85 out of 100 points to be considered certified (“Quality Matters Program,” n.d.).

Figure 1

Quality Matters (QM) Peer Review Process



Note. (“Quality Matters Program,” n.d.)

Problem Statement

Many new faculty enter academia with little to no teaching experience or training in andragogy strategies. Andragogy principals describe how adults learn focusing on the facilitation of the learning process rather than teaching the content (Knowles, 1980). Faculty are subject matter experts in their discipline, but are in need of support to develop the necessary skills to transfer their subject matter knowledge to students new to the subject. This has been expounded for faculty who are expected to teach online. There has been a move at many higher education institutions to set expectations for completing certain training to promote the quality of designing online courses (Laurillard et al., 2013; Lim, 2012; Persky et al., 2012). There seems to be gap in showing the impact required training for online teaching has on the student learning experience (Angeli & Valanides, 2005; Shea & Bidjerano, 2009). There is a lack of literature in the area of how Quality Matters (QM) is being used across higher education as an online course design framework.

Online learning has become even more significant for higher education institutions as they have faced the swift move to this modality due to the recent COVID-19 pandemic.

Institutions have recently faced the need to transition all courses to the online learning environment and train faculty who have never taught online in teaching strategies that are new, all within a couple of weeks' time. Within this new environment educational institutions are in need of guidance and frameworks for how to make this move effectively while ensuring they continue to offer their students quality learning experiences. This also means institutions will need to build support infrastructures that guide their faculty in embracing this new teaching environment while keeping their students engaged in the learning experience. (Bao, 2020; Hodges, Moore, Lockee, Trust, & Bond, 2020; Johnson, Veletsianos, & Seaman, 2020).

Purpose of Study

The purpose of this study was to determine what impact, if any, online course design training has on instructor teaching in the online classroom. This study examined student perceptions of the educational experience in Quality Matters (QM) certified online courses using the Community of Inquiry (COI) framework.

This quantitative study addressed the use of a Quality Matters (QM) online course design framework at a southeastern university. In this study, quantitative data was used to collect demographic data and data using a survey relating to a Community of Inquiry (COI) framework, use of the Quality Matters (QM) rubric, and the impact on the student learning experience. This study was limited to one undergraduate program at a southeastern university in which all major courses were Quality Matters' (QM) Certified.

Research Questions

The following questions were used in this study:

1. What are the student perceptions of the learning experience in a Quality Matters (QM) certified course?

2. What is the relationship between teaching presence and social presence in a Quality Matters (QM) certified course?
3. What is the relationship between teaching presence and cognitive presence in a Quality Matters (QM) certified course?
4. What is the relationship between social presence and cognitive presence in a Quality Matters (QM) certified course?

Significance of the Study

This study will add to the body of knowledge to assist faculty developers and instructional designers who design and develop training to help fill the gap in education for many faculty who are asked to teach once they enter academia. There is a need for evidence to show the impact of training in instructional design on teaching practices in the online classroom showing a return on investment to higher education administrators and impact on student learning.

This study will also provide insight into the impact of having an online course Quality Matters (QM) certified. The process for putting a course through the QM peer review process is rigorous. There is a need for evidence to illustrate the impact of this process on the student learning experience.

Assumptions

There were several assumptions made in regards to this research study. It was assumed that all faculty course designers will have completed the Quality Matters' (QM) Applying the QM Rubric Workshop. It was also assumed that all courses have gone through the QM peer review process to be quality certified within the last two years.

It was assumed that participants of this study are over the age of 18 and students in the RN to BSN program. It is also assumed that they are registered nurses. It's also assumed they have experience taking online courses.

The survey instrument used for this study is based on the Community of Inquiry (COI) Framework. The validity of the COI framework has been confirmed by multiple studies (Arbaugh, 2007; Arbaugh & Hwang, 2006; Garrison, Cleveland-Innes, & Fung, 2004; Shea & Bidjerano, 2009). It is assumed to measure the existence of teaching, social, and cognitive presence in an online course.

Limitations

The selection of participants for this study was based on convenience sampling, which could limit the generalizability of the study. The sample was limited to participants at a southeast university who are students in an undergraduate nursing program. Participation in the study was voluntary.

Definitions

1. Andragogy – the principals of adult learning describing how adults learn focusing on the facilitation of the learning process rather than teaching the content.
2. Asynchronous learning – students learn on their own time independent of instructor and other students.
3. Blended learning – courses delivered through a combination of modalities.
4. COI – Community of Inquiry framework that includes the joining of teaching, social, and cognitive presence to ensure an effective student learning experience.
5. Course design – the process by which a developer plans out the components of their course.

6. Distance education – courses offered where the instructor and students are in different locations.
7. Online course – course that is offered by Internet where students and instructor communicate via electronic means.
8. QM – stands for Quality Matters which is a non-profit organization that has developed a rubric of standards for quality online course design.
9. QM rubric – set of 42 standards developed by QM which is used to measure the quality of an online course.
10. Synchronous learning – students and instructor meet via web conference in real time.

Organization of Study

This research study has been organized into five chapters. This first chapter has given an overview of what to expect in future chapters, outlined the research questions for which the study is based and some background for why this study is significant. Chapter 1 also includes background information to create a framework for the context of course design models and faculty development being discussed in this study.

Chapter 2 provides a literature review. The literature review includes sections related to faculty development in post-secondary education available to faculty teaching both in the classroom and online. The review highlights studies regarding the preparation given to faculty around course design. There will also be sections devoted to the discussion of research conducted using Quality Matters (QM) and the Community of Inquiry (COI) framework.

Chapter 3 provides information about the methods used for this research study. This chapter discusses the data collection method, participants, and instrument used to conduct the study. Also discussed in this chapter will be the processes used to ensure research integrity.

Chapter 4 provides the results of the research study. This chapter includes some of the raw data and analysis produced in the study described objectively. Lastly, Chapter 5 provides the conclusion. In this chapter the researcher will provide discussion of the results including their opinions as to what the data analysis provided in Chapter 4 means and what impact it has on the field of study.

Chapter 2

Literature Review

Introduction

There are a number of online course design models that have been created to assist online learning instructors with the design of their courses. These models subscribe to the idea that if you can meet certain outlined standards, an instructor will have created an effective online course that will lead to student success. Subjective nature of interpretation is a commonality among all of these models. With all of these models in place and plenty of best practices that have been developed by online instructors and instructional designers, there is still a lot to be learned about how higher education institutions are using these models to provide a framework of quality for their online learning programs and courses as well as how this ultimately impacts the online student experience (Angeli & Valanides, 2005, 2009; Benbunan-Fich & Arbaugh, 2006; Dole & Bloom, 2009; Fung, 2004; D. R. Garrison, 1992, 1993; Heims & Wagner, 2002; Koehler, Mishra, & Yahya, 2007; Laumakis et al., 2009; Laurillard et al., 2013; Lim, 2012; Mishra & Koehler, 2006; Persky et al., 2012; Stacey, 2002; Tallent-Runnels, Cooper, Lan, Thomas, & Busby, 2005; Trigwell & Prosser, 1991; Vella, 2000; Webb, 1982; Wegerif, 1998; Weigel, 2002; Wiesenberg & Stacey, 2005).

Online learning has proved to have many benefits for students which is why the modality is chosen over face-to-face. Some of these benefits include convenience, flexibility, accessibility, self-paced, and anonymity (Berge, 1997; Harasim, Hiltz, Teles, & Turoff, 1995; Jiang, 1998; Jiang & Ting, 2000; Matthews, 1999; Richardson & Swan, 2003; Rourke, Anderson, Garrison, & Archer, 2001; Simonson, Smaldino, Albright, & Zvacek, 2000; Swan et al., 2000; Ward & Newlands, 1998). Although there are many benefits to taking courses online there have also

proved to be some disadvantages as well. These include the lack of face-to-face interaction, feeling of isolation, and lack of body language used to interpret meanings in communication (Johnson et al., 2020; Mo et al., 2017; Richardson & Swan, 2003; Ward & Newlands, 1998).

In this chapter aspects of course design, faculty development, and online course frameworks will be discussed. This chapter is organized into the following subtopics: online course design frameworks, Quality Matters (QM), faculty development, and Community of Inquiry (COI) framework.

Purpose of Study

The purpose of this study was to determine what impact, if any, online course design training has on instructor teaching in the online classroom. This study examined student perceptions of the educational experience in Quality Matters (QM) certified online courses using the Community of Inquiry (COI) framework.

This quantitative study addressed the use of a Quality Matters (QM) online course design framework at a southeastern university. In this study quantitative data was used to collect demographic data and data using a survey relating to a Community of Inquiry (COI) framework, use of the Quality Matters (QM) rubric, and the impact on the student learning experience. This study was limited to one undergraduate program at a southeastern university in which all major courses were Quality Matters' (QM) Certified.

Research Questions

The following questions were used in this study:

1. What are the student perceptions of the learning experience in a Quality Matters (QM) certified course?

2. What is the relationship between teaching presence and social presence in a Quality Matters (QM) certified course?
3. What is the relationship between teaching presence and cognitive presence in a Quality Matters (QM) certified course?
4. What is the relationship between social presence and cognitive presence in a Quality Matters (QM) certified course?

Online Course Design Frameworks

The use of frameworks and course design models has increased at an institutional level to ensure the quality of courses. This includes more of a focus on the alignment of course objectives, activities, and assessments to ensure student outcomes are met (Salter et al., 2009). This includes providing education and policy to guide faculty in how best to design and facilitate instruction in an online or blended environment.

A common theme across many design frameworks is that active learning and opportunities for students to interact with the content and engage in the application of new knowledge is a key to student learning and success (Salter et al., 2009; Trigwell & Prosser, 1991; Vella, 2000; Weigel, 2002). The purpose of course design models is to provide a framework for designing a successful course including the organization of the course, supporting the students' learning experience, and creating an environment whereby a learning community can emerge (Benbunan-Fich & Arbaugh, 2006; Hodges et al., 2020; Schmidt, 2008; Tallent-Runnels et al., 2005).

It has been uncovered that students are often most frustrated by a lack of communication from their instructors and a lack of timely feedback on their progress. This is an important

element that leads to students feeling presence in the online classroom (Choo et al., 2020; Schaefer, Rahn, Kopp, Fabian, & Brown, 2019; Tallent-Runnels et al., 2005).

Creating a social presence by including interaction is an essential element of a well-designed course. This allows students to better construct their knowledge and understanding through the discussion of content with their classmates. This helps form the learning community (Benbunan-Fich & Arbaugh, 2006; Choo et al., 2020; Fung, 2004; D. R. Garrison, 1992, 1993; Wegerif, 1998). However, the instructor is an important element in creating an environment that allows for this to happen ensuring that there is a significant amount of instructor presence in the online classroom (Mo et al., 2017; Stacey, 2002; Wiesenbergs & Stacey, 2005).

One of the challenges with engaging faculty in using frameworks that are designed to provide some structure to how online courses are designed is ensuring that faculty are still assured some flexibility. While allowing for this flexibility in the design process there must also be attention to ensuring all of the components in the design of the course work together in alignment to support the outlined learning outcomes (Laurillard et al., 2013).

In 2010, the University of North Carolina at Chapel Hill School of Pharmacy conducted a study to gain insight into the perceptions of the stakeholders when implementing a course review process as well as to determine if having a course review process using a rubric affected course quality. They reviewed 97% of their courses using a rubric addressing “five areas: course layout and integration, learning outcomes, assessment, resources and materials, and learner interaction” (Persky et al., 2012, p. 1).

The researchers surveyed course reviewers and course directors about their attitude towards the review process. Ninety percent of course reviewers were in favor of the review process while the other 10% were neutral. Ninety-five percent of the course reviewers felt having

a course review process was important to ensuring quality in their courses and that this course review process was objective. The course director's attitudes were much more mixed with only 53.8% being satisfied with the course review process and 84.6% feeling it ensured course quality and was objective (Persky et al., 2012).

They were asked to discuss challenges and improvements they would make in implementing a course review process across an institution, department or program. Time, as a challenge, developed as a theme as this often added work for faculty and directors on top of already full workloads. Other challenges identified were faculty buy-in, disagreements with recommendations, and encroachment on academic freedom (Persky et al., 2012).

Laumakis et al. (2009) conducted a case study to measure the effectiveness of using the Sloan-C Pillars framework to evaluate blended learning courses. They looked at a blended course that had a large enrollment of over 500 students. This type of course is most often offered by an instructor mostly using the lecture format, which was common at the researcher's university. Their prior focus in this case study was to look at the learning effectiveness pillar although they discovered other pillars in the framework where extremely connected as well. They compared face-to-face and the redesigned blended courses looking at student's progress made on course objectives and overall satisfaction with the instructor and course.

Laumakis et al. (2009) used a mixed method approach using several different surveys, student focus groups, and student grades. Although most of the data they collected and provided gave little significant difference between the face-to-face courses and blended learning they did find in the control semester before using the redesign framework face-to-face ratings were higher than those of the blended courses. In the following semester after the blended course had been redesigned the ratings were much higher than the prior semester and higher than the face-to-face

courses in the same semester. They concluded that the use of the SLOAN-C framework was a valuable tool in “evaluating large-enrollment blended learning courses.” The framework can provide standards on which to pursue continuous improvement in the area of course design and redesign. Their conclusion from this study was that “blending learning can indeed offer the best of both worlds – the face-to-face and online learning environments” (Laumakis et al., 2009, p. 85).

The HPL (How People Learn) framework was used by Dole and Bloom (2009) to perform a case study to answer the research question, “How can course design promote collaboration, reflection, mentoring, and learning from one another?” This qualitative study involved interviewing students about the assignments used in the course aligned with the HPL framework to promote a learner-centered, assessment-centered, and knowledge-centered course. The responses from the students provided evidence “that course design can promote high levels of learning consistent with a professional view of teaching as well as promote professional collaboration and reflection” (Dole & Bloom, 2009, p. 7).

Reflective Action Instructional Design (RAID) is a model that has been used to develop e-learning content. The acronym stands for reusable, accessible, interoperable, and durable. This model focuses on developers being able to easily repurpose the content developed across platforms, courses, and learners (Heims & Wagner, 2002; Lim, 2012).

Technological Pedagogical Content Knowledge (TPACK) is a model that proposes the idea that faculty need three levels of knowledge to successfully teach online: pedagogical, technological, and content knowledge. All three levels are needed and must be used together in a way where they interact to create an engaging student learning environment (Angeli & Valanides, 2009; Arinto, 2013; Mishra & Koehler, 2006).

“At the heart of TPACK is the dynamic, transactional relationship between content, pedagogy, and technology. Good teaching with technology requires understanding the mutually reinforcing relationships between all three elements taken together to the development of appropriate, context-specific, strategies, and representations.” (Koehler et al., 2007, p. 741).

Angeli and Valanides (2009) extended the TPACK model to include ICT (information and communication technology). The researchers proposed this extension to the model to indicate the need for faculty to have foundational knowledge and skills in the use of computer technology in addition to the ability to integrate technology, pedagogy, and content.

They conducted an experimental study using an iteration of three different instructional design methods using pre-service teachers who were taking an information communications and technology (ICT) course. The sample included 227 students. Participants were asked to design and develop a lesson plan that integrated ICT into their lesson in three iterations. The first iteration was used as the baseline for further data collected based on the use of case studies and reflection instruction in the course. After each iteration the lesson plan was rated on the four dimensions of TPACK by two different raters (Angeli & Valanides, 2005).

Before participants were asked to complete iteration two of their design and development of a lesson plan with ICT integrated, the overall design of the course the participants were taking to teach them about the design and integration of ICT was changed. The instructors designed the curriculum around a multi-faceted approach that incorporated the following: identifying the content, ICT tools, pedagogy, learners’ background, implementation, assessment and reflection constructed on the framework of the learners’ epistemological beliefs, their classroom experiences, and the environmental factors. Participants were also exposed to ICT tools that could be used to create multimedia. There was a heavy focus on how their own experiences and

beliefs can impact how they integrate ICT and design and implement their lesson plans (Angeli & Valanides, 2005).

Before the third iteration of participants creating their lesson plans, instructors introduced the concept of using modeling and tools that could be used to support this in their lesson plans. The same curriculum design was used in the design of the course that was used before the second iteration. The lessons plans were rated on the same TPACK scale after both iteration two and three and the mean scores of the raters almost doubled from iteration one to two and had a slight increase from iteration two to three (Angeli & Valanides, 2005).

The results of this study show that there is a need to provide more context when teaching instructors how to incorporate technology into their lessons. It is necessary to provide experiential learning that helps them connect new techniques with already held beliefs and experiences about teaching and learning (Angeli & Valanides, 2005; Mo et al., 2017).

As Armellini and Jones (2008) study was based on the presumption that a collaborative course design is the best design for an online course Benbunan-Fich and Arbaugh (2006) conducted a study to determine the impact of a collaboratively designed online course along with the use of constructivist instructional design on student learning. Benbunan-Fich and Arbaugh (2006) conducted a mixed methods experimental study using 40 online business courses. Data was collected via student surveys, instructor interviews, course artefacts, and student grades. A total of 579 students completed the survey given at the end of the course.

Interviews were conducted with the instructors of each of the 40 online business courses to learn more about the perception of the instructors on the design of their courses. The goal was to gain an understanding of how activities and content were integrated into the course and at

what level students were asked to construct their own learning experience as opposed to the learning experience being created by the instructor (Benbunan-Fich & Arbaugh, 2006).

The instrument used to survey the students measured three components of students' perception of learner-to-learner interaction, learner-to-instructor interaction, and learning in the course (Benbunan-Fich & Arbaugh, 2006). The researchers found that the perception of learning by students was lower in courses that transmitted content rather than created a constructive learning environment. This could be a result of the students being asked to construct their own knowledge and learning experience. Whereas student grades were higher in the courses with the constructive learning environment than the transmissive courses (Benbunan-Fich & Arbaugh, 2006).

Some institutions are moving towards the implementation of online course design models to assist with providing a consistent experience across online courses for students. The development of a course template is an element of instructional design that can provide a consistent navigation and layout for all courses to follow. This is not related to the content of the course. There are variations as to how strict institutions apply these standards.

Lee, Dickerson, and Winslow (2012) discuss three philosophies they discovered, through their review of the literature, including the fully autonomous approach, basic guidelines approach, and highly specified approach. In the fully autonomous approach an institution allows instructors a good amount of latitude in how they structure and design their course as opposed to the highly specified approach where an institution might have a required template for instructors to use. The decision of which approach to use can often be directly related to the culture at the institution as well as how much support and infrastructure is provided for online learning (Lee et al., 2012). Quality of education experiences have a significant impact and contribute to a

country's economic growth (Miao & Sunny Wong, 2011). The quality of these experiences are supported by the use of design frameworks such as Quality Matters.

Quality Matters

Pollacia and Terrie (2009) used Quality Matters (QM) to take a look at the significance a quality assurance program plays in ensuring academic standards in online course design. The authors asserted that QM could be used effectively in assisting with the effective use of Web 2.0 tools in online courses.

Roehrs, Li, and Kendrick (2013) conducted a mixed methods study to look at the perception of faculty experiences going through the QM peer review process and the usefulness of the reviews on their own course design. One conclusion that came out of this study was the need for expert instructional designers to assist faculty with the interpretation and application of reviews as well as being available to assist with the course design process (Gibson & Dunning, 2012; Roehrs et al., 2013).

QM, when used by institutions, has been shown to have an impact on a student's ability to navigate the content of their courses and better overcome technological challenges often present in online courses. An important element of QM is the alignment of course and module objectives to all components within the course which has been disclosed to improve the overall design of the course and better track student progress through the course (Gibson & Dunning, 2012).

Swan, Day, Bogle, and Matthews (2014) looked at the use of QM in conjunction with the Community of Inquiry (COI) framework and the impact on student learning outcomes from fall 2009 through fall 2012. While QM focuses on the design of an online course the COI framework focuses more on delivery through the collaborative learning processes using a constructivist

foundational approach. The COI framework focuses on the three elements of social presence, teaching presence, and cognitive presence, which must all be present within a course to support student learning.

The researchers wanted to find out if there was any effect on student learning outcomes by each framework (QM and COI) independently and if there was any effect when they were used in parallel. “This study was grounded in design-based methods. Design-based approaches begin with the theory-based design of learning environments then use empirical findings from real-world implementations of those designs to iteratively refine them” (Swan et al., 2014, p. 75).

The researchers chose four graduate courses in a Teacher Leader program. These courses had already been taught in their existing form over multiple semesters to allow for comparison after the redesign was applied. The COI survey was used as one of the instruments for this study. The COI survey instrument contains 34 Likert scale statements with a section related to each of the three areas included in the framework (cognitive, teaching, and social presence). The survey was administered to students before and after the use of QM to redesign the four courses. The other instrument used for this study was the QM rubric. The rubric was used to assess whether the courses met the standards after the redesign. The QM rubric was only used once for the redesign of the course while the COI survey was used at the end of every semester the courses were taught (Swan et al., 2014).

Analysis was performed comparing scores between major assignments and the final exam as well as comparison of perception collected using the COI survey. The researchers concluded from this analysis that using QM and COI together had the greatest impact on student learning outcomes and student grades. They argued that changes from the use of QM or COI

independently did not result in significant changes, but did when used in combination (Swan et al., 2014). A big piece of applying Quality Matters (QM) involves faculty development.

Faculty Development

According to a study conducted by Lion and Stark (2010) many institutions do require training for faculty who teach online. Although these institutions require training of their faculty many of the institutions still allow their faculty much of the authority in how their courses are designed provided they have completed the training requirements. There is a gap in the literature showing the connection between requiring training to teach online and changes in faculty behavior in how they design their courses (Lion & Stark, 2010). This gap could be attributed to that creating institutional policy and guidelines for teaching can be a long process requiring different layers of committees and input before being able to decide on guidelines that can help faculty in designing their course to ensure high quality courses that follow a set of standards and has the greatest impact on student success (Lion & Stark, 2010).

Part of faculty development is recognizing that faculty will already have pre-existing behaviors and beliefs about their teaching (Blumberg, 2016). It takes practice and reflection of new teaching strategies and best practices for faculty to embrace these changes of behavior. Transformative learning theory describes this process of opening one's mind to new beliefs that require faculty to abandon previously held beliefs. It has been contended that training to teach online has had an impact on teaching in the face-to-face environment. Faculty learn how to transition from lecture to more active learning techniques. Reflection has been demonstrated to be an important part of the process of transforming faculty teaching. There has been contended to be a gap in faculty knowledge of teaching andragogy. It has been concluded that little faculty

development is based on established adult learning theories, but rather best practices and principals of good practice (Meyer & Murrell, 2014).

Sanford and Kinch (2016) suggested that the needs for today's faculty included skills in course design for both distance courses and in-person including an understanding of designing for a diverse set of learners addressing accessibility. In contradiction, the researcher's results indicated that an understanding of adult and non-traditional learners was low on the list of faculty skills needed.

Faculty encounter a number of challenges when designing their online courses including the lack of training on how to best integrate new tools rather than just training on how to use the tools. Another challenge is that faculty tend to append additional tools and activities as they learn them rather than consider how they fit into the overall course design and alignment. Another challenge is the lack of ongoing instructional design support and feedback as they design their courses. They are typically trained and then asked to design and develop their courses on their own (Salter et al., 2009). The e-Scholars programme sought to address these challenges by designing a program that provided ongoing design support and building a community through the use of a faculty cohort who participated in a prescribed professional development program together (Salter et al., 2009).

Outcomes observed after evaluating the program show significant behavior changes in how the faculty design and deliver their courses including the increased use of active learning activities that allow their students more opportunities to interact with the content and apply the skills being learned. They also observed an increase in faculty providing more ongoing feedback to their students throughout the learning process (Salter et al., 2009).

Arinto (2013) conducted a qualitative study looking at the perception of faculty on how their course design process and use of teaching strategies has changed when moving from teaching face-to-face to online. Based on the findings there was surmised to be a gap in the skills faculty needed to effectively design their courses for an online delivery. The researcher explored the reasons behind why faculty participants made design decisions which lead to discussing their knowledge of the technological and pedagogical tools available to them as online instructors. It has been revealed that being intentional about decisions in online course design are essential. Much of online courses must be planned out ahead of time thinking through the activities and resources the instructor and students will need access to ensure a successful learning experience (Arinto, 2013; Beetham & Sharpe, 2007; Naidu, 2007; Swan, 2010; Tait, 2010).

Part of the process of faculty transitioning to teaching online is discovering the opportunities provided by technology, but also gaining insight into how they can be used to effectively support the learning process (Arinto, 2013; Armellini & Jones, 2008). Many faculty expressed frustrations over the lack of opportunities to lecture in the online environment as this was their main teaching strategy they used in the face-to-face class (Arinto, 2013; Haythornthwaite, C. & Andrews, 2011). Faculty also expressed difficulty in time management as providing individual attention to each student was more of a requirement in the online classroom than face-to-face classroom (Arinto, 2013). “The issue is no longer whether teachers should integrate technology in their existing practices, but how to use technology to transform their teaching with technology and create new opportunities for learning.” (Angeli & Valanides, 2009, p. 154).

Coppola, Hiltz, and Rotter (2002) conducted a qualitative study to look at the challenges that faculty face when transitioning from being an instructor who teaches face-to-face to teaching

online. The researchers interviewed 20 faculty across multiple disciplines who taught at least one course online asking them to share their experiences with transitioning to the online teaching and learning environment. The sample included both undergraduate and graduate faculty. “The interviews covered course preparation and delivery, instructor motivation, training and support, faculty attitudes toward policy issues, perceived outcomes for both students and faculty, and Asynchronous Learning Networks pedagogy.” (p. 173).

The researchers pointed out that the faculty acknowledged the need for a different set of skills to teach online. They also identified the need for time to transition and learn these skills. There is a requirement for more time to plan and design prior to the teaching of the course over teaching face-to-face (Coppola et al., 2002).

There is still a major gap when it comes to faculty being prepared to teach effectively with technology (Angeli & Valanides, 2009; Koehler et al., 2007; Rodrigues, 2003). Research has shown that this gap is caused by the limited amount of training provided to faculty in the use of technology in conjunction with pedagogy. Rather, faculty are typically trained in the basic rote technical mechanisms (Angeli & Valanides, 2009; Selinger, 2006).

The gap in faculty preparedness for teaching online has been expounded by the need for higher education institutions to move all of their courses online due to the COVID-19 pandemic. Bao (2020) conducted a case study examining the process used at Peking University when they had to swiftly move all of their courses online due to the COVID-19 pandemic. They moved 4,437 of their courses (undergraduate and graduate) online. Prior to this, they only offered approximately 100 courses in the online modality. They learned that their faculty and students were unprepared to make this transition. The researcher analyzed responses from students identifying the major challenges of self-discipline, having access to the appropriate learning

materials and learning environment for their students when transitioning online. This was the focus of the emergency faculty development provided to prepare their instructors to meet these challenges. Faculty development included planning for the unexpected, chunking content, establishing teaching presence, using instructional support personnel, active learning strategies, and substantive feedback.

Johnson et al., 2020 conducted a study to evaluate the transition process of higher education institutions in response to COVID-19. The researchers distributed a survey receiving 897 responses from various higher education faculty and administrators across 672 schools. Participants were asked about their prior online teaching experience with 64% of respondents stating they had no prior online teaching experience. Participants were asked to report what changes they made to their courses while transitioning online. Ninety-three percent of faculty indicated they made at least one of the listed modifications. The majority (64%) of faculty conveyed they made changes to assignments or exams, 49% of institutions represented allowed instructors to assign pass/fail grades, 48% of faculty lowered their expectations of the amount of work required of their students, 46% dropped assignments or exams from students' grades, 32% lowered their expectations of the quality of work required of their students, 17% reduced the number of required readings, and 16% made some other modification. The researchers also discovered that faculty were in need of instructional assistance in how to support students remotely and teach from a home environment. "Preparing faculty to teach in online and blended modes will increase the likelihood of quality online educational experience." (Johnson et al., 2020, p. 17).

Studies have shown that providing training to faculty on how to use technology integrated with their content specific area aligned with pedagogical strategies has a greater

impact on their ability to design technology integrated curriculum (Angeli & Valanides, 2005, 2009; Valanides & Angeli, 2006, 2008). Armellini and Jones (2008) conducted a study looking at the effectiveness of a new faculty development program created to better meet the gap they saw in their faculty's use of e-learning pedagogy. The training included an immersive hands-on experience where faculty designed and developed new learner-centered activities for their courses. Prior to the faculty attending the workshop the facilitators would meet with them to discuss their prior knowledge related to e-learning and designing instruction. The workshop is then designed around the faculty's existing needs and to connect with prior knowledge. The goal is to see change in the behaviors of the faculty in how they design their instruction.

Armellini and Jones (2008) conducted a qualitative study that used interviews, observations, and course artifacts as the data to determine the impact of the faculty development program on faculty change in behavior. Data was collected before and after the faculty development program so it could be compared for changes. The sample for this study was 93 faculty who were divided into 17 discipline specific design teams (Armellini & Jones, 2008).

One significant change that was observed was the perception of what e-learning is. Many of the faculty came into the program believing that e-learning is just a repository of course materials posted for learners to access. There was little use of discussion boards to engage students, but mainly used for question and answer forums. There was little interaction or collaboration encouraged among learners. Many activities used were to check for understanding or knowledge acquisition of the students (Armellini & Jones, 2008).

To categorize the type of design used by the course design teams before and after the faculty development program, the researchers used three main categories: transmissive, interactive, and collaborative. Prior to the development program the majority of the course

design teams implemented transmissive designs which primarily meant information was delivered and students were expected to consume. Some examples included the posting of static PowerPoint slides, paper-based content presented as Word or PDF documents, and one-to-one communication via e-mail with the instructor. All course designs fell within the transmissive and/or interactive categories. The goal for after the completion of the development program was for there to be a significant change in the behavior of the instructional design to a collaborative approach (Armellini & Jones, 2008).

After completing the faculty development program among the 17 courses designed, they had three courses that still fit within the transmissive design category, seven courses that shifted towards the interactive design category, and seven courses that shifted towards the collaborative design category. While this represents a significant shift of changed behavior in the design of their instruction, some faculty voiced that they needed more time to process the approaches and implement them in their courses (Armellini & Jones, 2008). The application of faculty development impacts the student learning experience which can be assessed by the Community of Inquiry (COI) framework.

Community of Inquiry Framework

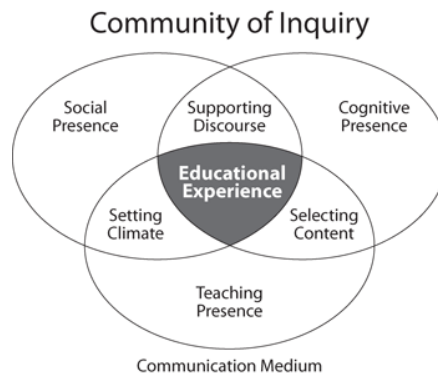
The Community of Inquiry (COI) Framework has demonstrated to reliably assess the experiences of students in both fully online and blended learning environments. It has been widely used across the field of online learning to assess the online student experience (Arbaugh, 2007; D. R. Garrison & Arbaugh, 2007). The researchers found differences in the student learning experience depending on the subject area of the courses (Wicks et al., 2015). The COI Framework has further been showed to have a greater impact in courses that are more applied

disciplines such as nursing, science, education, and technology related fields (Arbaugh, Bangert, & Cleveland-Innes, 2010; Wicks et al., 2015).

The COI Framework (see Figure 2) has been used as a guide to assist faculty in the course design process illustrating standards that can be used to accomplish teaching, cognitive, and social presence in the classroom (Garrison, Anderson, & Archer, 2001; Wicks et al., 2015). By ensuring these three elements are present in the online classroom an instructor can better ensure that the learning environment is more conducive for students learning and engagement (Choo et al., 2020; Wicks et al., 2015).

Figure 2

Community of Inquiry (COI) Framework



Note. (“The Community of Inquiry,” 2019)

The first element of the COI model is teaching presence which is defined as the instructor engaging in the course by responding to students in a timely manner, engaging in the course discussions, and providing quality feedback to further deeper student learning of the content (Choo et al., 2020; D. R. Garrison, Cleveland-Innes, & Fung, 2010; Wicks et al., 2015).

Teaching presence occurs when a combination of effective course design, course facilitation, and direct instruction is present in the course (Arbaugh et al., 2010; D. R. Garrison et al., 2001).

Kupczynski, Ice, Wiesenmayer, Ice, & McCluskey (2010) conducted a mixed methods study to determine the impact of teaching presence on the success of students in the online classroom based on students' perceptions. They also looked further at the differences based on the degree program level of the student.

The participants included 643 students at two higher education institutions across all four degree program levels (associates, bachelors, masters, and doctorate). Participants were asked to identify one positive and negative thing respectively that the instructor did that the student believed impacted their learning in the course. They were also asked to identify the grade they expected to receive in the course. This data was categorized and compared to the data collected about the students' perception of teaching presence using the COI survey (Kupczynski et al., 2010).

The response that participants gave the most (approximately 39%) regarding what their instructor did to contribute to their success in the online classroom was providing substantive feedback on assignments and assessments. Secondly, approximately 26% participants indicated having their instructor encourage them to explore and research new concepts on their own in the course as helping them have a successful learning experience (Kupczynski et al., 2010).

On the negative side approximately 30% of participants indicated a lack of feedback on why they received a certain grade and how they could improve as the reason for their lack of success in the course. Also, approximately 30% indicated a lack of clear communication regarding the content of course from the instructor contributed to their lack of success. There was a clear distinction at the program level whereby the students at the associate program level believe having direct instruction including directed substantive feedback from their instructor as extremely important to their learning success (Kupczynski et al., 2010).

There is a debate as to whether teaching presence can exist with or without the instructor. Some say it could exist through the collaboration and interaction of the students in the course while others have indicated there is a difference between teaching presence and teacher presence. While effective instruction could be present through the design of the course the instructor may not be actively present in the online classroom (Arbaugh, 2007; Benbunan-Fich & Arbaugh, 2006; Brower, 2011; Coppola et al., 2002; Drago et al., 2002).

The second element of the COI model is cognitive presence which is defined as the course providing opportunities for students to engage in the content of the course. This includes opportunities to make connections to prior knowledge, and constructing and applying new knowledge to solve real world problems (Arbaugh et al., 2010; Garrison et al., 2001; Wicks et al., 2015). “Cognitive presence describes potential learning activities for deep and meaningful learning. It includes understanding an issue or problem; searching for relevant information; connecting and integrating information; and actively confirming the understanding in a collaborative and reflective learning process.” (Akyol et al., 2009, p. 125).

Cognitive presence is occurring when there is an event that causes exploration, integration, and application of the new knowledge (Garrison et al., 2001; Garrison & Arbaugh, 2007). Cognitive presence has been demonstrated as the most challenging of the three to gain in the online classroom often being tied closely to the existence of teaching presence. It has also been mentioned that cognitive presence can be heavily dependent upon the level of the course (graduate or undergraduate) and the nature of the learners (traditional or adult learners) (Arbaugh, 2007; Benbunan-Fich & Arbaugh, 2006; Choo et al., 2020).

Shea and Bidjerano (2009) conducted a study to look more closely at how social and teaching presence impact the existence of cognitive presence. The sample for this study was

2,159 students across 30 institutions all part of a single higher education system that includes both four-year and two-year institutions. This study found that there was a significant correlation between cognitive presence and social and teaching presence respectively. Looking at teaching presence, in particular, there were two indicators of teaching presence that stood out as being predictors of high cognitive presence. They were related to learners feeling comfortable participating in discussions and the participation of their instructor in discussions to ensure they were focused on the topic. Looking at social presence, in particular, learners having the opportunity to get to know their classmates had a high correlation to the existence of cognitive presence. In addition, Choo et al., (2020) also found that with the existence of teaching and cognitive presence together there is a stronger correlation to student satisfaction of the online learning experience.

The last element in the COI framework is social presence which is defined as the course providing a learning environment that is conducive to students being able to share and collaborate on course content. This includes providing a safe space allowing students to share honest opinions and engage with each other (Arbaugh et al., 2010; Wicks et al., 2015). Social presence is often facilitated by the use of synchronous or asynchronous discussions that promote a deeper understanding of the content through the interaction with others. Students should have the ability to put forth their thoughts in a manner where the meaning can be synthesized by their peers and feel like they are participating in a real learning environment. This includes communicating their thoughts and emotions effectively. Students must be able to trust their instructor and peers enough to be able to express their thoughts and opinions. They should also feel comfortable collaborating with their peers within a virtual environment (Akyol et al., 2009; Richardson & Swan, 2003; Swan & Shih, 2005).

Engaging students in the learning process is essential to the transfer of learning. Students must be engaged with the content within the context of the learning environment. There has been shown to be a lack of social presence among students in online courses (Bowen, 2005; Lim, 2012; Muilenburg & Berge, 2001).

Social presence has been studied as a part of the learning experience even prior to the existence of online learning as a modality. It was defined with indicators including eye contact, body language, and other nonverbal cues. This made it difficult when looking at social presence for the online environment. There was a need to look for other indicators of social presence to prove its existence in the online environment (Gunawardena & Zittle, 1997).

Gunawardena and Zittle (1997) developed a scale over 20 years ago to measure social presence that is still used as a basis for future scales (Richardson & Swan, 2003; Swan & Shih, 2005). Their scale used six parameters to measure social presence: immediate, interactive, personal, sensitive, social, and warm. This scale provides a foundational framework for the existence of social presence in the online classroom (Choo et al., 2020; Swan, 2010).

Of the three presences included in the COI framework, social presence appears to have been looked at closely the most in the literature. The research on social presence has varied between finding a causal or correlational relationship between student learning and the existence of social presence in the online classroom (Arbaugh, 2007; Mo et al., 2017).

Wicks et al. (2015) reported that students reported an increased amount of interaction with their instruction and peers in the online classroom as the greatest desired improvement to their courses. Other areas of improvement that were reported highly by students was access to online resources, providing flexibility, and providing a variety of assessment methods.

Social presence has also been found to have an impact on whether students persist in their online program showing that having a high level of social presence across their courses increases the likelihood they will maintain their enrollment in the program (Boston, Gibson, Ice, Richardson, & Swan, 2009; Mo et al., 2017; Tinto, 1975). Students feeling like they are part of a learning community allows them to more effectively interact with their peers and establish social presence (Hostetter & Busch, 2006; Liu, Gomez, & Yen, 2009).

Swan and Shih (2005) conducted a mixed methods study to determine the impact of online discussions on social presence in the online classroom. Further, they also looked at the relationship between students' perception of their social presence and their perception of interaction in the course and their satisfaction with their instructor. The study discovered a statistically significant correlation between the existence of social presence and participation in online discussions. Other factors that were found to have significance were the presence of the instructor and the design of the course.

Swan and Shih (2005) involved the use of four graduate fully online course sections across the subject areas of communication and educational technology. All of the courses surveyed used online discussions to create a learning community in the course. The sample included 51 participants which was 56% of the population surveyed. When participants were asked how much time each week they spend participating in online discussions the majority of respondents stated they spent between one to three hours (Swan & Shih, 2005).

Respondents were asked to complete an online survey that consisted of five-point Likert scale questions as well as three open-ended questions. The researchers identified the highest and lowest scoring respondents and those responses were used in comparison to indicators of social presence in their online discussion postings in their courses. In addition, these respondents were

interviewed in-person to gain more insight into the process of how they participate in the discussion as well as their perceptions of their peers and instructor through the online discussion experience. The researchers used the social presence density index to identify social presence indicators in their individual posts (Swan & Shih, 2005).

The researchers used three indicators of social presence including affective, cohesive, and interactive. An affective indicator might include paralanguage, emotion, value, humor, or self-disclosure. A cohesive indicator might include greetings or salutations, vocatives, group reference, social sharing, or course reflection. Interactive indicators might include acknowledgement, agreement or disagreement, approval, invitation, or personal advice (Swan & Shih, 2005).

The results of this study showed the strongest correlations between students' perception of social presence existence in the course and their perception of their learning in the course as well as the correlation between the students' perception of presence of their instructor and their satisfaction with their instructor. There was also significance in the findings between the subject area and the student's ages (Swan & Shih, 2005). The researchers ascertained the difference in the design of the course to potentially explain the correlation in subject area and perceived social presence. This is supported by other research studies showing a correlation between course design and perceived social presence (Swan & Shih, 2005; Tu, 2000; Tu & McIsaac, 2002). No significant difference was shown based on age or experience in the online environment. This could show that the prevalence of technology in everyday life makes the transition for students to the online academic environment less challenging (Choo et al., 2020; Swan & Shih, 2005).

When the researchers separated out the respondents with the highest and lowest perceived social presence they distinguished that those with the highest perceived social presence were the

most likely to share more personal experiences with their peers, describe the courses and their peers as being part of a learning community, and provide more substantive responses to their peers in the discussion furthering the conversation. The most significant difference found in the comparison of the highest and lowest perceived social presence was the differences in their perception of interaction in the course and their perception of their own learning in the course. Responses received from students who reported a lower social presence indicated they were uncomfortable with the personal tone of some of their classmates feeling that the online environment warranted a more formal tone (Swan & Shih, 2005).

On the other hand, both students who identified a low and high social presence felt a high connection with their instructor. The relationship with their instructor was built through private communications and feedback given by their instructor. Students also felt a connection with their instructor when they shared their own personal experiences related to the subject. The researchers also found that students who indicated a higher social presence also indicated a higher level of learning as well as reported that they were able to see topics from different viewpoints through their classmates' responses which allowed them to open their minds to new ideas. Students indicating a low social presence described postings made by their classmates as not helpful to their overall learning (Swan & Shih, 2005).

Based on their findings Swan and Shih (2005) put forth that this could indicate a need for students to be educated on how to participate in an online community and how it fits within their learning experience. They also indicated this could mean that some students learn better within a social community and others do not which could support the need for a differentiated learning environment based on students' needs (Haythornthwaite, 2002; Lave & Wenger, 1991; Vygotsky, 1978).

The major finding from this study is that there is a significant relationship between social presence and students' perception of learning which is supported by a variety of studies on this topic (Choo et al., 2020; D. R. Garrison et al., 2010; Gunawardena & Zittle, 1997; Picciano, 2002; Richardson & Swan, 2003; Swan et al., 2000; Swan & Shih, 2005). Although the researchers extended the notion that the perception of instructor presence has a significant impact on instructor satisfaction there is a gap in the research looking at the correlation between instructor presence and student learning (Picciano, 2002; Swan & Shih, 2005). Students having a positive feeling towards their online learning experience through interaction with their peers and instructor then leads to a significant cognitive presence (Shea & Bidjerano, 2009).

Boston et al. (2009) found that students feeling the presence of their instructor and classmates as being real in the online classroom as a significant impact on their learning success and ability to retain in their online program. A number of research studies have connected student satisfaction in the online environment having a significant relationship to the establishment of social presence (Gunawardena, 1995; Gunawardena & Zittle, 1997; Hostetter & Busch, 2006; Picciano, 2002; Richardson & Swan, 2003; Russo & Benson, 2005; Stacey, 2002; Swan & Shih, 2005).

Richardson and Swan (2003) conducted a study to look at the relationship between social presence in the online classroom and students' perception of their learning in the classroom. They also sought to determine if there is a relationship between social presence and the students' satisfaction with their instructor in the online environment. They had a sample size of 97 out of a possible 369 undergraduate students (26% response rate). Students were asked to complete a survey that measured their social presence in their online classroom.

The researchers used a survey instrument based on the social presence scale developed by Gunawardena and Zittle (1997). The Likert scale questions used were meant to measure three constructs: “students’ satisfaction with their instructor, students’ overall perceived learning, and students’ overall perceived social presence” (Richardson & Swan, 2003, p. 72). Further, participants were asked to indicate their perception of learning and social presence in relation to different types of activities in the course including discussion, individual and group projects, exams, assignments, lectures and readings (Richardson & Swan, 2003).

The authors were able to establish a relationship “between students’ perception of social presence and students’ perceived learning” (Richardson & Swan, 2003, p. 73). Further, the results of the study using regression analysis indicated that when students perceive a higher level of social presence they also perceive a higher level of learning and indicate a higher level of satisfaction with their instructor. These results aligned with the results also recorded in the study conducted by Swan and Shih (2005). In addition, students who found their interaction with their instructor in the course had a perception of a higher level of learning in their course (Richardson & Swan, 2003).

The role of the instructor in establishing and supporting the existence of social presence continues to be prevalent in the online environment (Stacey, 2002). In terms of demographics the researchers disclosed a significant variance in the level of social presence based on gender with females perceiving a higher level of social presence than males. They did not find any further significant correlations between demographics and social presence (Richardson & Swan, 2003).

In terms of any correlation of the perception of social presence and the course activities explored in the survey the researchers found that the higher the perception of social presence correlated with a higher perception of learning in online discussions, projects, and assignments

(Richardson & Swan, 2003). This also aligns with the study conducted by Swan and Shih (2005) in regards to the correlation between social presence and online discussions. The other course activities including exams, lectures, and readings also indicated a statistically significant correlation, but indicated a smaller correlation than the discussions, projects, and assignments. Although some of these activities would be individual activities in nature (e.g., assignments, readings) which would contradict the idea of existing social presence, the researchers explained the existence of social presence being tied to the interaction that might take place around these activities either with their instructor or classmates (Richardson & Swan, 2003). This came across in a number of studies indicating the importance of interaction as a critical component to the learning experience (Richardson & Swan, 2003). The researchers explain the gaps in the research putting forward the need to look even deeper at the extent of the impact of social presence on students' perception of their learning, satisfaction, and social presence in the online environment (Richardson & Swan, 2003).

The results of this study align with the social learning theory that a higher level of learning takes place while interacting and collaborating over the content with other learners (Richardson & Swan, 2003). The results of this study are also supported by other literature that indicates perception of learning and satisfaction with the course and instructor are positively related to timely response and feedback (A. Moore, Masterson, Christophel, & Shea, 1996; Richardson & Swan, 2003). Assignments and discussions were indicated as the most beneficial activities to promote their learning in their online courses by students showing that the application of content, feedback from their instructor and interaction with their peers is an important element in supporting the student learning experience in the online environment (Richardson & Swan, 2003).

Boston et al. (2009) conducted a study to look at the impact of teaching, social, and cognitive presence on online student retention. Although this study was limited to one public for-profit online university the sample size could warrant the results being considered significant. With a sample of over 25,000 online undergraduates their participants completed the Community of Inquiry (COI) survey. Data collection was conducted across multiple semesters and compared to the retention of the students in their courses to determine if any of the three constructs measured by the survey had an impact on the retention of the students.

The study brought to light the need for students to be able to engage socially with their peers in the virtual environment as they would on a residential campus. This also follows the need to integrate new ways of engaging students in the academic experience that aligns with how they interact in their everyday lives (Boston et al., 2009).

A limitation of the Boston et. al. (2009) study is that it was restricted to undergraduate students only and was limited to one fully online for-profit institution. Results could differ based on academic classification and type of institution attending (Boston et al., 2009). Other studies have found differences in the three constructs of teaching, social, and cognitive presence based on academic classification (Gunawardena, 1995; Kupczynski et al., 2010).

Arbaugh et al. (2010) conducted a study to look at the differences between cognitive, social, and teaching presence across disciplines. The researchers conducted their study across two universities with a total of 1,582 participants to broaden the diversity of their sample. The participants came from both undergraduate and graduate courses across business, nursing, science and math, engineering, education, social sciences, allied health and technical, and humanities in fully online and blended courses. They used the COI Framework 34-item survey instrument developed by Arbaugh, Cleveland-Innes, Diaz, Garrison, Ice, Richardson, Shea, &

Swan in 2008. The results showed that participants who were surveyed as part of an allied health or technical program had a statistically significant higher perception of social, cognitive, and teaching presence in their courses over the other subject areas surveyed (Arbaugh et al., 2010).

To look more closely at the differences by discipline the researchers separated the responses based on whether the respondents fell in a pure course or an applied course. A pure course would revolve more around the instructor disseminating information that students must take in, in a linear way such as the hard sciences. An applied course revolves around learners constructing knowledge through exploring new information and finding ways to connect it to prior knowledge and experiences (Arbaugh et al., 2010).

The results showed that learners perceived a significantly higher existence of cognitive presence in applied courses than in pure courses. This can be explained by the fact that in applied courses which tend to focus on more soft skills require students to engage more heavily in the act of building new knowledge through critical thinking and problem solving (Arbaugh et al., 2010).

The true power of the use of the COI framework is how the use of teaching, cognitive, and social presence work together to create an effective online learning experience. All three exist together overlapping, impacting, and influencing each other (Arbaugh, 2007).

There has been some debate about the true purpose of the Community of Inquiry (COI) Framework as to whether it focuses on the establishment of cognitive, social, and teaching presence as a way to support the alignment to learning outcomes or whether the focus is more on the support of the overall student learning experience (Akyol et al., 2009).

Arbaugh (2007) conducted a study to measure the effectiveness of the Community of Inquiry (COI) Framework. The study used 55 graduate level business courses with a total of 667 respondents. The researcher developed a 44-item survey instrument based on a review of the

literature that define the constructs of teaching, social, and cognitive presence. He also added a fourth construct of course design and organization. The researcher used an exploratory factor analysis to determine the reliability of the survey instrument which resulted in a Cronbach's alpha of a .88 or higher for each instrument item respectively. Teaching presence received a .97, social presence a .88, cognitive presence a .90, and course design and organization a .89, all meeting the standard of good reliability ($\alpha > .7$). The validity of the COI framework has been confirmed by multiple studies (Arbaugh, 2007; Arbaugh & Hwang, 2006; Garrison, Cleveland-Innes, & Fung, 2004; Shea & Bidjerano, 2009).

Summary

There is a need to look deeper at what specific behaviors indicate the existence of social presence to guide designers and facilitators in what online faculty need in terms of education to best support social presence in their online classroom (Gunawardena, 1995; Richardson & Swan, 2003).

A gap exists between the training and education of instructors in the design and use of instructional technology for their courses and the application of these skills in the online classroom (Angeli & Valanides, 2005). The COI framework can be used to assist faculty developers and instructional designers in gaining insight into the development needs of instructors to help them better support the learning experience for their online students (Shea & Bidjerano, 2009).

There is research using the COI framework, specifically looking at each of the three presences separately. There is still a lack of literature examining the COI framework, as a whole, particularly in disciplines outside of education and students' perception of their learning success

(D. R. Garrison & Arbaugh, 2007; Kupczynski et al., 2010) and in correlation with other design frameworks (Swan et al., 2014).

Chapter 3

Methods

Introduction

There has been a significant amount of research accomplished in recent years on the effectiveness of online teaching particularly comparing online learning to face-to-face. The amount of research literature demonstrates the growth in different frameworks and models to assist with the design and delivery of online teaching and learning. However, there is limited research on how the use of these design and delivery frameworks and models impact the student learning experience. There are studies that use the Community of Inquiry (COI) Framework as a tool to measure the student learning experience, but there is a gap in the use of the COI Framework in correlation with course design frameworks; specifically, in the use of the COI Framework with the Quality Matters (QM) design rubric.

Prior to this chapter, Chapter 1 covered the statement of the problem, purpose of the study, significance of the study, research questions, assumptions, definitions, and general introduction of the topic of the research study. Chapter 2 restated the purpose of the study and the research questions and then addressed a review of relevant literature covering the range of online course design frameworks and how they have been used to change how online courses are designed. The review of literature continued with a look at the impact of faculty development on the behavior change of faculty transitioning to teaching online, faculty views on teaching pedagogy, and the impact on the student learning experience. The literature review continued with a look at the literature conducted on the use of Quality Matters (QM) as a design framework, and the Community of Inquiry (COI) Framework. Chapter 3 will include a

description of the sample, a look at the instrument used, and a discussion about how the data was collected and analyzed.

Purpose of Study

The purpose of this study was to determine what impact, if any, online course design training has on instructor teaching in the online classroom. This study examined student perceptions of the educational experience in Quality Matters (QM) certified online courses using the Community of Inquiry (COI) framework.

This quantitative study addressed the use of a Quality Matters (QM) online course design framework at a southeastern university. In this study quantitative data was used to collect demographic data and data using a survey relating to a Community of Inquiry (COI) framework, use of the Quality Matters (QM) rubric, and the impact on the student learning experience. This study was limited to one undergraduate program at a southeastern university in which all major courses were Quality Matters' (QM) Certified.

Research Questions

The following questions were used in this study:

1. What are the student perceptions of the learning experience in a Quality Matters (QM) certified course?
2. What is the relationship between teaching presence and social presence in a Quality Matters (QM) certified course?
3. What is the relationship between teaching presence and cognitive presence in a Quality Matters (QM) certified course?
4. What is the relationship between social presence and cognitive presence in a Quality Matters (QM) certified course?

Overall Design

This research study used an online survey. The courses identified as part of the study have received the Quality Matters' (QM) course certification within the last two years. Quality Matters (QM) uses a rubric that includes eight general standards that cover the different elements believed to contribute to effective course design. The eight areas covered in the rubric are Course Overview and Introduction, Learning Objectives (Competencies), Assessment and Measurement, Instructional Materials, Course Activities and Learner Interaction, Course Technology, Learner Support, Accessibility and Usability. The focus of QM is on course design and does not address course delivery ("Quality Matters Program," n.d.). A thorough faculty peer review process is used to QM certify a course (See Figure 1). The reviewers are experienced online faculty having gone through a peer reviewer certification. The reviewers must use the QM rubric that includes eight general standards and 42 specific review standards worth one to three points respectively. A course must receive an 85% or a score of 85 out of 100 points to be considered QM quality certified ("Quality Matters Program," n.d.).

Participants were given a survey based on the Community of Inquiry framework (COI) (See Figure 2). The COI framework views the student learning experience from a constructivist point of view suggesting that the learning process is constructed by teaching presence, cognitive presence, and social presence in the online classroom (Swan et al., 2014).

This study used a correlational, non-experimental quantitative research design which is used to describe the relationship between two or more variables. Correlational research design is used when extraneous variables cannot be controlled, but there is a need to find out whether a statistical relationship exists between two variables (Price, Jhangiani, & Chiang, n.d.). Data integrity is making sure that data collected is as accurate as possible

taking into consideration any possible threats to validity. Quantitative methods have internal and external threats to validity. One potential threat to internal validity for this study is selection (Creswell, 2014). Because the researchers are letting the participants self-select to participate based on their response to the survey, there might not be an equal distribution among the participants. Another potential threat to internal validity is diffusion of treatment (Creswell, 2014). Because the students are in the class together and could discuss their responses or be swayed by their personal feelings for the instructor, diffusion of treatment might impact their responses.

Instrumentation

This research study used the instrument developed by Swan, Richardson, Ice, Garrison, Cleveland-Innes, and Arbaugh (2008) as a measurement tool based on the Community of Inquiry (COI) framework. The survey instrument includes 34 items divided into three sections focusing on teaching, cognitive, and social presence respectively. All items use the Likert scale with 1=strongly disagree to 5=strongly agree. Swan et al., (2014) tested the instrument at four higher education institutions in 2007 with a sample size of 287. Factor analysis was used to look at each section showing an internal consistency based on Cronbach's Alpha was .94, .91, and .95 for teaching, social, and cognitive presence respectively demonstrating a reliable and valid measure for the COI framework. One of the Likert scale statements as appeared on the survey is provided below in Figure 3. Permission for the use of the COI survey instrument is granted under an open educational resource under a Creative Commons license ("The Community of Inquiry," 2019).

Figure 3

Community of Inquiry (COI) Sample Question

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
The instructor clearly communicated important course topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In addition to the COI survey questions, participants were asked to respond to demographic questions identifying their age, gender, race/ethnicity, academic classification, and number of online courses taken.

The validity of an instrument is determined by whether that instrument measures what it says it will measure. There are three ways an instrument is tested for validity in quantitative research including: content validity, predictive validity, and construct validity (Creswell, 2014; Creswell & Creswell, 2018).

Internal validity is the degree to which cause and effect can be established; degree of confidence that you located what you said you found. Threats to internal validity include things that can happen involving the participants, procedures, or treatment that could have an impact on the results of the experiment whereby the researcher might not be able to draw incorrect conclusions. Threats to internal validity include: history, maturation, regression, selection, mortality, diffusion of treatment, compensatory/resentful demoralization, compensatory rivalry, testing, and instrumentation (Creswell, 2014).

External validity is the degree of confidence to which findings of a study are generalizable. Threats to external validity when a researcher draws incorrect conclusions because of the timing of the experiment, sample of participants, or the setting of the experiment. This can happen when a researcher tries to generalize findings for other groups or settings not included in

the experiment. Threats to external validity include: interaction of selection and treatment, interaction of setting and treatment, and interaction of history and treatment (Creswell, 2014).

The first example of a potential threat to external validity is interaction of selection and treatment. This could occur when a sample is specific towards a certain region or organization, the results cannot be generalized to the entire population, which might result in different conclusions. This is a potential threat in this study due to the data being collected from one institution.

An internal consistency test was run to test for reliability which resulted in a Cronbach's alpha of .959 which indicates good reliability ($\alpha > .7$). The test was also run on each subscale resulting in a Cronbach's alpha of .941 for teaching presence, .753 for social presence, and .942 for cognitive presence. A Cronbach's alpha less than .5 is considered unacceptable, while an alpha greater than .7 is good and greater than .8 is preferred (Taber, 2018).

Sample

The sample for the study consisted of the students in the online RN to BSN (Registered Nurse to Bachelor's of Science in Nursing) program at a southeastern university. It is a small university located in the southeastern United States with an approximate enrollment of 8,000 supporting 46 programs at the undergraduate level and 42 at the graduate level with six undergraduate programs online and 12 graduate programs online. It has 63 online courses Quality Matters (QM) certified across the disciplines of business, communication, criminal justice, computer science, education, nursing, psychology, and sociology. The online RN to BSN program is the only program at this university that has certified the courses in their major program which is the reason for it being chosen as the population for this research study,

There are nine major courses in the RN to BSN program of which all have received the Quality Matters' (QM) quality certification. As of spring 2019 there were 216 active students in the RN to BSN program. To be a student in this program you must have already completed an associate degree in nursing qualifying them as a registered nurse. Of the 216 students, 32 students responded to some or all questions resulting in a 14.8% response rate. Of the 32 respondents 94% (30 of 32) are female and 6% are male (2 of 32). The average age of the participants is 37 years old with the youngest being 24 and the oldest being 48 years old. All of the respondents classify themselves as junior or senior with 84% (27 of 32) classified as seniors and 16% (6 of 32) classified as juniors. Of the responses, 18 identified as Caucasian, 13 as African American, two as Hispanic, and one selected Other. Respondents were given the option to select more than one option. Of the 30 respondents who responded to the open-ended question asking how many online courses they have taken, participants have taken an average of 10 online courses with the least amount being two and the most being 30. The two remaining responses indicated that they have taken many online courses ("too many to count").

Teaching Presence

In the first section of the survey teaching presence is assessed. Teaching presence represents the actions taken by the instructor to provide feedback, facilitate interaction and learning, and provide direct instruction during the progression of the course. The 13 Likert style statements included in this section more specifically assess the students' perception of the existence of design and organization, facilitation, and direct instruction which indicates the existence of teaching presence. An example of a statement included in this section is "The instructor clearly communicated course goals." (Rourke et al., 2001; "The Community of Inquiry," 2019).

Social Presence

In the second section of the survey social presence is assessed. Social presence represents the ability of the instructor and learners to engage in activities that build a community and allows them to make real life connections. The 9 Likert style statements included in this section more specifically assess the students' perception of the existence of affective expression, open communication, and group cohesion which indicates the existence of social presence. An example of a statement included in this section is "Getting to know course participants gave me a sense of belonging in the course." (Rourke et al., 2001; "The Community of Inquiry," 2019).

Cognitive Presence

In the last section of the survey cognitive presence is assessed. Cognitive presence represents the existence of higher level thinking and the learners pursuit of critical thinking and application of the topics being studied. The 12 Likert style statements included in this section more specifically assess the students' perception of the existence of triggering events, exploration, integration, and resolution which indicates the existence of cognitive presence. The COI framework suggests that cognitive presence cannot exist without the existence of teaching and social presence. An example of a statement included in this section is "Problems posed increased my interest in course issues." (D. R. Garrison et al., 2001; "The Community of Inquiry," 2019).

Data Collection

Prior to data collection the research study was submitted to the Institutional Review Board (IRB) at Auburn University to conduct an expedited review with the explanation of the minimal risk to participants. The application to the IRB included the principal investigator (PI) and advisor verification of CITI training, a copy of the survey instrument as would be viewed in

Qualtrics, a copy of the language that would be used in the Announcement posting to invite participation, and a letter of permission from the RN to BSN program coordinator at the university allowing data collection to be performed with their courses and students. The proposal received an exempt approval from the IRB in April of 2019.

Prior to data collection the Delphi method was used to pilot test the survey instrument. The Delphi method includes using panel experts to review and provide feedback (Eggers, Hubbard, & Jones, 1998). The panel members were asked to provide feedback on the design (look and feel) of the survey in Qualtrics and the clarity of the instructions. They reported on the amount of time for completion and provided feedback regarding the clarity of instructions.

The survey, including the demographic questions and the 34 Likert scale questions contained in the COI survey, was administered online via Qualtrics from April to May 2019. The survey link from Qualtrics was posted through the Announcements tool in D2L Brightspace by the instructor of each course in the RN to BSN program taught spring 2019. The instructors were given the language to copy and paste into the Announcement which included the purpose of the study, that participation was voluntary, participation was confidential and a URL link to access the informed consent and survey. In addition to the initial invitation, instructors were asked to post follow-up announcements in their courses one week and two weeks after the initial invitation respectively.

The survey was available via any device that could access the Internet including desktops, laptops, or mobile devices making it easily accessible to participants (Dillman, Smyth, & Christian, 2014). The survey link directed participants to a page that included the informed consent giving them a description of the study and information regarding participation in the study. They were informed that there was no incentive provided for participation other than

contributing to the research study and the potential to help improve the design of online learning courses for future students. Students were asked to select a radio button to indicate their agreement or disagreement to participate in the study. If they selected the radio button indicating they did not wish to participate they were redirected to a thank you page and if they selected the radio button indicating they agreed to participate they were redirected to the survey itself. The survey took approximately 10 minutes to complete. The survey was open for approximately three weeks at which time the data was downloaded from Qualtrics to be analyzed in SPSS. Follow-up reminders were sent three times to increase response rate. The Dillman method recommends repeated contact of participants to increase response rate (Dillman et al., 2014).

The survey presented the questions divided into four pages. The first page included the five demographic questions. The second page included questions related to teaching presence which were divided into three blocks of Likert scale matrices identified by design and organization, facilitation, and direct instruction. The third page included questions related to social presence which were divided into three blocks of Likert scale matrices identified by affective expression, open communication, and group cohesion. The fourth page included questions related to cognitive presence which were divided into three blocks of Likert scale matrices identified by triggering event, exploration, integration, and resolution.

Data Analysis

After the window for data collection concluded, the data was exported from Qualtrics and imported into Statistical Package for Social Science (SPSS) 25. SPSS was used to analyze the data collected in this study. Before analysis began fields that included identifying information were removed including the start date, end date, status, IP address, progress, duration, finished, recorded date, response id, recipient last name, recipient first name, recipient email, external

reference, location latitude, location longitude, distribution channel, and user language. The remaining variables were renamed and the scales and data for the 34 Likert scale questions were reverse coded resulting in 5=Strongly Agree, 4=Agree, 3=Neither Agree or Disagree, 2=Disagree, 1=Strongly Disagree. There were a total of 32 cases.

Descriptive statistics were run to identify the range, minimum, maximum, mode, mean, and standard deviation for the demographic questions (See Figure 4). Descriptive statistics for the Likert scale questions that measure the construct of student online learning experience were also run to determine a basis for other statistical tests. The correlational test Kendall tau_b was used to describe the relationship between QM certification and the COI scores. This statistical test was used due to the small sample size and the negatively skewness of data.

Figure 4

Demographic Questions

What is your gender?

Male
 Female
 Other

What is your age?

How many online courses have you taken?

What is your academic classification?

Freshman
 Sophomore
 Junior
 Senior

What is your race/ethnicity?

White
 Black or African American
 Hispanic
 American Indian or Alaska Native
 Asian
 Native Hawaiian or Pacific Islander

Summary

This chapter presented the methods used to conduct the research study including a detailed description of the instruments used, the Quality Matters' (QM) rubric and the Community of Inquiry (COI) Framework. Also included in this chapter was an explanation of the data analysis and procedures used for data collection. The study and procedures used were approved by the Auburn University Institutional Review Board prior to beginning data collection.

Chapter 4

Findings

Introduction

The findings, associated data for this research study and the research questions outlined in Chapter 1 are presented in this chapter. Descriptive and correlational statistical tests were run based on the data collected from participants' responses to the Community of Inquiry (COI) Framework survey and demographic data. Analysis was completed using the Statistical Program for Social Science (SPSS) 25.

Purpose of Study

The purpose of this study was to determine what impact, if any, online course design training has on instructor teaching in the online classroom. This study examined student perceptions of the educational experience in Quality Matters (QM) certified online courses using the Community of Inquiry (COI) framework.

This quantitative study addressed the use of a Quality Matters (QM) online course design framework at a southeastern university. In this study quantitative data was used to collect demographic data and data using a survey relating to a Community of Inquiry (COI) framework, use of the Quality Matters (QM) rubric, and the impact on the student learning experience. This study was limited to one undergraduate program at a southeastern university in which all major courses were Quality Matters' (QM) Certified.

Research Questions

The following questions were used in this study:

1. What are the student perceptions of the learning experience in a Quality Matters (QM) certified course?

2. What is the relationship between teaching presence and social presence in a Quality Matters (QM) certified course?
3. What is the relationship between teaching presence and cognitive presence in a Quality Matters (QM) certified course?
4. What is the relationship between social presence and cognitive presence in a Quality Matters (QM) certified course?

Data Collection

Prospective participants were contacted via their spring 2019 online courses through an announcement posted in the course by their instructor within the online undergraduate RN to BSN program at the university and invited to participate in the study. The invitation to participate outlined the purpose of the study and that participation was voluntary. A copy of the approval from the Institutional Review Board was included in the invitation. The survey instrument was delivered through Qualtrics and the data was retrieved by exporting it to SPSS. Once in SPSS, variable fields containing any identifying data was deleted. Any incomplete or otherwise non-responsive survey results were removed or completed with the use of mean imputation. Data were then collated and sorted appropriately so that overall descriptive statistics and analyses could begin.

For research question 1, descriptive statistics were analyzed to determine response means, standard deviation, and indications of normality including skewness and kurtosis. For research questions 2 – 4 the correlational test Kendall tau_b was used to determine any significant relationships between teaching, social, and cognitive presence.

Results of the Community of Inquiry (COI) survey and their respective analyses are presented in the context of each research question. Corresponding demographics and descriptive

statistics are also presented as appropriate to the independent variables associated with specific research questions.

Organization of the Data Analysis

A description of the sample is presented below including how the data was aggregated from Qualtrics and imported to SPSS to develop the findings shown in this chapter.

Demographic data on the respondents is presented using descriptive statistics. Data on gender, age, number of online courses taken, academic classification, and race/ethnicity are presented in written and table form. Following the presentation of demographic data, each research question is stated with the findings associated with that question summarized in written and table form.

For question 1, “What is the relationship between Quality Matters (QM) certified courses and the student learning experience?” the participants’ aggregate perception of the existence of teaching, social, and cognitive presence is used as the measure for the student learning experience construct.

Inferential statistics which are used to look at the relationship between two variables were used to analyze the data to determine if any correlations exist between social and cognitive presence in a QM certified course. The analysis makes use of the variance and standard deviation of the variables (Ross & Shannon, 2011).

Research questions 2 through 4 were meant to address whether or not there was a significant relationship between each of teaching, social, and cognitive presences respectively when found in a Quality Matters (QM) certified course. The data obtained from the Community of Inquiry (COI) Framework survey was analyzed using descriptive and inferential statistics using the Kendall tau-b test to examine the relationship between teaching, social, and cognitive presence in a Quality Matters (QM) Certified course.

Description of the Sample

The sample for this study included registered nurses who are seeking their bachelor's of science in nursing in a fully online program where all of the major courses have received Quality Matters (QM) certification. Data was collected during the spring semester 2019. The sample focused on one program at a medium-sized university in the southeast United States which resulted in a small sample size. This allowed the research study to focus on students who are solely enrolled in courses that have received the Quality Matters (QM) certification. Participants were male and female and were at least 19 years old. Of the 216 possible participants, 32 responded to the survey. Due to missing data 1 case was removed from collected responses leaving 31 cases included in the analysis. Of the remaining there was a small amount of missing data on a few questions. For these cases mean imputation was used to fill in the missing data. A person mean was used to impute the mean of the participant's responses on the other variables within a given factor (Enders, 2010).

A convenience sample was used to determine the respondents of the survey. The researcher received permission from the program coordinator and the instructors of the nursing courses to recruit nursing students to participate in the study. The language for a course announcement was sent to the program instructors including a link to the Qualtrics survey. The instructors then posted this information as an announcement in their courses.

Responses were assumed to be independent, with no collusion or group participation based on the nature of the delivery of the survey instrument. The sampling was not random, which could limit generalizability. Distributions were generally negatively skewed.

The Qualtrics survey collected basic demographic data along with the students' perceptions on the Community of Inquiry (COI) Framework of teaching, social, and cognitive

presence in their courses. Data was downloaded from Qualtrics in the format for SPSS. Data was recoded, sorted, and organized so that the statistical analysis could be done more easily.

Demographic Information

The demographic information for the respondents was compiled and is presented for age, gender, number of online courses taken, academic classification and race/ethnicity. All variables were identified as factors that may impact the perception of the existence of teaching, social, and cognitive presence. Table 1 presents the number and percentage of respondents by gender. Data indicated that 94% of the respondents are female and 6% are male.

Table 1

Descriptive Statistics of Gender Demographics

Gender	<i>n</i>	%
Female	30	94
Male	2	6
Totals	32	100

Respondents were also asked to identify their academic classification. Data indicated that the major of the respondents are seniors at 84% with the rest being juniors at 16%. Table 2 presents the number and percentage of respondents by academic classification.

Table 2

Descriptive Statistics of Academic Classification Demographics

Academic Classification	<i>n</i>	%
Junior	27	84
Senior	5	16
Totals	32	100

Respondents were also asked to identify their race/ethnicity through a multi-select question. Data indicated that the highest percentage of respondents are white with black or African American having the second highest percentage. Table 3 presents the number and percentage of respondents by academic classification.

Table 3

Descriptive Statistics of Race/ethnicity Demographics

Race/ethnicity	<i>n</i>
White	18
Black or African American	13
Hispanic	2
Other	1
Total	34

Respondents were asked to identify their age as a continuous variable. Data indicated that the average age of the participants is 37 years old with the youngest being 24 and the oldest being 48 years old.

Respondents were also asked to identify the number of online courses they've taken as a continuous variable. Data indicated that respondents have taken an average of 10 online courses with the least amount being two and the most being 30. Two respondents did not provide a number, but instead indicated that they have taken many online courses or "too many to count".

The remaining questions on the survey asked participants to identify their perception of the existence of a variety of factors that measure components of the student learning experience. The descriptive results of these factors are presented below separated by teaching, social, and cognitive presence, respectively.

Research Question 1

The first research question examines the relationship between a Quality Matters (QM) certified course and student perceptions of the overall learning experience. The construct of student learning experience is being measured by the Community of Inquiry (COI) framework that includes teaching, social, and cognitive presence. The research question is "What are the student perceptions of the learning experience in a Quality Matters (QM) certified courses?"

An aggregate variable was computed in SPSS that contains the mean of scores for the 34 questions measuring the perception of the student's overall learning experience. This aggregate variable was used in the analysis to determine the perception of the student's overall learning experience.

Teaching Presence Descriptive Statistics

Teaching presence describes the existence which is defined as the instructor engaging in the course by responding to students in a timely manner, engaging in the course discussions, and providing quality feedback to further deeper student learning of the content (D. R. Garrison et al., 2010; Wicks et al., 2015). Teaching presence occurs when a combination of effective course

design, course facilitation, and direct instruction is present in the course (Arbaugh et al., 2010; D. R. Garrison et al., 2001). The construct of teaching presence is represented by 13 factors separated into three categories of design and organization, facilitation, and direct instruction.

Table 4 presents the mean, mode, and median of the factors included under design and organization. This category includes four factors that measure teaching presence.

Table 4

Descriptive Statistics of teaching presence factors in the design and organization category

Design & Organization	<i>n</i>	<i>Mean</i>	<i>Standard</i>	<i>Median</i>	<i>Skewness</i>	<i>Kurtosis</i>
			<i>Deviation</i>			
The instructor clearly communicated important course topics.	30	4.73	.640	5.00	-3.096	11.201
The instructor clearly communicated important course goals.	30	4.70	.651	5.00	-2.825	9.578
The instructor provided clear instructions on how to participate in course learning activities.	30	4.67	.711	5.00	-2.488	6.540
The instructor clearly communicated important due dates/time frames for learning activities.	30	4.73	.785	5.00	-4.060	18.516

Table 5 presents the mean, mode, and median of the factors included under facilitation. This category includes six factors that measure teaching presence.

Table 5

Descriptive Statistics of teaching presence factors in the facilitation category

Facilitation	<i>n</i>	<i>Mean</i>	<i>Standard Deviation</i>	Median	Skewness	Kurtosis
The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.	30	4.40	.855	5.00	-1.263	.715
The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.	30	4.40	.894	5.00	-2.156	6.192
The instructor helped to keep course participants engaged and participating in productive dialogue.	30	4.47	.730	5.00	-1.015	-.303
The instructor helped keep the course participants on task in a way that helped me to learn.	30	4.47	.776	5.00	-1.541	2.294
The instructor encouraged course participants to explore new concepts in this course.	30	4.57	.728	5.00	-1.971	4.361
Instructor actions reinforced the development of a sense of community among course participants.	30	4.47	.973	5.00	-2.305	5.554

Table 6 presents the mean, mode, and median of the factors included under direct instruction. This category includes three factors that measure teaching presence.

Table 6

Descriptive Statistics of teaching presence factors in the direct instruction category

Direct Instruction	<i>n</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Median</i>	<i>Skewness</i>	<i>Kurtosis</i>
The instructor helped to focus discussion on relevant issues in a way that helped me to learn.	30	4.50	.820	5.00	-2.814	10.911
The instructor provided feedback that helped me understand my strengths and weaknesses relative to the course's goals and objectives.	30	4.10	1.269	5.00	-1.393	.834
The instructor provided feedback in a timely fashion.	30	4.53	.819	5.00	-2.129	4.568

Social Presence Descriptive Statistics

Social presence describes the evidence of a learning environment that is conducive to students being able to share and collaborate on course content. This includes providing a safe space allowing students to share honest opinions and engage with each other (Arbaugh et al., 2010; Wicks et al., 2015). Social presence is often facilitated by the use of synchronous or asynchronous discussions that promote a deeper understanding of the content through the interaction with others. Students should have the ability to put forth their thoughts in a manner where the meaning can be synthesized by their peers and feel like they are participating in a real learning environment. This includes communicating their thoughts and emotions effectively. Students must be able to trust their instructor and peers enough to be able to express their thoughts and opinions. They should also feel comfortable collaborating with their peers within a virtual environment (Akyol et al., 2009; Richardson & Swan, 2003; Swan & Shih, 2005). The

construct of social presence is represented by nine factors separated into the three categories of affective expression, open communication, and group cohesion.

Table 7 presents the mean, mode, and median of the factors included under affective expression. This category includes three factors that measure social presence.

Table 7

Descriptive Statistics of social presence factors in the affective expression category

Affective Expression	<i>n</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Median</i>	<i>Skewness</i>	<i>Kurtosis</i>
Getting to know other course participants gave me a sense of belonging in the course.	30	4.07	1.112	4.00	-1.106	.601
I was able to form distinct impressions of some course participants.	30	3.87	1.137	4.00	-.477	-1.205
Online or web-based communication is an excellent medium for social interaction.	30	4.03	1.066	4.00	-.985	.637

Table 8 presents the mean, mode, and median of the factors included under open communication. This category includes three factors that measure social presence.

Table 8

Descriptive Statistics of social presence factors in the open communication category

Open Communication	<i>n</i>	<i>Mean</i>	<i>Standard</i>	<i>Median</i>	<i>Skewness</i>	<i>Kurtosis</i>
			<i>Deviation</i>			
I felt comfortable conversing through the online medium.	30	4.10	.845	4.00	-.198	-1.585
I felt comfortable participating in the course discussions.	30	4.03	.890	4.00	-.068	-1.780
I felt comfortable interacting with other course participants.	30	3.97	.890	4.00	.068	-1.780

Table 9 presents the mean, mode, and median of the factors included under group cohesion. This category includes three factors that measure social presence.

Table 9

Descriptive Statistics of social presence factors in the group cohesion category

Group Cohesion	<i>n</i>	<i>Mean</i>	<i>Standard</i>	<i>Median</i>	<i>Skewness</i>	<i>Kurtosis</i>
			<i>Deviation</i>			
I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.	30	4.33	.959	5.00	-1.750	3.664
I felt that my point of view was acknowledged by other course participants.	30	4.40	.814	5.00	-1.300	1.224
Online discussions help me to develop a sense of collaboration.	30	4.20	1.031	4.50	-1.442	2.030

Cognitive Presence Descriptive Statistics

Cognitive presence is defined as the course providing opportunities for students to engage in the content of the course. This includes opportunities to make connections to prior knowledge, constructing and applying new knowledge to solve real world problems (Arbaugh et al., 2010; Garrison et al., 2001; Wicks et al., 2015). “Cognitive presence describes potential learning activities for deep and meaningful learning. It includes understanding an issue or problem; searching for relevant information; connecting and integrating information; and actively confirming the understanding in a collaborative and reflective learning process.” (Akyol et al., 2009, p. 125). Cognitive presence is occurring when there is an event that causes exploration, integration, and application of the new knowledge (Garrison et al., 2001; Garrison & Arbaugh, 2007). The construct of cognitive presence is represented by 12 factors separated into the four categories of triggering event, exploration, integration and resolution.

Table 10 presents the mean, mode, and median of the factors included under triggering event. This category includes three factors that measure cognitive presence. Participants rated each factor under triggering event above average with an overall mean of 4.22.

Table 10

Descriptive Statistics of cognitive presence factors in the triggering event category

Triggering Event	<i>n</i>	<i>Mean</i>	<i>Standard Deviation</i>	Median	Skewness	Kurtosis
Problems posed increased my interest in course issues.	30	4.10	1.029	4.00	-.822	-.504
Course activities piqued my curiosity.	30	4.20	.961	4.50	-.928	-.189
I felt motivated to explore content related questions.	30	4.37	.928	5.00	-1.385	1.026

Table 11 presents the mean, mode, and median of the factors included under exploration. This category includes three factors that measure cognitive presence. Participants rated each factor under exploration above average with an overall mean of 4.39.

Table 11

Descriptive Statistics of cognitive presence factors in the exploration category

Exploration	<i>n</i>	<i>Mean</i>	<i>Standard Deviation</i>	Median	Skewness	Kurtosis
I utilized a variety of information sources to explore problems posed in this course.	30	4.47	.629	5.00	-.758	-.321
Brainstorming and finding relevant information helped me resolve content related questions.	30	4.37	.850	5.00	-1.535	2.263
Online discussions were valuable in helping me appreciate different perspectives.	30	4.33	.994	5.00	-1.420	.956

Table 12 presents the mean, mode, and median of the factors included under integration. This category includes three factors that measure cognitive presence. Participants rated each factor under integration above average with an overall mean of 4.38.

Table 12

Descriptive Statistics of cognitive presence factors in the integration category

Integration	<i>n</i>	<i>Mean</i>	<i>Standard Deviation</i>	Median	Skewness	Kurtosis
Combining new information helped me answer questions raised in course activities.	30	4.47	.629	5.00	-.758	-.321
Learning activities helped me construct explanations/solutions.	30	4.40	.855	5.00	-1.617	2.430
Reflection on course content and discussions helped me understand fundamental concepts in this class.	30	4.27	.944	4.50	-1.371	1.257

Table 13 presents the mean, mode, and median of the factors included under resolution. This category includes three factors that measure cognitive presence. Participants rated each factor under resolution above average with an overall mean of 4.39.

Table 13

Descriptive Statistics of cognitive presence factors in the resolution category

Resolution	<i>n</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Median</i>	<i>Skewness</i>	<i>Kurtosis</i>
I can describe ways to test and apply the knowledge created in this course.	30	4.40	.814	5.00	-1.300	1.224
I have developed solutions to course problems that can be applied in practice.	30	4.40	.814	5.00	-1.300	1.224
I can apply the knowledge created in this course to my work or other non-class related activities.	30	4.37	.809	5.00	-1.211	1.085

Research Question 2

The second research question looks at the relationship between teaching presence and social presence. The construct of teaching presence is represented by 13 factors separated into the three categories of design and organization, facilitation, and direct instruction. The construct of social presence is represented by nine factors separated into the three categories of affective expression, open communication, and group cohesion. The research question is “What is the relationship between teaching presence and social presence in a Quality Matters (QM) certified course?”

An aggregate variable for teaching and social presence was created using the compute variable in SPSS that contains the aggregate mean of the scores for the questions in each area of the framework. These aggregate variables were used in the analysis to determine the relationship for this research question.

Kendall’s tau test was used to determine if there is any correlation between teaching and social presence. This statistical test was used due to the small sample size and the negatively skewness of data. There is a significant relationship between the significance value of .000 is less than .01. The correlation coefficient indicated a moderate positive linear relationship.

Table 14

Results of Kendall tau_b test for relationship between teaching and social presence

Outcome	Correlation Coefficient	Sig. (2-tailed)	N
Teaching / Social Presence	.576	.000	30

Research Question 3

The third research question examines the relationship between teaching presence and cognitive presence. The construct of teaching presence is represented by 13 factors separated into three categories of design and organization, facilitation, and direct instruction. The construct of cognitive presence is represented by 12 factors separated into the four categories of triggering event, exploration, integration and resolution. The research question is “What is the relationship between teaching presence and cognitive presence in a Quality Matters (QM) certified course?”

An aggregate variable for teaching and cognitive presence was created using the compute variable in SPSS that contains the aggregate mean of the scores for the questions in each area of the framework. These aggregate variables were used in the analysis to determine the relationship for this research question.

Kendall’s tau_b test was used to determine if there is any correlation between teaching and cognitive presence. This statistical test was used due to the small sample size and the

negatively skewness of data. There is a significant relationship between the significance value of .000 is less than .01. The correlation coefficient indicated a moderate positive linear relationship.

Table 15

Results of Kendall tau_b test for relationship between teaching and cognitive presence

Outcome	Correlation Coefficient	Sig. (2-tailed)	N
Teaching / Cognitive Presence	.598	.000	30

Research Question 4

The fourth research question looks at the relationship between social presence and cognitive presence. The construct of social presence is represented by nine factors separated into the three categories of affective expression, open communication, and group cohesion. The construct of cognitive presence is represented by 12 factors separated into the four categories of triggering event, exploration, integration and resolution. The research question is “What is the relationship between social presence and cognitive presence in a Quality Matters (QM) certified course?”

An aggregate variable for social and cognitive presence was created using the compute variable in SPSS that contains the aggregate mean of the scores for the questions in each area of the framework. These aggregate variables were used in the analysis to determine the relationship for this research question.

Kendall’s tau_b test was used to determine if there is any correlation between social and cognitive presence. This statistical test was used due to the small sample size and the negative

skewness of data. There is a significant relationship between the significance value of .000 is less than .01. The correlation coefficient indicated a moderate positive linear relationship.

Table 16

Results of Kendall tau_b test for relationship between social and cognitive presence

Outcome	Correlation Coefficient	Sig. (2-tailed)	N
Social / Cognitive Presence	.485	.000	30

Summary

This chapter presented the results of the statistical analyses of the survey data collected as part of this research study. Data analyzed included responses from 30 participants who completed the Community of Inquiry (COI) survey instrument in addition to demographic questions. Participants were registered nurses completing their bachelor’s degree online.

There were four research questions that examined the student learning experience in a Quality Matters (QM) certified course. Research question 1 asked about the overall student learning experience while research questions 2, 3, and 4 asked about the relationship between specific aspects of the learning experience. Data overall was negatively skewed which could be explained by social desirability bias. Kendall tau_b was used to determine any significant relationship between the different sets of factors in the COI framework. A moderate positive relationship was found between all three.

Chapter 5 will discuss the implications of these findings in detail and considerations including the contribution to the field of online learning along with additional areas for research, limitations of this study, and discussion.

Chapter 5

Summary, Conclusions, Discussion, Implications, and Recommendations

Introduction

This study investigated the perception of student learning experiences in Quality Matters (QM) certified courses. This research study was organized into five chapters. The first chapter gave an overview of what to expect in future chapters, outlined the research questions for which the study is based and some background for why this study is significant. Chapter 1 also included background information to create a framework for the context of course design models and faculty development being discussed in this study as well as assumptions and definitions that provide context for the research.

Chapter 2 provided a comprehensive literature review. The literature review included sections related to faculty development in post-secondary education available to faculty teaching both in the classroom and online. The review highlighted studies that have looked at the preparation given to faculty around course design. An overview of the research done using Quality Matters (QM) and the Community of Inquiry (COI) framework which was utilized for this study was also included.

Chapter 3 provided information about the methods used for the implementation of this research study including the quantitative research design. This chapter discussed the data collection method, participants, and instrument used to conduct the study. Also discussed in this chapter was data analysis used and the processes used to ensure research integrity outlining the steps taken to comply with the Institutional Review Board (IRB) protocol. This chapter also provided a description of the Community of Inquiry (COI) survey instrument.

Chapter 4 provided the results of the research study. This chapter included some of the raw data and analysis produced in the study described objectively. This chapter presented the results laid out by research question including descriptive statistics and analysis using Kendall tau_b.

Lastly, this chapter will provide the conclusion. In this chapter the researcher will provide discussion of the results including their opinions as to what the data analysis provided in Chapter 4 means and what impact it has on the field of study. A summary and discussion of findings will be presented in the order of research questions including a discussion of the implications of these findings in detail and considerations including the contribution to the field of online learning along with suggestions for additional areas for research, limitations of this study, and discussion.

Purpose of Study

The purpose of this study was to determine what impact, if any, online course design training has on instructor teaching in the online classroom. This study examined student perceptions of the educational experience in Quality Matters (QM) certified online courses using the Community of Inquiry (COI) framework.

This quantitative study addressed the use of a Quality Matters (QM) online course design framework at a southeastern university. In this study quantitative data was used to collect demographic data and data using a survey relating to a Community of Inquiry (COI) framework, use of the Quality Matters (QM) rubric, and the impact on the student learning experience. This study was limited to one undergraduate program at a southeastern university in which all major courses were Quality Matters' (QM) Certified.

Research Questions

The following questions were used in this study:

1. What are the student perceptions of the learning experience in a Quality Matters (QM) certified course?
2. What is the relationship between teaching presence and social presence in a Quality Matters (QM) certified course?
3. What is the relationship between teaching presence and cognitive presence in a Quality Matters (QM) certified course?
4. What is the relationship between social presence and cognitive presence in a Quality Matters (QM) certified course?

Summary

Many new faculty enter academia with little to no teaching experience or training in andragogy strategies. Faculty are subject matter experts in their subject matter, but are in need of support to develop the necessary skills to transfer their subject matter knowledge to students new to the subject. This has been expounded for faculty who are expected to teach online. There has been a move at many higher education institutions to set expectations for completing certain training to promote the quality of designing online courses. There seems to be a gap in showing the impact required training for online teaching on the student learning experience.

There are a number of online course design models that have been created to assist online learning instructors with the design of their courses. These models subscribe to the idea that if you can meet certain outlined standards, an instructor will have created an effective online course that will lead to student success. One thing that all these models have in common is the subjective nature of interpretation. With all of these models in place and plenty of best practices that have been developed by online instructors and instructional designers, there is still a lot to be learned about how higher education institutions are using these models to provide a framework

of quality for their online learning programs and courses as well as how this ultimately impacts the online student experience (Angeli & Valanides, 2005, 2009; Benbunan-Fich & Arbaugh, 2006; Dole & Bloom, 2009; Fung, 2004; D. R. Garrison, 1992, 1993; Heims & Wagner, 2002; Koehler et al., 2007; Laumakis et al., 2009; Laurillard et al., 2013; Lim, 2012; Mishra & Koehler, 2006; Persky et al., 2012; Stacey, 2002; Tallent-Runnels et al., 2005; Trigwell & Prosser, 1991; Vella, 2000; Webb, 1982; Wegerif, 1998; Weigel, 2002; Wiesenberg & Stacey, 2005).

Online learning has shown to have many benefits for students which is why this modality is chosen over face-to-face. Some of these benefits include convenience, flexibility, accessibility, self-paced, and anonymity (Berge, 1997; Harasim et al., 1995; Jiang, 1998; Jiang & Ting, 2000; Matthews, 1999; Richardson & Swan, 2003; Rourke et al., 2001; Simonson et al., 2000; Swan et al., 2000; Ward & Newlands, 1998). Although there are many benefits to taking courses online there have also proved to be some disadvantages as well. These include the lack of face-to-face interaction, feeling of isolation, and lack of body language used to interpret meanings in communication (Bullen, 1998; Richardson & Swan, 2003; Ward & Newlands, 1998).

Many new faculty enter academia with little to no teaching experience or training in andragogy strategies. Faculty who are new to teaching online are in need of assistance to develop the necessary competencies to transfer their subject matter knowledge to the online teaching medium. There has been a move at many higher education institutions to set expectations for completing certain training to promote the quality of designing online courses. There seems to be a gap in showing the impact required training for online teaching on the student learning experience.

This study added to the body of knowledge to assist faculty developers and instructional designers who design and develop training to help fill the gap in education for many faculty who are asked to teach once they enter academia. There is a need for evidence to show the impact of training in instructional design on teaching practices in the online classroom showing a return on investment to higher education administrators and impact on student learning.

This study examined the relationship between student learning experience in an online Quality Matters (QM) certified course using the Community of Inquiry (COI) framework to define the construct of student learning experience. The sample population for this study was 216 registered nurses enrolled in the RN to BSN program at the university during the spring semester, 2019 with 32 voluntarily participating resulting in a response rate of 15%. Participants completed a survey that included demographic questions and the 34-item Community of Inquiry (COI) framework instrument. The demographic questions included questions to obtain participant's age, ethnicity, number of online courses taken, and academic classification.

The majority of participants were female (94%) and White (53%) or Black or African American (38%). Participants had a range of online learning experience. Data indicated that respondents have taken an average of 10 online courses with the least amount being two and the most being 30.

Once the data was collected and coded, SPSS was used for analysis. Correlational tests and the Kendall tau_b was used to analyze any significances in the data.

Research Question 1

What are the student perceptions of the learning experience in a Quality Matters (QM) certified courses? The Community of Inquiry (COI) framework survey provides a 34 Likert 5-point scale factors that measure teaching presence, social presence, and cognitive presence.

Overall, participants rated each of these presences' above average with teaching presence at 4.52 across 13 factors, social presence at 4.11 across 9 factors, and cognitive presence at 4.35 across 12 factors.

Using a one sample t-test there was found to be a significant difference between the expected means. The overall means of the defined factors present along a negative skew which could be the results of students feeling a higher level of satisfaction due to the courses meeting quality standards. The negative skewness could also have been caused by social desirability biases which causes participants to hide their true perceptions because they want to please those involved in the research. Due to the fact that the survey was posted by the participants instructors in the program could have had an influence on their response even though they were told their responses would be kept confidential and that only aggregate data would be shared with the program and instructors (Fisher, 1993; Yoon, Goh, Zinko, & Furner, 2020).

Research Question 2

What is the relationship between teaching presence and social presence in a Quality Matters (QM) certified course? Results of the Kendall tau_b indicated a moderate positive correlation between teaching and social presence. The correlation coefficient is .576. A correlation between teaching and social presence is supported by the literature finding that many students connect their feeling of a learning community with the presence of the instructor in the online classroom (Swan & Shih, 2005; Tu, 2000; Tu & McIsaac, 2002).

Research Question 3

What is the relationship between teaching presence and cognitive presence in a Quality Matters (QM) certified courses? Results of the Kendall tau_b indicated a moderate positive correlation between teaching and cognitive presence. The correlation coefficient is .598. A

correlation between teaching and cognitive presence is supported by the literature whereby cognitive presence has been found to be largely tied to the existence of teaching presence and the most challenging to achieve. Having participation from the instructor in discussions to guide the discussion and ensure students stayed on topic had a significant impact on the existence of cognitive presence (Arbaugh, 2007; Benbunan-Fich & Arbaugh, 2006; Shea & Bidjerano, 2009)(Shea & Bidjerano, 2009).

Research Question 4

What is the relationship between social presence and cognitive presence in a Quality Matters (QM) certified course? Results of the Kendall tau_b indicated a moderate positive correlation between social and cognitive presence. The correlation coefficient is .485. A correlation between social and cognitive presence is supported by the literature whereby cognitive presence has been largely tied to the existence of social presence. Students having the opportunity to get to know their peers in the online classroom has been shown to have a significant impact on the existence of cognitive presence (Shea & Bidjerano, 2009; Swan & Shih, 2005).

Conclusions

The results and analysis included in this study adds to the body of literature to show that there are significant correlations between teaching, social, and cognitive presence. These results support similar prior research studies focused around the correlation between teaching, social, and cognitive presence in the online classroom.

There is little prior research available specifically looking at how the use of the Quality Matters (QM) rubric is used to quality certify a course impacts the online student learning experience. The purpose of this research study was to examine that impact defining the student

learning experience with the COI framework. There was found to be a high levels of teaching, social, and cognitive presence in the QM certified courses used in this study.

Implications

The results of this research have implications for training and instructional design professionals in regard to the education and training of online faculty. Many faculty developers provide training programs and requirements for online faculty without knowing the impact of that training. In particular, making the connection between the training the faculty receive and how that connects to the student learning experience requires multiple steps of investigation. This study provides an initial step in making this connection. Faculty development centers should seek to make the connection between the use of online quality rubrics and student learning to provide evidence to faculty and administrators of the impact these standards can have on student learning and retention.

As institutions of higher learning seek to create programs and policy related to ensuring faculty are fully prepared to teach online, there is a need for research to inform what will have the most impact on student learning. The results of this research study provide the beginning of informing these policies.

It would be helpful to institutions that use Quality Matters (QM) or are thinking about using Quality Matters (QM) as well as instructional designers and course developers to have an understanding of how it is currently being used and the challenges and successes in implementation to be able to further study the impact it has on online learning and student success.

As institutions move forward in a new environment dealing with crisis's such as COVID-19 where they must be prepared to offer flexible teaching and learning options, this research

provides evidence of the importance of maintaining quality in online teaching. This study offers a connection between preparing faculty to teach online through training and a quality student learning experience.

Recommendations for Future Research

Little research exists in the area of assessing the impact of the Quality Matters (QM) certification on the student learning experience. As a result, there are a number of opportunities for future research including the following:

1. A study utilizing a qualitative research design would provide deeper insight into the perceptions of students learning experience in QM certified online courses. Interviewing students could provide additional information about how they viewed the existence of teaching, social, and cognitive presence as well as what they considered the most significant factors contributing to their learning experience.
2. A study measuring the training effectiveness between multiple control groups, based on discipline, and experience level
3. A similar study but with a larger sample across multiple institutions and disciplines
4. A study conducting a pre and post-test with students measuring using the COI instrument before and after a course becomes QM certified
5. Collecting student data including grades of students prior to and after course becomes QM certified.
6. Conduct a study over a longer time period collecting results from the COI survey at the end of each semester across multiple years.

References

- Akyol, Z., Arbaugh, J. Ben, Cleveland-Innes, M., Garrison, D. R., Ice, P., Richardson, J. C., & Swan, K. (2009). A response to the review of the community of inquiry framework. *Journal of Distance Education, 23*(2), 123–136.
- Amundsen, C., & Wilson, M. (2012). Are we asking the right questions?: A conceptual review of the educational development literature in higher education. *Review of Educational Research, 82*(1), 90–126. <https://doi.org/10.3102/0034654312438409>
- Anderson, A., Barham, N., & Northcote, M. (2013). Using the TPACK framework to unite disciplines in online learning. *Australasian Journal of Educational Technology, 29*(4), 549–565.
- Angeli, C., & Valanides, N. (2005). Preservice elementary teachers as information and communication technology designers: An instructional systems design model based on an expanded view of pedagogical content knowledge. *Journal of Computer Assisted Learning, 21*(4), 292–302. <https://doi.org/10.1111/j.1365-2729.2005.00135.x>
- Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT-TPCK: Advances in technological pedagogical content knowledge (TPCK). *Computers and Education, 52*(1), 154–168. <https://doi.org/10.1016/j.compedu.2008.07.006>
- Arbaugh, J. B. (2007). An empirical verification of the community of inquiry framework. *Online Learning, 11*(1), 73–85. <https://doi.org/10.24059/olj.v11i1.1738>
- Arbaugh, J. B., Bangert, A., & Cleveland-Innes, M. (2010). Subject matter effects and the Community of Inquiry (COI) framework: An exploratory study. *Internet and Higher Education, 13*(1–2), 37–44. <https://doi.org/10.1016/j.iheduc.2009.10.006>

- Arbaugh, J. B., & Hwang, A. (2006). Does “teaching presence” exist in online MBA courses? *The Internet and Higher Education*, 9(1), 9–21.
- Arinto, P. B. (2013). A framework for developing competencies in open and distance learning. *International Review of Research in Open and Distance Learning*, 14(1), 167–185.
- Armellini, A., & Jones, S. (2008). Carpe diem: Seizing each day to foster change in e-learning. *Reflecting Education*, 4(1), 17–29.
- Bao, W. (2020). COVID -19 and online teaching in higher education: A case study of Peking University . *Human Behavior and Emerging Technologies*, 2(2), 113–115.
<https://doi.org/10.1002/hbe2.191>
- Beetham, H., & Sharpe, R. (2007). *Rethinking pedagogy for a digital age*. Routledge.
- Benbunan-Fich, R., & Arbaugh, J. B. (2006). Separating the effects of knowledge construction and group collaboration in learning outcomes of web-based courses. *Information and Management*, 43(6), 778–793. <https://doi.org/10.1016/j.im.2005.09.001>
- Benson, R., & Samarawickrema, G. (2009). Addressing the context of e-learning using transactional distance theory to inform design. *Distance Education*, 30(1), 15–21.
- Berge, Z. L. (1997). Computer conferencing and the online classroom. *International Journal of Educational Telecommunications*, 3(1), 3–21.
- Blumberg, P. (2016). Assessing Implementation of Learner-Centered Teaching While Providing Faculty Development. *College Teaching*, 64(4), 194–203.
<https://doi.org/10.1080/87567555.2016.1200528>
- Boston, W., Gibson, A. M., Ice, P., Richardson, J., & Swan, K. (2009). An exploration of the relationship between indicators of the community of inquiry framework and retention in online programs. *Journal of Asynchronous Learning Networks*, 13(3), 67–83.

- Bowen, S. (2005). Engaged learning: Are we all on the same page? *Peer Review*, 2(7), 1–32.
- Brower, H. H. (2011). On emulating classroom discussion in a distance-delivered OBHR course: Creating an on-line learning community. *Academy of Management Learning & Education*, 2(1), 22–36. <https://doi.org/10.5465/amle.2003.9324013>
- Bullen, M. (1998). Participation and critical thinking in online university distance education. *Journal of Distance Education*, 13(2), 1–32.
- Choo, J., Bakir, N., Scagnoli, N. I., Ju, B., & Tong, X. (2020). Using the Community of Inquiry Framework to Understand Students' Learning Experience in Online Undergraduate Business Courses. *TechTrends*, 64(1), 172–181. <https://doi.org/10.1007/s11528-019-00444-9>
- Coogan, T. A. (2009). Exploring the hybrid course design for adult learners at the graduate level. *MERLOT Journal of Online Learning and Teaching*, 5(2), 316–324.
- Coppola, N. W., Hiltz, S. R., & Rotter, N. G. (2002). Becoming a virtual professor: Pedagogical roles and asynchronous learning networks. *Journal of Management Information Systems*, 18(4), 169–189. <https://doi.org/10.1080/07421222.2002.11045703>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed method approaches* (4th ed.). Sage.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Sage Publications Ltd.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). John Wiley & Sons, Inc.
- Dole, S., & Bloom, L. (2009). Online course design: A case study. *International Journal for the Scholarship of Teaching & Learning*, 3(1), 1–11.

- Drago, W., Peltier, J., & Sorensen, D. (2002). Course content or the instructor: Which is more important in on-line teaching? *Management Research News*, 25(6–7), 69–83.
<https://doi.org/10.1108/01409170210783322>
- Eggers, R. M., Hubbard, O., & Jones, C. M. (1998). Practical considerations for conducting delphi studies: The oracle enters a new age. *Educational Research Quarterly*, 21(3), 53–66.
- Enders, C. K. (2010). *Applied missing data analysis* (1st ed.). New York, NY: Guilford Press.
- Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research*, 20(2), 303–315.
- Fung, Y. H. (2004). Collaborative online learning: Interaction patterns and limiting factors. *Open Learning*, 19(2), 135–149. <https://doi.org/10.1080/0268051042000224743>
- Garrison, D. R. (1992). Critical thinking and self-directed learning in adult education: An analysis of responsibility and control issues. *Adult Education Quarterly*, 42(3), 199–211.
- Garrison, D. R. (1993). A cognitive constructivist view of distance education: An analysis of teaching-learning assumptions. *Distance Education*, 14(2), 199–211.
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, 15(1), 7–23.
- Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education*, 10(3), 157–172.
<https://doi.org/10.1016/j.iheduc.2007.04.001>
- Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2004). Student role adjustment in online community of inquiries: Model and instrument validation. *Journal of Asynchronous Learning Networks*, 8(2), 61–74.

- Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring causal relationships among teaching, cognitive, and social presence: Student perceptions of the community of inquiry framework. *Internet and Higher Education, 13*, 31–36.
- Garrison, R. (2009). Implications of online and blended learning for the conceptual development and practice of distance education. *International Journal of E-Learning & Distance Education, 23*(2), 93–104.
- Gibson, P. A., & Dunning, P. (2012). Creating quality online course design through a peer-reviewed assessment. *Journal of Public Affairs Education, 18*(1), 209–228.
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications, 1*(2/3), 147–166.
- Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *International Journal of Phytoremediation, 21*(1), 8–26. <https://doi.org/10.1080/08923649709526970>
- Harasim, L. N., Hiltz, S. R., Teles, L., & Turoff, M. (1995). *Learning networks: A field guide to teaching and learning online*. The MIT Press.
- Haythornthwaite, C. & Andrews, R. (2011). *E-learning theory & practice*. Sage Publications Ltd.
- Haythornthwaite, C. (2002). Building social networks via computer networks: Creating and sustaining distributed learning communities. In W. Shumar & K. Renninger (Eds.), *Building Virtual Communities: Learning and Change in Cyberspace*. Cambridge University Press.
- Heims, F., & Wagner, E. D. (2002). *Macromedia MX: Empowering enterprise elearning*. San Francisco, CA.

- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The Difference Between Emergency Remote Teaching and Online Learning. *EDUCAUSE Review*. Retrieved from <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Hostetter, C., & Busch, M. (2006). Measuring up online: The relationship between social presence and student learning satisfaction. *Journal of Scholarship of Teaching and Learning*, 6(4), 1–12.
- Huun, K., & Hughes, L. (2014). Autonomy among thieves: template course design for student and faculty success. *Journal of Educators Online*, 11(2), 1–30.
- Jiang, M. (1998). *Distance learning in a web-based environment*. University of Albany.
- Jiang, M., & Ting, E. (2000). A study of factors influencing students' perceived learning in a web-based course environment. *International Journal of Educational Telecommunications*, 6(4), 317–338.
- Johnson, N., Veletsianos, G., & Seaman, J. (2020). U.S. faculty and administrators' experiences and approaches in the early weeks of the COVID-19 pandemic. *Online Learning Journal*, 24(2), 6–21. <https://doi.org/10.24059/olj.v24i2.2285>
- Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy* (2nd ed.). Cambridge Books.
- Koehler, M. J., Mishra, P., & Yahya, K. (2007). Tracing the development of teacher knowledge in a design seminar: Integrating content, pedagogy and technology. *Computers and Education*, 49(3), 740–762. <https://doi.org/10.1016/j.compedu.2005.11.012>
- Kupczynski, L., Ice, P., Wiesenmayer, R., Ice, P., & McCluskey, F. (2010). Student perceptions of the relationship between indicators of teaching presence and success in online courses.

- Journal for Interactive Online Learning*, 9(1), 23–43. Retrieved from <https://www.learntechlib.org/p/109406>.
- Laumakis, M., Graham, C., & Dziuban, C. (2009). The Sloan-C pillars and boundary objects as a framework for evaluating blending learning. *Journal of Asynchronous Learning Networks*, 13(1), 75–87.
- Laurillard, D., Charlton, P., Craft, B., Dimakopoulos, D., Ljubojevic, D., Magoulas, G., ... Whittlestone, K. (2013). A constructionist learning environment for teachers to model learning designs. *Journal of Computer Assisted Learning*, 29(1), 15–30.
<https://doi.org/10.1111/j.1365-2729.2011.00458.x>
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lee, C., Dickerson, J., & Winslow, J. (2012). An analysis of organizational approaches to online course structures. *Online Journal of Distance Learning Administration*, 15(1). Retrieved from https://www.westga.edu/~distance/ojdla/spring151/lee_dickerson_winslow.html
- Lim, D. H. (2012). A comprehensive approach of e-learning design for effective learning transfer. *International Journal on E-Learning: Corporate, Government, Healthcare, and Higher Education*, 11(1), 55–71.
- Lion, R. W., & Stark, G. (2010). A glance at institutional support for faculty teaching in an online learning environment. *EDUCAUSE Quarterly*, 33(3). Retrieved from <http://web.b.ebscohost.com.eri.lib.byu.edu/ehost/detail/detail?sid=d4e51485-5158-4f86-8ade-dc6e7bd9fdf6%40sessionmgr103&vid=0&hid=124&bdata=JnNpdGU9ZWwhvc3QtbGl2ZSZzY29wZT1zaXRl#AN=EJ901497&db=eric>

- Little, B. (2009). The use of standards for peer review of online nursing courses: A pilot study. *Journal of Nursing Education, 48*(7), 411–415.
- Liu, S., Gomez, J., & Yen, C. (2009). Community college online course retention and final grade: Predictability of social presence. *Journal of Interactive Online Learning, 8*(2), 165–182.
- Matthews, D. (1999). The origins of distance education in the United States. *T.H.E. Journal, 27*(2), 54–66.
- Meng-Jung, T. (2009). The model of strategic e-learning: Understanding and evaluating student e-learning from metacognitive perspectives. *Journal of Educational Technology & Society, 12*(1), 34–48.
- Meyer, K. A., & Murrell, V. S. (2014). A national study of theories and their importance for faculty development for online teaching. *Online Journal of Distance Learning Administration, 17*(2). <https://doi.org/10.24059/olj.v18i1.355>
- Miao, W., & Sunny Wong, M. C. (2011). FDI, education, and economic growth: Quality Matters. *Atlantic Economic Journal, 39*(2), 103. <https://doi.org/10.1007/s11293-011-9268-0>
- Mishra, P., & Koehler, M. (2006). Technological pedagogical content knowledge: A new framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.
- Mo, S. K., Lee, S., & Kyoung, S. (2017). The Relationships among the Presences of Community of Inquiry and the Perceptions of EFL College Students in Online Learning. *Multimedia Assisted Language Learning, 20*(2), 11–35.
- Moore, A., Masterson, J. T., Christophel, D. M., & Shea, K. A. (1996). College teacher immediacy and student ratings of instruction. *Communication Education, 45*, 29–39.
- Moorefield-Lang, H., Copeland, C. A., & Haynes, A. (2016). Accessing abilities: Creating

- innovative accessible online learning environments and putting quality into practice.
Education for Information, 32(1), 27–33. <https://doi.org/10.3233/EFI-150966>
- Muilenburg, L. Y., & Berge, Z. L. (2001). Barriers to distance education: A factor-analytic study. *American Journal of Distance Education*, 15(2), 7–22.
- Naidu, S. (2007). Instructional design for optimal learning. In M. G. Moore (Ed.), *Handbook of distance education*. Routledge.
- Persky, A. M., Joyner, P. U., & Cox, W. C. (2012). Development of a course review process. *American Journal of Pharmaceutical Education*, 76(7), 1–8.
- Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks*, 6(1), 21–40.
- Pollacia, L., & Terrie, M. (2009). Using web 2.0 technologies to meet Quality Matters (QM) requirements. *Journal of Information Systems Education*, 20(2), 155–164.
- Price, P. C., Jhangiani, R., & Chiang, A. (n.d.). *Research methods in psychology* (2nd ed.). BCcampus Open Education.
- Quality Matters Program. (n.d.). Retrieved from <https://www.qualitymatters.org/>
- Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Network*, 7(1), 68–88.
- Rodrigues, S. (2003). Experiences from the partnership in primary science project: Teacher professional development involving ICT and science pedagogical content knowledge. *Science Educational International*, 14(2), 2–11.
- Roehrs, C., Li, W., & Kendrick, D. (2013). Preparing faculty to use the Quality Matters model for course improvement. *Journal of Online Learning & Teaching*, 9(1), 52–67.

- Ross, M. E., & Shannon, D. M. (2011). *Quantitative methods in education* (2nd ed.). Kendall Hunt.
- Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (2001). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education, 14*(2).
- Russo, T., & Benson, S. (2005). Learning with invisible others: Perceptions of online presence and their relationship to cognitive and affective learning. *Educational Technology and Society, 8*(1), 54–62.
- Salter, D., Pang, M., & Sharma, P. (2009). Active tasks to change the use of class time within an outcomes based approach to curriculum design. *Journal of University Teaching and Learning Practice, 6*(1), 27–38. Retrieved from http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/46/2f/0b.pdf
- Sanford, R., & Kinch, A. F. (2016). A new take on program planning: A faculty competencies framework. *The Journal of Faculty Development, 30*(2), 79–96.
- Schaefer, T., Rahn, J., Kopp, T., Fabian, C. M., & Brown, A. (2019). Fostering online learning at the workplace: A scheme to identify and analyse collaboration processes in asynchronous discussions. *British Journal of Educational Technology, 50*(3), 1354–1367. <https://doi.org/10.1111/bjet.12617>
- Schmidt, T. M. (2008). A new model for online doctoral course development with faculty quality assessment. *International Journal of Information and Communication Technology Education, 4*(3), 69–80.
- Selinger, M. (2006). Learning information and communications technology skills and the subject context of the learning. *Journal of Information Technology for Teacher Education,*

- 10(1&2), 143–154. <https://doi.org/10.1080/14759390100200108>
- Shea, P., & Bidjerano, T. (2009). Community of inquiry as a theoretical framework to foster “epistemic engagement” and “cognitive presence” in online education. *Computers and Education*, 52(3), 543–553. <https://doi.org/10.1016/j.compedu.2008.10.007>
- Shih, C.-C., & Gamon, J. A. (2003). Relationships among learning strategies, patterns, styles, and achievement in web-based courses. *Journal of Agricultural Education*, 43(4), 1–11. <https://doi.org/10.5032/jae.2002.04001>
- Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2000). *Teaching and learning at a distance: Foundations of distance education*. Merrill.
- Stacey, E. (2002). Social presence online: Networking learners at a distance. *Educational and Information Technologies*, 7(4), 287–294.
- Swan, K. (2010). Teaching and learning post-industrial distance education. In D. R. Garrison & M. Cleveland-Innes (Eds.), *An introduction to distance education: Understanding teaching and learning in a new era* (pp. 108–134). Routledge.
- Swan, K., Day, S. L., Bogle, L. R., & Matthews, D. B. (2014). A collaborative, design-based approach to improving an online program. *Internet and Higher Education*, 21, 74–81.
- Swan, K., Shea, P., Fredricksen, E., Pickett, A., Pelz, W., & Maher, G. (2000). Building knowledge communities: Consistency, contact, and communication in the virtual classroom. *Journal of Educational Computing Research*, 23(4), 389–413.
- Swan, K., & Shih, L. (2005). On the nature and development of social presence in online course discussions. *Online Learning*, 9(3), 115–136. <https://doi.org/10.24059/olj.v9i3.1788>
- Taber, K. S. (2018). The Use of Cronbach’s Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48(6), 1273–1296.

<https://doi.org/10.1007/s11165-016-9602-2>

- Tait, A. (2010). Foreword. In M. Cleveland-Innes & D. R. Garrison (Eds.), *An introduction to distance education: Understanding and learning in a new era* (pp. ix–xi). Routledge.
- Tallent-Runnels, M. K., Cooper, S., Lan, W. Y., Thomas, J. A., & Busby, B. (2005). How to teach online : What the research says. *Distance Learning*, 2(1), 21–27.
- <https://doi.org/http://dx.doi.org/10.1016/j.foreco.2006.09.033>
- The Community of Inquiry. (2019). Retrieved from <https://coi.athabasca.ca/coi-model/coi-survey/>
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89–125. <https://doi.org/10.2307/1170024>
- Trigwell, K., & Prosser, M. (1991). Relating learning approaches, perceptions of context and learning outcomes. *Higher Education (Special Education on Student Learning)*, 22, 251–266.
- Tu, C. H. (2000). On-line learning migration: From social learning theory to social presence theory in CMC environment. *Journal of Network and Computer Applications*, 23(1), 27–37.
- Tu, C. H., & McIsaac, M. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education*, 16(3), 131–150.
- Valanides, N., & Angeli, C. (2006). Preparing preservice elementary teachers to teach science through computer models. *Contemporary Issues in Technology and Teacher Education - Science*, 6(1), 87–98.
- Valanides, N., & Angeli, C. (2008). Professional development for computer-enhanced learning: A case study with science teachers. *International Journal of Phytoremediation*, 26(1), 3–12.
- <https://doi.org/10.1080/02635140701847397>

- Vella, J. (2000). *Taking learning to task: Creative strategies for teaching adults*. Jossey Bass.
- Vygotsky, L. S. (1978). *Mind in society*. Harvard University Press.
- Ward, M., & Newlands, D. (1998). Use of the web in undergraduate teaching. *Computers and Education, 31*(2), 171–184.
- Webb, N. M. (1982). Student interaction and learning in small groups. *Review of Educational Research, 52*(3), 421–445.
- Wegerif, R. (1998). The social dimension of asynchronous learning networks. *The Journal of Asynchronous Learning Networks, 2*(2), 34–49.
- Weigel, V. B. (2002). *Deep learning in a digital age*. Jossey Bass.
- Wicks, D. A., Craft, B. B., Mason, G. N., Gritter, K., & Bolding, K. (2015). An investigation into the community of inquiry of blended classrooms by a faculty learning community. *Internet and Higher Education, 25*, 53–62. <https://doi.org/10.1016/j.iheduc.2014.12.001>
- Wiesenberg, F., & Stacey, E. (2005). Reflections on teaching and learning online: Quality program design, delivery and support issues from a cross-global perspective. *Distance Education, 26*(3), 385–404. <https://doi.org/10.1080/01587910500291496>
- Yoon, T. E., Goh, S. H., Zinko, R., & Furner, C. P. (2020). *The Effects of Culture and Data Collection Mode on Socially Desirable Distortion and Confidentiality Concerns in Survey Research*. <https://doi.org/10.4018/978-1-5225-8933-4.ch002>