

STUDENT PERCEPTIONS OF QUALITY AND SATISFACTION
IN ONLINE EDUCATION

by

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ABSTRACT

The purpose of this study was to examine student perceptions of quality and satisfaction in regionally accredited online courses. This study intended to answer the following four research questions (1) Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process and online courses that have not undergone a systematic faculty peer review process?; (2) Is there a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review process but are affiliated with a peer review program and online courses that have no affiliation with a peer review program?; (3) Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have been faculty peer reviewed?; and (4) Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have not been faculty peer reviewed but are affiliated with a peer review program? A total of 157 responses (out of 1,774 solicited) were obtained from the student satisfaction questionnaire, which is a 9% student response rate. A total of 7 responses (out of 54 solicited) were obtained from the course designer questionnaire, which is a 13% course designer response rate. Results of the study confirmed with statistical significance that students who were more comfortable with distance learning reported higher satisfaction with their online course. Results of the study also indicated that online courses that have undergone a formal peer review may lead to higher student satisfaction in the course. Surprisingly, however, results also indicated that courses that have not undergone a formal peer review but that are offered at institutions that are subscribed to a peer review

program may lead to lower student satisfaction of the course. Both of these results were non-significant. The researcher recommends striving for statistical significance in future research by using a larger sample size. Additionally, the researcher recommends future research regarding the correlation of student satisfaction to peer review subscriptions, even without a formal peer review.



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CHAPTER 1

INTRODUCTION

Statement of the Problem

Allen and Seaman (2010) suggested growth in online course enrollment is increasing more rapidly than in higher education courses offered overall. As online education continues to expand, institutions of higher education are determined to find ways of ensuring quality in online course development (Chua & Lam, 2007; Dringus, 2000; Puzziferro & Shelton, 2008; Ross, Batzer, & Bennington 2002). Puzziferro and Shelton (2008) insisted that developing an online course is a “complex and multifaceted process” (p. 119) that cannot be completed by one person alone. They also suggested that online course development needs a “common framework for consistency, design, pedagogy and content” (Puzziferro & Shelton, 2008, p. 119)

Theoretical/Conceptual Framework

The Quality Matters (QM) framework is a faculty-centered, peer review process designed to ensure quality in online and hybrid courses. QM’s peer-based approach for continuous improvement has received national recognition in online education (Quality Matters, 2010). The QM rubric was originally developed by MarylandOnline, through The Fund for the Improvement of Postsecondary Education (FIPSE) grant and is continuously reviewed and improved upon based on scholarly research. Now, it is a self-supporting organization with an objectives-based framework focusing on course design rather than course delivery. This framework is structured around eight general standards: course overview and introduction, learning objectives

(competencies), assessment and measurement, instructional materials, learner interaction and engagement, course technology, learner support, and accessibility.

QM course designers followed the ADDIE (Analyze, Design, Develop, Implement, Evaluate) framework of instructional design by working closely with faculty to create the standards included in their rubric (MarylandOnline, 2010). “The ADDIE framework is a cyclical process that evolves over time and continues throughout the instructional planning and implementation process” (Peterson, 2003, p. 228). The analyze phase allows the designers to determine the learning needs of their audience. The design phase allows course designers to research and plan the design of the course. The development phase allows course designers to use the information gained in the first two phases to physically construct a course. The development phase gathers formative evaluations to help designers improve a course before implementation. The implementation phase allows designers to work with faculty and students to analyze, redesign, and enhance the course. The final phase, evaluation, can actually occur throughout the previous four phases, as course designers continually evaluate and improve upon the course structure (Peterson, 2003).

Statement of the Purpose

The purpose of this study was to examine student perceptions of quality and satisfaction in regionally accredited online courses. A review of the literature suggested there may be specific factors in online courses that increase students’ perceived quality of an online course (Ross et al., 2002). This study reviewed the existing body of literature to determine which factors were significant with regard to student perceived quality and satisfaction in online education, which led the researcher to Aman’s (2009) dissertation “Improving student satisfaction and

retention with online instruction through systematic faculty peer review of courses.” Aman’s recommendations for future research included a time-lag study and a replication study for other types of online courses outside of the community college general education courses. This study intended to satisfy both of those recommendations, as well as build upon Aman’s research by further exploring the QM framework as significant with regard to student satisfaction in online graduate courses that have not been faculty peer reviewed by QM but who subscribe to the program. Aman found no statistical significance in the diffusion of treatment between courses that have not been formally peer reviewed by QM but that are offered at institutions where faculty peer reviewed courses are also offered and courses that have no affiliation to QM. However, this led the researcher to an interesting question: Could there be a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review process but that are affiliated with a peer review program and online courses that have no affiliation with a peer review program? The Quality Matters website identifies 435 institutions that are current subscribers to QM, but that are *not* recognized by QM as being peer reviewed. Is it possible that simply being subscribed to the QM framework may enhance course design, leading to higher student satisfaction with an online course even without a formal peer review?

Significance of the Problem

Traditional educators have doubted the quality control in distance education (Casey, 2008). Accrediting bodies continue to search for ways to assess quality in online course design (Council for Higher Education Accreditation, 2002). The Quality Matters (QM) program rubric was created based on the “Best Practices for Electronically Offered Degree and Certificate

Programs,” which is the same set of principles implemented by the eight regionally accrediting bodies in the United States (Legon, 2006). The QM program is similar to traditional accreditation processes in that they are both essentially peer review processes. Traditional accreditation processes, however, are focused on evaluating overall programs and institutions; while the QM program is focused on evaluating the quality of individual online courses (Legon, 2006). The significance of this study lies in supporting online education accreditation standards for peer reviewed online courses (Lewis et al., 2011; Shattuck, 2010).

Research Questions

The four research questions in this study were as follows:

1. Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process and online courses that have not undergone a systematic faculty peer review process?
2. Is there a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review process but are affiliated with a peer review program and online courses that have no affiliation with a peer review program?
3. Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have been faculty peer reviewed?
4. Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have not been faculty peer reviewed but are affiliated with a peer review program?

Assumptions of the Study

Survey participants were assumed to be 19 years of age or over, per the letter of informed consent. It was assumed that participants would answer the survey questions honestly and completely. The sample of students who participated in this study was assumed to represent the greater population of students enrolled in regionally accredited online courses.

Limitations of the Study

Limitations of this study included the possibility of unreliable data collection. Using a web-based survey posed the potential problem of incomplete data and duplicate submissions (Schmidt, 1997). It is also possible that there was a great variance in the courses offered between participating institutions.

Definition of Terms

Diffusion of treatment--treatment group pedagogy may carry over to controlled groups within the same institution by proximity of faculty (Aman, 2009).

Mean of QM factor means--the combined mean of all QM factors included in the study to measure student satisfaction (Aman, 2009).

Student satisfaction--students' expectations were met in their online learning experience with respect to orientation, learning outcomes, services, and instructor and peer interaction (Aman, 2009; Moore 2005).

Peer review--outside experts evaluate and judge an institution's performance in relation to mandatory standards (Dill, Massy, Williams, & Cook, 1996).

Upper-level courses--junior and senior level undergraduate courses.

Recognized--institutions have undergone a formal QM peer review by three QM-certified peer reviewers (including one from an institution outside of the one being reviewed and one who is a content area specialist) and are recognized as including all standards deemed by QM as essential in addition to obtaining a minimum of 85% of the possible 95 rubric points required to meet the QM course design level of acceptance (Legon & Runyon, 2007; MarylandOnline, 2011).

Subscribed--institutions have not undergone a formal peer review process; however, a subscription allows those institutions access to the automated, web-based tools, trainings, and materials available through Quality Matters (MarylandOnline, 2010).

Non-affiliated--institutions have not undergone a formal QM peer review and do not hold a subscription to QM.

Chapter Summary

Chapter 1 of this dissertation outlined the statement of the problem, theoretical/ conceptual framework used for the study, statement of the purpose, significance of the problem, and research questions. Additionally, the assumptions and limitations of the study were discussed, as well as the operational definition of terms. Chapter 2 of this dissertation outlines the review of literature, which includes a review of regional accreditation, quality in online education, satisfaction in online education, the assumption that quality equals satisfaction, retention in online education, the conceptual framework of Quality Matters, and a review of Aman's research.

Chapter 3 describes the methods used to determine student satisfaction in online courses that are (1) faculty peer reviewed; (2) not faculty peer reviewed but offered at institutions that are

subscribed to peer review tools, trainings, and materials; and (3) not faculty peer reviewed and offered at institutions that have no affiliation with a peer review program. It also addresses the setting of the study, participants, instrumentation, research questions, data collection and data analysis.

Chapter 4 analyzes the response rates, demographics, and research questions associated with this study. Qualitative data obtained from the QM Institutional Representative and the course designer(s) are also discussed in this chapter.

Chapter 5 recaps the purpose, framework, and research questions of this study. In addition, this chapter summarizes a discussion of the findings, the researcher's conclusions, and recommendations for practice. Limitations of the study and recommendations for future research are also included. The chapter ends with the researcher's concluding remarks.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

This chapter outlines the review of literature, which includes a review of regional accreditation, quality in online education, satisfaction in online education, the assumption that quality equals student satisfaction, and retention in online education. Additionally, this chapter reviews the conceptual framework of Quality Matters, as well as, a review of Aman's research.

Regional Accreditation

“Accreditation can be viewed as a seal of academic approval and proof of scholarly legitimacy” (Casey, 2008, p. 49). Page, Bradford, and Canova (1997) defined accreditation as the “official certification that a model is acceptable for use within the context of a specific objective” (p. 396). Dill et al. (1996) defined accreditation as a way to govern that “an institution or a program meets threshold quality criteria and therefore certifies to the public the existence of minimum educational standards” (p. 20). Hayward (2006) defined accreditation as “a process of self-study and external quality review used in higher education to scrutinize colleges, universities and higher education programs for quality assurance and quality improvement” (p. 5).

Head and Johnson (2011) discussed the significance of regional accreditation as enhancing academic excellence, safeguarding against groundless criticism, and stimulating improvement of courses and educational programs. The United States Department of Education (DOE) uses regional accrediting agencies as proxies for enforcing DOE educational

requirements (Schmadeka, 2011). The Southern Association of Colleges and Schools (SACS) Commission on Colleges (2011) is “the regional body for the accreditation of degree-granting higher education institutions in the Southern states” (para. 1). Their mission is to certify the quality of education in the states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Tennessee, Texas, and Virginia. To achieve SACS accreditation, institutions must comply with all standards and requirements set forth by the accrediting agency.

When the American College of Surgeons (ACS) began offering regional accreditation to simulation-based surgical education programs, the University of Washington in Seattle (UW), who was already working with simulation, proposed a new center entitled Institute for Surgical and Interventional Simulation. Their goal was to promote their School of Medicine with ACS accreditation. In 2008, Sachdeva, Pellegrini, and Johnson conducted a case study on UW’s journey to accreditation. This study reinforced the importance of accreditation by showing that the establishment of this new center and the achievement of accreditation for the center generated growth in both student enrollment and faculty recruitment at the institution.

Benson (2003) conducted a study evaluating NetEd, a state undergraduate degree program initiative to provide distance learning to undergraduate degrees in areas where shortages had been declared. Those who participated in this qualitative study emphasized that meeting established accreditation standards was strongly related to online course quality.

Quality in Online Education

There is a plethora of literature claiming to identify quality characteristics of online education. Ternus, Palmer, and Faulk (2007) created a rubric to evaluate the quality of an online course, which included structure (context, organization, and environment), content (presentation

of information), processes (relationships and interactions), and outcomes (mastery of content and course evaluation) (p. 51). McGorry (2003) emphasized that a quality online course should include flexibility, responsiveness and student support, self-reported (perceived) learning, interaction, perceived usefulness and ease of use of technology, technical support, and student satisfaction. Means, Toyama, Murphy, Bakia, and Jones (2010) found that including multiple media was related to quality online instruction when the student was able to control the media. Their study also found that student reflection was critical for student success in an online learning environment. Herrington, Herrington, Oliver, Stoney, and Willis (2001) found that pedagogies, resources, and delivery strategies were crucial for quality in online education.

Frydenberg (2002) compiled a review of literature that outlined quality standards published by various authors in the U.S. and found that the most commonly cited standards for quality assurance in online education during that time were executive commitment, technological infrastructure, student services, design and development, instruction and instructor services, program delivery, financial health, legal and regulatory requirements, and program evaluation. Phipps and Merisotis (2000) argued that institutional support, course development, teaching and learning, course structure, student support, faculty support, and evaluation and assessment are essential to quality in online education. Deubel (2003) indicated that “instructor’s attitude, motivation, and true commitment toward instruction delivery via distance education programs affect much of the quality of instruction” (para. 5). Deubel also stressed that social presence, course materials, and technical support were related to online course quality. Bickle and Carroll (2003) suggested several items that should be included in online education to ensure a quality course, including course introduction, timely feedback, consistency in delivery of information, relevancy, learning objectives, and technical support. Sonwalkar (2007) insisted that quality in

an online course could be measured by its medial elements, learning styles, and interactivity. Wiesenberg and Stacey (2005) identified teaching support, learning support, and administrative support as important factors in quality online education.

Best Practices

The Western Cooperative for Educational Telecommunications (WCET) at the Western Interstate Commission for Higher Education (WICHE) is one framework that targets quality assurance in distance education (Johnstone & Krauth, 1996). WICHE drafted the “Best Practices for Electronically Offered Degree and Certification Programs” (Western Cooperative for Educational Telecommunications, 2001), which was later established by the eight regional accrediting agencies in response to the increased demand for distance education in institutions of higher education. The “Best Practices” are not new standards; they simply aim to clarify how the existing accreditation standards are applicable to the emerging online environments. Eaton (2001) agreed that classroom accreditation standards are not appropriate for the online learning environment and that those standards need to be modified specifically for distance education. The five standards identified by “Best Practices” include the following: institutional context and commitment, curriculum and instruction, faculty support, student support, and evaluation and assessment (WCET, 2009). The practices are periodically reviewed and revised as needed, with the latest update being implemented in 2009. WCET joined with the State Higher Education Executive Officers (SHEEO, 2003) to examine the “goals, functions, challenges, and outcomes” of distance education across the United States (p. 1). This study included a survey sent to all state-wide and system-wide virtual colleges and universities, as well as, multiple interviews with system administrators. The results of this study concluded that successful institutions were those

that focused on the up-front learner support. Additionally, institution consortia were found to be significant to the quality of virtual education.

Sloan-C Quality

The Sloan Consortium (Sloan-C) is another framework that strives for quality assurance and student satisfaction in online education (Sloan-C, 2011). Sloan-C is a community that “shares techniques, strategies, and practices in online education that have worked for them” (Sloan-C, 2011, para. 1). All practices identified as effective are peer reviewed to ensure quality. The five pillars identified by Sloan-C include learning effectiveness, cost effectiveness and institutional commitment, access, faculty satisfaction, and student satisfaction (Moore, 2005). Zhao (2003) conducted a study to explore issues that may affect the quality of online education. Sloan-C was incorporated as the framework for this study but was extended by emphasizing course effectiveness, which was considered the “core of the overall quality of online higher education” (Zhao, 2003, p. 218). After surveying participants of this study, Zhao concluded that universities should implement their own quality assurance plan specific to their institution, using the framework as a guide. More research was needed to determine significance of the framework to quality in online education.

QM

Quality Matters (QM) is another framework that has developed a rubric for online course design that sets a standard for measuring quality assurance, as well as accreditation standards, in online education (Legon, 2006; Lewis et al., 2011; Shattuck, 2010). This rubric can be used to design online higher education courses, as well as hybrid/blended higher education courses, with

the intention of increasing student learning, retention, and satisfaction (Legon, 2009). The QM framework is structured around eight broad standards: course overview and introduction, learning objectives, assessment and measurement, instructional materials, learner interaction and engagement, course technology, learner support, and accessibility. In 2008, Ralston-Berg and Nath surveyed students to find out how much they valued the QM rubric standards in their online course. Students were informed that by *value* the researchers meant “how much they wanted the feature in an online course” (Ralston-Berg & Nath, 2008, p. 2). Students were asked to rank the features according to their perspective of importance. Analyses showed that students ranked 40 out of 41 standards of the QM rubric (Quality Matters, 2010) as somewhere between 2 to 3 (*very important to essential*), disregarding the standard for netiquette. The researchers performed correlations between student satisfaction, as perceived by the student, and all QM features. This analysis indicated that students who claimed high satisfaction in their online course were correlated with those who ranked the QM features as more valuable; whereas the students who claimed low satisfaction in their online course were correlated with those who ranked the QM features as less valuable. Artino (2011) also conducted a study designed to explore students’ perceptions of quality in their online courses that were designed with the QM framework. The results of this study indicated that students viewed almost all of the QM standards as valuable to their online course.

U21G

Chua and Lam (2007) investigated the use Universitas 21 Global (U21G) as a method of assuring quality in online education. U21G is a network that includes 18 international universities across four continents. The purpose of creating U21G was to allow all participating

institutions to pool their resources and offer high quality online education via collaboration between the institutions. The quality assurance processes measured through this program include content authoring (authored by multiple stakeholders), courseware development, adjunct faculty recruitment, pedagogy, and delivery. All course content is peer reviewed through a double-blind review process. Online courses offered through this program contain “textual material, graphics, interactive exercises, assignment questions, test questions, online library and links to other online resources” (Chua & Lam, 2007, p. 135). At the end of the course, students were given a 5-point Likert-type survey to assess their perception of course quality. Chua and Lam concluded that the quality assurance measures implemented by U21G greatly improved the overall quality of the program and student learning.

Satisfaction in Online Education

Opinions on what constitutes student satisfaction vary across the discipline. Lee (2010) claimed that timely feedback from instructors is essential to student satisfaction in an online learning environment. Social presence is another factor emphasized as leading to higher student satisfaction in online education (Abdous & Yen, 2010; Richardson & Swan, 2003). Support services have also been characterized as a predictor for student satisfaction in online courses (Lee, 2010). McGorry (2003) indicated that student satisfaction is affected by the flexibility in a course, social presence, technical support, and course technology. Lorenzo and Moore (2002) declared that student satisfaction is a product of responsive, timely, personalized services and support; high-quality learning outcomes; academic and administrative support services; and learner interaction and collaboration.

Seven Principles

Babb, Stewart, and Johnson (2010) studied student perceptions in a hybrid course using the framework by Chickering and Gamson (1983): Seven Principles for Good Practice in Undergraduate Education. This framework encouraged student-faculty contact, cooperation among students, active learning, prompt feedback, emphasis on time on task, communication of high expectations, and respect of diverse talents and ways of learning. The study conducted by Babb et al. (2010) found that students who were active in their learning were likely to be more satisfied with their online experience. By allowing students to bring personal experiences into discussions, it brings a more personal atmosphere altogether into the online course. Students should be encouraged to participate in active learning, peer reviews, and team-building problem-solving activities (Chickering & Gamson, 1983).

Sloan-C Satisfaction

Fredericksen, Pickett, Shea, Pelz, and Swan (2000) collected data from a student satisfaction survey in 1999 based on the Sloan-C framework for quality and satisfaction in online education. The results of this study indicated that students were more satisfied with their course when they had higher levels of interaction with their teacher and their classmates. However, students also stated higher levels of satisfaction with their online course when they were satisfied with the reliability of the technology and when they were satisfied with the level of technical support they received during technical difficulties. Students who were taking the online course for its flexibility reported higher levels of satisfaction than those who were taking it only because they could not find a campus course to take.

TAM

Arbaugh (2000) conducted a study using the Technology Acceptance Model (TAM) framework, which focuses on the usefulness of technology and the perceived ease of use of technology as predictors for user satisfaction. Arbaugh concluded that the usefulness of technology and the user-friendliness of technology implemented in online courses were positively related to student satisfaction in their online course. Flexibility in the course was also a positive factor in student satisfaction. Swan's (2001) study found that students were more satisfied with their online course when the course structure was consistent and easy to use. Participants in this study also reported higher levels of satisfaction when they were satisfied with the level of instructor/student, student/student, and student/content interaction. Carr and Hagel (2008) conducted a study in which students were surveyed to assess their perceptions of quality in online and face-to-face courses in Australia. This study found that student satisfaction increased with the increase in online activity.

Determinants of Learning Effectiveness

Eom, Wen, and Ashill (2006) conducted a study to assess factors related to student learning and satisfaction in online education. They used the conceptual framework Determinants of Learning Effectiveness, created by Piccoli, Ahmad, and Ives (2001), which points to both human and design factors as essential to online course quality. In this framework, human factors include students and instructors; whereas, design factors include technology, learner control, course content, and interaction. More specifically, Eom et al. predicted that student satisfaction would be related to student self-motivation, student learning style, instructor knowledge and facilitation, instructor feedback, interaction, and course structure. The results of this study

concluded that all six of these factors were significant with regard to student satisfaction in their online course.

ADL Network

Artino (2008) conducted a study aimed at predicting characteristics that would contribute to student satisfaction of their online course. Artino used the Advanced Distributed Learning (ADL) network as a framework for the study. Online courses developed by the U.S. Navy were evaluated in this study. An anonymous, Likert-type survey was distributed to U.S. service academy students at the completion of their online course. Results of this study indicated that student's self-reported "task value, self-efficacy beliefs and perceptions of instructional quality" (Artino, 2008, p. 266) were significant predictors of overall student satisfaction of the online course.

Sun, Tsai, Finger, Chen, and Yeh Framework

Sun et al. (2008) conducted a study using a framework designed specifically for the study, which included six dimensions based on a review of literature: learner, instructor, course, technology, design, and environment. Validity of the framework was established through a series of interviews with experienced e-learners and then reliability was established via a pilot test of e-learners. The final questionnaire included a Likert-type scale that was distributed to e-learners who had not already participated in the pilot test. The purpose of this study was to examine factors that influenced student satisfaction in online education. The study concluded that computer anxiety, instructor attitude, flexibility, course quality, usefulness, ease of use, and

diversity in assessments were the factors that most influenced student satisfaction with their online course.

Observational Case Study Design

Hong (2002) conducted a study using the observational case study design (Bogdan & Biklen, 1998) to evaluate student satisfaction in their problem-based online course. Hong interacted with students participating in the research. Data were collected by distribution of questionnaires, faculty records, and interviews with the students. The results of this study indicated that gender, age, and learning styles showed no relation to student perceptions of satisfaction in their online course; however, students who were more skilled with computers perceived higher satisfaction with their online course.

Quality Equals Satisfaction

In reviewing the literature for online course quality and student satisfaction, it appeared that the same factors were identified as promoting both quality and satisfaction. It also appeared that an online course that included quality standards would lead to higher student satisfaction of that course. Sloan Consortium (2011) identifies effective online education as including the element of student satisfaction. Rodriguez, Ooms, and Montanez (2008) conducted a study of student perceptions regarding online quality instruction and found that student satisfaction was related to perceived quality of course delivery. Sun et al. (2008) agreed that online course quality was a critical factor in student satisfaction. Zhao (2003) also agreed that student satisfaction is affected by course quality. McGorry (2003) acknowledged student satisfaction as an essential standard in quality online education. Based on the literature, the researcher assumed that an

online course designed with a reputable quality framework would result in higher student satisfaction of that course.

Retention in Online Education

Rovai (2003) insisted that student retention was an important factor for determining quality assurance and student satisfaction in higher education. Rovai claimed that retention rates in higher education are “strongly related to the ability of educational programs to satisfy adult needs” (p. 2). Tinto (1975) claimed that insufficient social presence may result in lower retention rates in online education. He also believed that teamwork and collaboration supported greater retention rates in higher education. Workman and Stenard (1996) concluded that the degree to which distance learner’s needs are met influenced their retention rates. These needs included “detailed information about the school, educational programs, and courses,” “an online student manual that covers the e-learning system in detail,” the “names, e-mail addresses, and phone numbers of online instructors, advisers, and technicians,” “prompt feedback and replies,” nurturing of “student self-esteem,” “sense of community,” “social integration,” and “access to support services” (Workman & Stenard, 1996, pp. 10-11). Morris, Wu, and Finnegan (2005) suggested that retention rates in higher education distance education may be related to student demographic characteristics, such as high school GPA, educational background, age, and gender. Lorenzo and Moore (2002) indicated that retention rates in online education were related to student satisfaction.

Nash’s (2005) study of student retention in online education suggested that better course development, instruction, management, and timely feedback might increase student retention. Herbert (2006) researched student satisfaction and retention in online courses and found that

students who claimed to be satisfied with the factors of their online course tended to be related to the completion rate of the online course; however, a model for predicting student retention was never produced as significant. Rovai (2003) disagreed with Hebert and further claimed that student persistence, and therefore retention, is generally based on both external and internal student characteristics, such as hours of employment, family responsibilities, study habits, stress, etc. Nichols' (2010) study agreed with Rovai by showing that most students who dropped out of their online course named personal reasons for their withdrawal. Eom et al. (2006) agreed that student self-motivation is a major factor affecting retention in online education. Dietz-Uhler, Fisher, and Han (2007-2008) specifically studied the use of the QM framework on student retention. Although this study showed a 95% retention rate in all courses that were designed using the QM rubric, there was no scientific comparison to show whether or not the QM framework aided in student retention rates because the study did not include courses that were designed without the QM rubric.

Quality Matters

Although there are varying definitions of what constitutes quality and satisfaction in online education, and varying frameworks for evaluating these characteristics in online courses, this study focused on the Quality Matters framework due to the shortage of literature documenting quality and satisfaction in online education using QM. One case study was documented in 2006, and a few case studies were found from 2009 and thereafter, but the literature on QM is still thin. This research expected to add to that body of literature.

Quality Matters has received “national recognition for their research-based rubric and inter-institutional peer review processes” (Puzziferro & Shelton, 2008, p. 125). The values that

initiated the creation of the rubric include those established by *The Guiding Principles for Distance Learning in a Learning Society* and the *Distance Learning Evaluation Guide* (Shattuck, 2010). Quality Matters routinely collects feedback from QM Rubric subscribers and peer reviewed institutions and uses that feedback to revise the rubric as needed. This rubric can be used to design online higher education courses, as well as hybrid/blended higher education courses, with the intention of increasing student learning, retention, and satisfaction (Legon, 2009).

Quality Matters is a faculty-centered, peer review process that certifies the quality of online courses that are built upon the QM framework. This framework is structured around eight broad standards: course overview and introduction, learning objectives, assessment and measurement, instructional materials, learner interaction and engagement, course technology, learner support, and accessibility. Within these broad standards, there are 41 specific standards that are assigned a rating of 1, 2, or 3, where 3 = *essential*, 2 = *very important*, and 1 = *important*. According to the QM rubric, all essential standards with a 3-point rating must be present in an online course. Furthermore, out of 95 possible rubric points, a course must obtain a minimum of 85% (or 81 points) to meet the QM course design level of acceptance. Peer review of a course includes three QM-certified reviewers, one of which must be from an institution outside of the one being reviewed, and one of which must be a content area specialist (Legon & Runyon, 2007; MarylandOnline, 2011). Course reviews provide institutions with recommendations for existing course improvement, as well as, quality thresholds for new courses. Additionally, course reviews provide institutions with quality process indicators for accreditation self-studies (MarylandOnline, 2011).

Course Overview and Introduction

Conrad (2002) suggested that students feel anxiety when starting a new course. He suggested giving a thorough orientation at the beginning of each online course to relieve some of this apprehension. Conrad also identified students as preferring an organized course structure, introduction from the instructor, and clear expectations of the course. Achtemeier, Morris, and Finnegan (2003) agreed that giving students clear expectations at the beginning of the course, as well as structured deadlines to keep students on pace, is preferred by students. Workman and Stenard (1996) suggested that students should be given a detailed online student manual at the beginning of a course to assist in learning the policies, procedures, and technical requirements for that online course. Shea, Pickett, and Pelz (2003) indicated that an effective online course will include setting the curriculum, designing methods, establishing time parameters, utilizing the medium effectively, and establishing netiquette at the start of the course. Setting the curriculum was defined as the instructor clearly communicating important course outcomes and course topics. Designing methods was defined as the instructor providing clear instructions on participation expectations. Establishing time parameters was defined as the instructor clearly communicating the course schedule and deadlines. Utilizing the medium effectively was defined as the instructor providing clear instructions regarding how to use the course media. Establishing netiquette was defined as the instructor providing students with clear instructions and examples on the types of behavior that were expected in an online learning environment.

Learning Objectives

“Designing effective learning environments and developing strategies to achieve student learning outcomes continue to be important factors in educational institutions in the online

sphere” (Artino, 2011). Providing learning objectives to students at the beginning of a course (whether online or face-to-face) is important for a clear understanding of what is expected from that course. Students should be told what outcomes are expected of them and any assessment taken by that student should measure those expected outcomes (Achtmeier et al., 2003; Hatziapostolou & Paraskakis, 2010; Palomba & Banta, 1999). Workman and Stenard (1996) also claimed that identifying clear and measurable learning objectives is critical to student success in an online learning environment.

Assessment and Measurement

The impersonal nature of online exams, varying levels of technology expertise, technological problems during exams, and learner anxiety are disadvantages of taking online assessments (Yates & Beaudrie, 2009). In an effort to offset these disadvantages, students should be assessed using a variety of methods (Rovai, Ponton, & Baker, 2008; Palomba & Banta, 1999), such as assessing asynchronous interaction in addition to standardized tests. A study conducted by Thurmond, Wambach, Connors, and Frey (2002) found that the strongest predictor of student satisfaction was being assessed by a variety of methods. Another predictor of student satisfaction included prompt feedback from instructors. Feedback on assessments should be prompt and specific to each student (Chickering & Gamson, 1983; Hatziapostolou & Paraskakis, 2010; Palomba & Banta, 1999), as many students are motivated by the satisfaction or repercussion of grades (Rovai et al., 2008). Effective feedback should be “timely, constructive, motivational, personal, manageable and directly related to assessment criteria and learning outcomes” (Hatziapostolou & Paraskakis, 2010, p. 111). Soon, Sook, Jung, and Im (2000) participated in a study to assess student satisfaction in an online course via a questionnaire at the end of the

course and found negative responses in relation to inadequate feedback from professors.

Workman and Stenard (1996) claimed that students need a sense of self-esteem to be successful in an online course. He stated that students' self-esteem can be nurtured by timely feedback.

Instructional Materials

Achtemeier et al. (2003) suggested that when planning an online class, it is important to assign tasks where resources for that task are easily accessible to every student in the class. With the expansion of online education, these resources may largely be electronic and available through a digital library or course management system (Dong, Xu, & Lu, 2009). Dong et al. found that students reported lower rates of satisfaction with their online education when certain factors, such as inadequate resources, were identified. Deubel (2003) agreed that appropriate use of media and interactivity with content contributed to course quality and student satisfaction. Deubel advised that instructional materials be centrally located for ease of access and that a list of additional resources (such as supplementary texts and websites) may be helpful for students seeking further exploration of course content. Deubel (2003) also indicated that instructor websites should include online help and technical assistance, frequently asked questions, plug-ins needed to view course content, online libraries and databases, and a list of supplementary websites related to course content, and that graphics and other visuals should be relevant for course content and sized appropriately to reduce student frustration from long download times.

Learner Interaction and Engagement

Moore (1989) introduced us to the concept of transactional distance, which is the measure of distance one feels between himself and his peers or between himself and his instructor. Tomei

(2006) believed that the most important thing in an online course is teacher-student interaction. Grandzol and Grandzol (2010) supported this in their study, which found learner to instructor interaction showed the strongest correlation with student perceptions of learning. Walther, Anderson, and Park, as quoted in Casey (2008, p. 50), claimed, “When cues are filtered out, communication becomes more ‘task oriented, cold and less personal than face-to-face communication.’” Casey suggested using available technologies, such as blogging and podcasting, to mediate this communication gap. Lack of feedback, communication, and interaction with their instructor leads to student dissatisfaction with their online course, as well as higher withdrawal rates from that course (Abdous & Yen, 2010; Steinman, 2007). To reduce transactional distance between students and instructors, Steinman (2007) suggested that instructors set virtual office hours for students, which is most effective if the student can both see and hear the instructor.

Steinman (2007) indicated that discussion boards and chat tools help facilitate communication between students, which helps to reduce transactional distance between students to other students. Baturay and Bay (2010) studied problem-based learning (PBL) and learned that students were more satisfied in PBL courses due to the social interaction increasing students’ perceptions of “connectedness” (p. 51). Rovai (2002) suggested using team-building activities to reduce transactional distance between students, although Baturay and Bay’s study contradicted this by showing that students working in team environments showed poorer achievement levels, possibly due to inactive or overbearing students.

Baturay and Bay (2010) concluded that problem-based learning minimizes the effects of transactional distance between students and their content. Swan (2002) showed that students who had higher interaction with their instructor, other students, and course content combined reported

higher levels of satisfaction with their online course. Interestingly, Grandzol and Grandzol (2010) found that higher levels of interaction in an online course environment appeared to have a relationship with decreased student retention rates in those courses. This is supported by Rourke, Anderson, Garrison, and Archer (2001) who found that although social presence is important for an online learning environment, too much interaction may actually lead to lower achievement. Grandzol and Grandzol (2010) also found that even though student-instructor interaction showed a positive correlation with student perceptions of learning in their online course, there was no statistical significance found in this category as related to student retention.

Course Technology

Augustsson (2010) stated that online education has now become more of a collaborative student learning process, rather than just a way for instructors to deliver instruction. Within this rapidly changing environment, it is essential to incorporate multiple technologies into a course (Cohen, Carbone, & Beffa-Negrini, 2011). This may include Virtual Lecture Halls (VLH) such as Tegrity, Camtasia, and Captivate (Cramer, Collins, Snider, & Fawcett, 2006); e-mail; web sites; discussion boards; chats; wikis; podcasts; videocasts; social bookmarking; social networking; blogs; and document sharing services (An, 2010; Arnold & Paulus, 2010; Augustsson, 2010; Halic, Lee, Paulus, & Spence, 2010; Kear, Woodthorpe, Robertson, & Hutchison, 2010; Preston, Phillips, Gosper, McNeill, Woo, & Green, 2010). Web 2.0 software, such as social networking and wikis, allow higher levels of interaction between students, instructors, and course content (Schroeder, Minocha, & Schneider, 2010).

Cohen et al. (2011) noted that “using technology for the sake of technology” (p. 84) may decrease student learning in an online course. Additionally, Schroeder et al. (2010) found that

incorporating technological features into a course is not sufficient unless the instructor facilitates the use of those tools. Course management systems (CMS), such as Angel, Blackboard, Moodle, etc., were designed to incorporate technologies into a manageable course environment (Arnold & Paulus, 2010; Schroeder et al., 2010).

Learner Support

Rovai et al. (2008) suggested that online students expect the same type of and convenience of access to support services that is offered to on-campus students. This may include enrollment support, instruction support, and particularly technical support. Workman and Stenard (1996) agreed that students need “ready access to support services such as bookstores, library, financial aid offices, and advisers” (p. 11). They also suggested that students in an online learning environment need access to tutoring, study preparation, and technology training. Additionally, they suggested using tools that support multiple learning styles to accommodate students with varying needs. Lee (2010) agreed that students need support services such as assistance with registration, financial aid, and technical support. McGorry (2003) stated that students in an online course need access to institutional resources as well as electronic resources that keep the student engaged in their course. Shea and Armitage (2002) argued that many institutions have neglected support services for their distance education students due to lack of resources and flexibility. They further indicated that online education will never see the same level of success or retention as campus-based education until online students have access to all student services made available to on-campus students. Shea and Armitage insisted that services that cannot be offered online be offered in some format that is an accessible and affordable

alternative to students, such as e-books or mail-order textbooks, online library resources, test proctoring arrangements, and online support held during non-traditional hours.

Accessibility

“Online courses can inadvertently erect barriers for students and instructors with disabilities” (Burgstahler, Corrigan, & McCarter, 2004, p. 234). The Americans with Disabilities Act (ADA) requires that online courses be compatible with assistive technologies. Section 504, which is an extension of the Americans with Disabilities Act of 1990, prohibits institutions from discriminating against students with disabilities regardless of whether they are federally funded (Burgstahler et al., 2004). Section 508 of the Rehabilitation Act requires that information and data be accessible nationwide by individuals with disabilities (United States Government, 2011). The Assistive Technology Act, enacted by the United States Congress (1998) requires states (including collegiate institutions) to comply with Section 508. Pearson and Koppi (2001) created a set of guidelines entitled Guidelines for Accessible Online Courses that could be used to assist course developers in creating online courses that are accessible. These guidelines include the following:

1. Ensure consistent and appropriate use of graphics, icons and other visual cues,
2. Ensure all graphics, figures, and other illustrations include a text equivalent,
3. Organize content to take account of the transition to an online environment,
4. Use the features provided by WebCT [or other learning management systems] to organize and structure your course content,
5. Make PDF and other read only file formats accessible,
6. Be aware of the limitations of screen readers in interpreting unusual text, characters, and abbreviations,
7. Ensure that tables are carefully and appropriately used,
8. Ensure appropriate use of colors and contrasts in screen design,
9. Provide alternative sources of information for video or audio or other moving images, and
10. Use style sheets to format text and control layout. (Pearson & Koppi, 2001, pp. 7-19)

Additional QM Case Studies

In 2011, Swan, Matthews, Bogle, Boles, and Day conducted a study that implemented both the QM and the Community of Inquiry (COI) frameworks to redesign one online course, hoping to enhance student learning. The COI framework is primarily a subjective, constructivist framework embedded in course implementation (Swan et al., 2011). The idea was to redesign a course to meet QM design standards and then tweak it based on COI ratings. Results of the study suggested that using the two frameworks simultaneously may positively improve student outcomes.

Legon (2006) conducted a study to compare the “Best Practices for Electronically Offered Degree and Certificate Programs”--which was adopted in 2001 by the eight regional accrediting bodies across the United States--with the QM rubric to see if an online course designed upon the QM framework would meet the accreditation guidelines for online education. Legon provided a one-to-one correspondence with the Best Practices for Electronically Offered Degree and Certificate Programs and QM principles. Although there were a few Best Practices principles that could not be paralleled with QM principles, those principles were not found to be in conflict with QM. Overall, Legon (2006) found the QM rubric to be “fully consistent with published accreditation standards for online education” (p. 9) and he suggested the rubric could even serve as a record of accreditation compliance.

Little (2009) conducted a study using two sets of online course standards: the 2006 College of Public Health (COPH) Online Course Standards and the 2005 Quality Matters (QM) Peer Course Review Rubric. The purpose of the study was to observe a convenience sample, consisting of 2 out of 10 online courses, in an RN-to-Bachelors of Science in Nursing (BSN) program. In the end, the study suggested that either instrument could provide accurate

evaluations of online courses, so deciding which tool to use should be based on other measures, such as user-friendliness, as the reviewers declared that the COPH standards were “time consuming and difficult to use” (Little, 2009, p. 413). The peer reviewers for this study suggested adoption of the QM rubric based on its “ease of use, content validity, and national recognition” (Little, 2009, p. 415).

McFerrin, Duchardt, Furr, Horton, and Gentry (2009) studied the design and implementation of online programs at Northwestern State University in Natchitoches, Louisiana, using the QM rubric as the basis for designing these online courses. To measure the effectiveness of each online course, faculty participated in peer evaluations for each course via a survey with both closed and open-ended questions. Additionally, students enrolled in each course completed a survey at the end of their term giving feedback for the course. Finally, an external evaluation was completed by an objective third-party that analyzed both the peer and the student feedback. While the courses were still being developed and tweaked at the time of this study, there is no cumulative data to show the effectiveness of the QM rubric in designing these courses.

In 2009, Pollacia, Russell, and Russell engaged in a study that created an online minor in Computer Information Systems (CIS), using the QM rubric as the basis for development. As of the publication date, there were no data to show whether or not this effort increased enrollment in the CIS department.

Aman’s Research

Aman (2009) began his research by determining whether online courses that were faculty peer reviewed would increase student satisfaction and retention rates, compared to online courses that were not faculty peer reviewed. He also studied courses that were not faculty peer reviewed,

but that were offered by institutions in which faculty peer reviewed courses were offered, to see if there was a diffusion of treatment between faculty at those institutions. He categorized these into three sections:

1. Reviewed--formally reviewed by a QM rubric,
2. Non-Reviewed--not formally reviewed by a QM rubric, but offered at institutions who also offer QM peer reviewed courses, and
3. No-Review--not affiliated with Quality Matters (Aman, 2009)

His study also looked at which specific quality standards were most directly related to student satisfaction and retention rates. The research questions for Aman's (2009) study included the following:

1. Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process and non-peer reviewed courses?
2. Is there a significant difference in course retention rates between online courses that have had a systematic faculty peer review process and non-peer reviewed online courses?
3. Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses?
4. Which factors of quality online instruction are most important in terms of increased retention levels of students in online courses? (pp. 3-4)

Participants in this study included 455 students, among 41 courses. To gather data on student satisfaction, Aman used a quasi-experimental method, which included an online Likert-type scale survey administered to students enrolled in online courses. Data on student retention were

obtained at the course level and compared student enrollment during the end of the first week of class with student enrollment at the end of the course for each course included in the study.

Aman (2009) participated in QM training to become a certified peer reviewer for the process of implementing online courses through the institution from which he was employed. Being familiar with the QM rubric, Aman chose this as his peer reviewed framework. The rubric outlined eight critical standards:

1. Course Overview and Introduction,
2. Learning Objectives,
3. Assessment and Measurement,
4. Instructional Materials,
5. Learner Interaction and Engagement,
6. Course Technology,
7. Learner Support, and
8. Accessibility,

Aman (2009) found only seven of those standards supported in his theoretical research:

1. Course Overview and Introductions,
2. Learning Outcomes or Objectives,
3. Student Assessment and Measurement,
4. Learning Resources and Materials,
5. Learner Interactions (Instructor, Student, Content),
6. Course Technology, and
7. Learner Support. (p. 38)

He then concluded that two of the standards, “Course Overview and Introductions” and “Learner Support” were not significantly supported theoretically because (1) Course Overview and Introductions was not discussed in the majority of his research, and (2) Learner Support was typically found to be out of the faculty member’s control. Therefore, Aman (2009) proceeded with his research assessing only five of the QM standards (see Table 1).

Table 1

Quality Matters Standards Included in Aman’s Research

Standard	Aman Name of Standard	QM Name of Standard
1.	Learning Outcomes or Objectives	Learning Objectives
2.	Student Assessment & Measurement	Assessment & Measurement
3.	Learning Resources & Materials	Instructional Materials
4.	Learner Interactions (Instructor, Student, Content)	Learner Interaction & Engagement
5.	Course Technology	Course Technology

Based on his review of the literature, Aman (2009) explored the following demographic variables, to see if they provided any correlation to student satisfaction: (1) student age, (2) student gender, (3) number of prior online courses taken, and (4) student level of comfort with online technology.

After an extensive review of literature, Aman (2009) defined student satisfaction in two ways. First, students were questioned about their levels of satisfaction with QM factors of quality found to be present in their online peer reviewed course. The assumption was that courses containing factors of quality would stimulate higher satisfaction among students than courses that did not contain the same factors of quality. Second, student retention rates were compared within their online course and other similar courses that had not been peer reviewed. The assumption was that students would drop an online course they felt did not satisfy their needs.

Aman's Findings

Aman's study found that comfort with distance learning, age, and gender may be related to student satisfaction in their online courses. A review of the literature supported that students' prior level of computer skills may be conducive to success and satisfaction with their online course (Abdous & Yen, 2010; Koroghlanian & Brinkerhoff, 2008; Lim, 2001; Menchaca & Bekele, 2008; Sahin & Shelley, 2008; Thurmond et al., 2002). Richardson and Swan (2003), however, found that age was not a significant factor in student satisfaction, which is supported by Thurmond et al. (2002), Hong (2002) and Lim (2001). The review of literature found mixed reviews regarding gender. Kim and Moore (2005) and Richardson and Swan (2003) found gender to be a significant factor in student satisfaction with online courses; whereas, Hong (2002) and Lim (2001) found no statistical significance with gender in relation to student satisfaction with their online course.

Aman's (2009) research found no significance in the number of prior online courses taken, which is supported by Richardson and Swan (2003), whose research showed that the number of college credits earned online showed no significant relationship to student satisfaction in online courses. Thurmond et al. (2002) also showed that the number of previous online courses taken was not a predictor of student satisfaction in an online learning environment. Arbaugh (2001) found that prior student experience with online courses was actually negatively associated with student satisfaction of their course. Arbaugh and Duray's (2002) study, however, disagreed by showing that students with more experience in online learning reported higher levels of satisfaction with their online course.

Diffusion of treatment was found to have no statistical significance for courses called "non-reviewed;" therefore, for the remainder of Aman's (2009) study he combined the "non-

reviewed” and “no-review” courses into a category called “all other.” The last question, which asked for student overall satisfaction, was not found to be significant with regard to faculty peer reviewed courses; so Aman calculated a mean of QM factor means, based on the combined means calculated for all of the QM standards included in the study. The mean of QM factor means did result in a significant difference in satisfaction between courses that were categorized as “reviewed” and “all other.” None of the variables identified in Aman’s research showed a statistical significance to student retention. A review of literature supported that identifying best practices for student retention is difficult to quantify and is non-consistent (McGivney, 2004; Nichols, 2010; Patterson & McFadden, 2009; Tait, 2004; Woodley, 2004).

Conclusion

To further validate Aman’s (2009) questionnaire, the five QM factors identified by Aman as significant to student perceptions of quality and satisfaction will be included in this study. This consisted of learning outcomes or objectives, student assessment and measurement, learning resources and materials, learner interactions (instructor, student, content), and course technology.

The demographic variables, comfort with distance learning, age, and gender, showed a possible relationship with student satisfaction in Aman’s research. The review of literature, however, did not show consistency pertaining to significance of these variables. Number of prior online courses taken did not show a significant relationship with student satisfaction in Aman’s study, and the review of literature also dismissed the significance of this variable. However, to maintain the validity and reliability of the survey instrument, all four demographic variables were included in this study.

CHAPTER 3

METHODS

Introduction

This chapter describes the methods used to determine student satisfaction in online courses that are (1) faculty peer reviewed; (2) not faculty peer reviewed but offered at institutions that are subscribers to peer review tools, trainings, and materials; and (3) not faculty peer reviewed and are offered at institutions that have no affiliation with a peer review program. It also addresses the setting of the study, participants, instrumentation, research questions, data collection, and data analysis.

Setting of the Study

The setting of this study included senior institutions accredited by the Southern Association of Colleges and Schools (SACS) in which upper-level and/or graduate courses were offered in an online format. Institutions asked to participate in this study included some that offered online courses peer reviewed by the QM rubric; some that offered online courses not peer reviewed by the QM rubric but offered at institutions that were subscribed to QM tools, trainings, and materials; and some that offered online courses not peer reviewed by the QM rubric and offered at institutions that had no affiliation with QM. To avoid a potential diffusion of treatment, institutions that were identified in one category were excluded from the other categories.

Participants

This study included upper-level and/or graduate online classes offered at senior institutions accredited by SACS. The participants identified in this study included three groups of participants over the age of 19: students who were enrolled in online courses at regionally accredited institutions that had been peer reviewed using the QM rubric; students who were enrolled in online courses at regionally accredited institutions that had not been peer reviewed using the QM rubric but that were offered at institutions who were subscribed to QM tools, trainings, and materials; and students who were enrolled in online courses at regionally accredited institutions that had not been peer reviewed using the QM rubric and that had no affiliation with QM. For the remainder of this study, the three categories were known as follows:

1. Recognized--have undergone a formal peer review through QM;
2. Subscribed--have not undergone a formal peer review through QM but are subscribed to QM tools, trainings, and materials; and
3. Non-affiliated--have not undergone a formal peer review through QM and are not subscribed to QM.

According to the Southern Association of Colleges and Schools Commission on Colleges Member, Candidate, and Applicant List (2011), there were 805 institutions regionally accredited through SACS. A comparison of the SACS Member, Candidate, and Applicant List; the QM website; and the individual websites of each of the institutions included in these two references determined that 10 institutions met criteria for the “recognized” category, 72 institutions met criteria for the “subscribed” category, and 453 institutions met criteria for the “non-affiliated” category. The remaining 270 institutions did not meet research criteria for inclusion in this study.

To maintain the confidentiality of data, institutional names of participants have not been disclosed. Upon receiving Institutional Review Board (IRB) approval from the researcher's home institution (Appendix A), the QM Institutional Representative was contacted at each of the 10 institutions that met research criteria for the "recognized" category to request support for this study. Of the 10 institutions who were contacted, 4 agreed to participate in this study, 3 declined participation, and 3 did not respond. IRB approval was granted from the 4 institutions who agreed to participate. A total of 334 students were enrolled in the 8 online courses recognized by QM across these 4 institutions, and were solicited for participation in this study. Those who declined participation gave the following reasons for not participating: (1) institution is closing for restructure, (2) solicitation of students is prohibited, (3) students are already participating in another study and the institution does not want to burden them with a second request. Non-respondents were sent follow-up requests anywhere from one to four times, in 2-week intervals between April 26, 2012 and July 30, 2012. Research invitations and follow-ups are further discussed under the section entitled Data Collection.

The researcher used Research Randomizer (<http://www.randomizer.org/>) to randomly select 10 of the 72 institutions that met research criteria for the "subscribed" category. Of the 10 selected, IRB approval was granted from 3 of those institutions, IRB approval was denied from 2 of the institutions, and 5 of the institutions did not respond. Of the institutions who agreed to participate, online courses were chosen that were similar to the courses studied from other participating institutions. A total of 764 students were enrolled in the 26 online courses chosen from these 3 institutions, and were solicited for participation in the study. Those who declined IRB approval gave the following reasons for not participating: (1) solicitation of students is prohibited, (2) institution is in transition with implementing QM and therefore not a good

candidate for this study. Non-respondents were sent follow-up requests anywhere from one to four times, in 2-week intervals between April 26, 2012 and July 30, 2012. Research invitations and follow-ups are further discussed under the section entitled Data Collection.

The researcher used Research Randomizer to randomly select 10 of the 453 institutions that met research criteria for the “non-affiliated” category. Of the 10 selected, IRB approval was granted from 3 of those institutions, IRB approval was denied from 3 institutions, and 4 institutions did not respond. Of the institutions who agreed to participate, online courses chosen that were similar to the courses studied from the other participating institutions. A total of 676 students were enrolled in the 24 online courses chosen from these 3 institutions, and were solicited for participation in this study. Those who declined IRB approval gave the following reasons for not participating: (1) it is not a good time to solicit student participation as it would conflict with other data collection and activities currently underway, (2) student solicitation is prohibited, (3) students are already involved in another study and a second request would be burdensome. Non-respondents were sent follow-up requests anywhere from one to four times, in 2-week intervals between April 26, 2012 and July 30, 2012. Research invitations and follow-ups are further discussed under the section entitled Data Collection.

Students enrolled in the courses solicited were emailed a research invitation requesting their participation in an online quantitative satisfaction questionnaire. Additionally, the QM institutional representative (where applicable) or the course designer for each course included in this study was sent a research invitation requesting their participation in an online qualitative survey to assess if and how they use peer review in the design of the courses. Institutional reps (or course designers) were sent research invitations anywhere from one to four times, in 2-week

intervals between April 26, 2012 and July 30, 2012. Research invitations and follow-ups are further discussed under the section entitled Data Collection.

Instrumentation

Quantitative Student Satisfaction Survey

With Dr. Aman's permission (Appendix B), this study used Aman's Satisfaction Instrument, which included a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with a neutral midpoint. This questionnaire began by asking a few questions pertaining to each of the five QM standards that could be directly related to student satisfaction in their online course: learning outcomes, assessment and measurement, learning resources and materials, learner interactions (student-faculty, student-student, student-materials), and course technology. Each question attempted to establish the importance of that standard to the student, as well as the student's satisfaction with that particular standard in their online course. Importance was defined as "a general, student reported, benchmark for the value placed on each of the factors," while satisfaction was defined as "the student's level of approval for that specific factor with the online course" (Aman, 2009, p. 75).

Additionally, this questionnaire assessed demographic variables that may be indirectly related to student satisfaction with their online course: comfort level with technology, gender, number of prior online courses completed, and age. Questions 1, 27, 28, and 29 were used to measure the demographic variables. This questionnaire also assessed background information about the online course, including course introduction, technology support, and student support, which were measured in questions 2, 3, and 4, respectively. One final question (question 30) was used to determine students' overall satisfaction with their online course. The independent

variable identified in this research was faculty peer review in online courses. Table 2 shows the breakdown of which dependent variables were measured and by which questions.

Table 2

Aman's Satisfaction Survey Measures

Standard	Category	Questions	Measure
Learning Outcomes	Importance of Factor to Student	Question 5	Importance
	Factors Directly Related to Online Learning	Questions 6, 7, and 8	Satisfaction
Assessment & Measurement	Importance of Factor to Student	Question 9	Importance
	Factors Directly Related to Online Learning	Questions 10, 11, 12, 13	Satisfaction
Learning Resources & Materials	Importance of Factor to Student	Question 14	Importance
	Factors Directly Related to Online Learning	Questions 15, 16, 17, 18	Satisfaction
Learner Interactions	Importance of Factor to Student	Question 19	Importance
	Factors Directly Related to Online Learning	Questions 20, 21, 22	Satisfaction
Online Course Technology	Importance of Factor to Student	Question 23	Importance
	Factors Directly Related to Online Learning	Questions 24, 25, 26	Satisfaction

Aman (2009) used his review of literature to create construct validity of the questionnaire by designing the questionnaire around the QM framework. He tested this questionnaire for content validity by asking a panel of online learning experts and QM experts to review the questionnaire. After eight revisions, the questionnaire was pilot-tested on two treatment and two control groups. During this pilot test, the participants were surveyed twice during a semester, once at midterm and once at the end of the semester (prior to final exams). Factor analyses showed a strong positive correlation between the QM factors chosen for this study and the satisfaction questions that were created based on the QM framework. A mean Cronbach's alpha

of .84 confirmed reliability of the questionnaire. The final questionnaire used to survey participants in Aman's study included 30 questions (Appendix C). This questionnaire was administered to participants via an online survey to obtain student-perceived satisfaction with peer reviewed and all other online courses. Student enrollment was obtained from the course instructors to gather data on retention rates in the online courses.

Qualitative Course Design Survey

The QM Institutional Representative of the institutions included in the "recognized" category was sent a research invitation (Appendix D) by email that asked questions regarding the level of QM implementation across their institution. The QM Institutional Representative (or the course designer if the QM Representative was unavailable) of the institutions in the "subscribed" category was sent a research invitation by email that asked questions regarding how many of the QM resources were implemented in their courses and which specific tools were used. The course designer of the institutions in the "non-affiliated" category was sent a research invitation by email that asked questions to determine if the institution was using another type of peer review evaluation (other than QM) and, if so, was it being used institution-wide or just in particular courses. Also, questions were asked of this category to determine what specific peer review tools/resources were being implemented.

The qualitative questions asked of the QM Institutional Representative and/or the course designers in hopes of clarifying data were as follows (Appendix E):

Recognized

1. What QM tools/resources do you have implemented in your QM-recognized online course(s)? Select all that apply.

- a. Rubric
- b. Faculty development
- c. Course development checklists
- d. QM peer-review
- e. Self-study
- f. Other (please describe)

Subscribed

1. What QM tools/resources do you have implemented in your online course(s)? Select all that apply.
 - Rubric
 - Faculty development
 - Course development checklists
 - QM peer-review
 - Self-study
 - Other (please describe)
2. If using the QM rubric, how are you using it?
 - As a blueprint for designing courses
 - For improvement in courses that have already been designed
 - Both
3. Other (please describe)
4. Are these tools/resources required of every online course?
 - Select Yes or No
5. How are these tools/resources being used?

Non-affiliated

1. Are you subscribed to any type of peer-review quality assurance program for your online courses/programs?

- Select Yes or No

If yes,

- What tools/resources are implemented in your online courses?
- Are these tools/resources required of every online course?
- How are these tools/resources being used?

Research Questions

The four research questions included in this study were as follows:

1. Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process and online courses that have not undergone a systematic faculty peer review process?

2. Is there a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review process but are affiliated with a peer review program and online courses that have no affiliation with a peer review program?

3. Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have been faculty peer reviewed?

4. Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have not been faculty peer reviewed but are affiliated with a peer review program?

Data Collection

Upon receiving IRB approval, the researcher requested student email addresses of the students enrolled in courses meeting research criteria from each institution's registrar. In a few cases, when email addresses were not released, the QM Institutional Representative or the course instructor (where applicable) was asked to forward the research invitation to their students on the researcher's behalf. Student research invitations (Appendix F) were sent anywhere from one to four times, in 2-week intervals between April 26, 2012 and July 30, 2012, as shown in Table 3. The institution who only received one invitation (with zero follow-ups) insisted that follow-ups would not be allowed for their students. This study included data from the Spring 2012 term and data from the Summer 2012 term. Students were contacted between the midterm and end of their enrollment in the online course(s).

Table 3

Research Invitation Timeline for Students and Course Designers

Term	Univ.	IRB Sent	IRB Approved	Duration of Course(s)	Initial Research Invitation	Follow-up #1	Follow-up #2	Follow-up #3
SP '12	Univ. 1	4/12/12	4/23/12	Jan - May	4/26/12	5/9/12	5/24/12	
SU '12	Univ. 1	4/12/12	4/23/12	Jun-Jul	6/14/12	7/1/12	7/16/12	
SU '12	Univ. 2	5/11/12	5/16/12	May-Jun	6/17/12	7/1/12	7/16/12	
SU '12	Univ. 3	4/18/12	5/16/12	Jun-Jul	6/25/12			
SU '12	Univ. 4	4/30/12	6/15/12	May-Aug	7/2/12	7/16/12	7/30/12	
SU '12	Univ. 5	4/23/12	5/24/12	May-Jul	6/25/12	7/9/12	7/23/12	
SU '12	Univ. 6	4/26/12	5/29/12	May-Jun	6/4/12	6/23/12	7/8/12	7/23/12
SP '12	Univ. 7	4/2/12	5/1/12	Jan-May	5/1/12	5/10/12	5/24/12	
SU '12	Univ. 7	4/2/12	5/1/12	Jun-Jul	6/14/12	7/1/12	7/16/12	
SU '12	Univ. 8	4/18/12	6/4/12	Jun-Jul	6/14/12	7/1/12	7/16/12	
SP '12	Univ. 9	3/28/12	4/25/12	Jan-May	4/27/12	5/10/12	5/24/12	
SU '12	Univ. 9	3/28/12	4/25/12	Jun-Jul	6/17/12	7/1/12	7/16/12	
SP '12	Univ. 10	4/12/12	4/25/12	Jan-May	5/4/12	5/10/12	5/24/12	
SU '12	Univ. 10	4/12/12	4/25/12	Jun-Jul	6/18/12	7/1/12	7/16/12	

SurveyMonkey was used to distribute the student satisfaction questionnaire to participants of this study due to its anonymous collection of data. Participation was voluntary. A letter of informed consent (Appendix G) was posted on the opening page of the survey. If a student agreed to participate, he was asked to click “Continue” at the bottom of the screen and proceed answering the questions that followed. If a student chose not to participate, he was asked to “Exit” the survey and no further action was required of that student. This survey did not collect internet protocol (IP) addresses, or any other identifiable information, of its participants. The survey did not require a response for every question; therefore, the participant had the option to not answer some or all of the questions. The participant was able to withdraw participation at any time during the survey.

The QM institutional representative was sent a research invitation (Appendix D) at institutions in the “recognized” category to request participation in a short qualitative questionnaire to determine the level of QM being implemented in online course design. Institutions in the “subscribed” and “non-affiliated” categories were sent research invitations to request participation in a short qualitative questionnaire to determine the level of QM or other peer review being implemented in online course design, if any. These research invitations were sent were sent anywhere from one to four times, in 2-week intervals between April 26, 2012 and July 30, 2012, as shown in Table 3.

SurveyMonkey was used to distribute the qualitative questionnaire to participants of this study due to its anonymous collection of data. Participation was voluntary. A letter of informed consent (Appendix H) was posted on the opening page of the survey. Participants were asked to click “Continue” at the bottom of the screen and proceed to answering the questions that followed. Anyone who chose not to participate was asked to “Exit” the survey and no further

action was required of that individual. The survey did not collect internet protocol (IP) addresses, or any other identifiable information, of its participants. The survey did not require a response for every question; therefore, the participant had the option to not answer some or all of the questions. The participant was able to withdraw participation at any time.

Data Analysis

Student satisfaction was measured by (1) students' overall satisfaction with their online course, and (2) students' satisfaction with each of the five QM framework factors included in this study: learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and course technology. Demographic variables included in this study were student age, student gender, number of prior online courses completed, and student level of comfort with online technology. Background data was collected to determine whether the online course included a course introduction, technology support, and student support. Finally, data was collected to determine the level of peer review that was included in the design of each online course.

The demographic variables were analyzed using the following procedure:

- A one-way ANOVA determined whether there was a mean difference between any of the demographic variables and overall student satisfaction in their online course.

Descriptive statistics were calculated on the background data to determine whether course introduction, technology support, and student support were included in the online course.

The first research question, "Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process

and online courses that have not undergone a systematic faculty peer review process?,” was analyzed using the following procedures:

- A *t*-test analysis determined whether the satisfaction score means of the two groups were different. Significance was measured at $p < .05$.
- A simple linear regression analysis was calculated to predict overall student satisfaction based on a course that has been peer reviewed. Significance was measured at $p < .05$.

The second research question, “Is there a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review process but are affiliated with a peer review program and online courses that have no affiliation with a peer review program?,” was analyzed using the following procedures:

- A *t*-test analysis determined whether the satisfaction score means of the two groups were different. Significance was measured at $p < .05$.
- A simple linear regression analysis was calculated to predict overall student satisfaction based on a course that has not been peer reviewed but is offered from an institution that is subscribed to peer review tools, trainings, and materials. Significance was measured at $p < .05$.

The third research question, “Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have been faculty peer reviewed?,” was analyzed using the following procedure:

- A Pearson correlation coefficient was calculated to determine if there was a relationship between peer review and student satisfaction with each of the five QM factors included in this study. Significance was measured at $p < .05$.

The fourth research question, “Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have not been faculty peer reviewed but are affiliated with a peer review program?,” was analyzed using the following procedure:

- A Pearson correlation coefficient was calculated to determine if there was a relationship between being subscribed to peer review tools, trainings, and materials (even without a formal peer review) and student satisfaction with each of the five QM factors included in the study. Significance was measured at $p < .05$.

It was hypothesized that online courses that had undergone a formal peer review, as well as courses that had not undergone a formal peer review but were offered at institutions that were subscribed to peer review tools, trainings, and materials, would receive higher student satisfaction ratings than online courses that had not undergone a formal peer review and were offered at institutions who had no affiliation with a peer review program.

Course designer data was collected as part of a descriptive research analysis pertaining to the level of peer review used in the design of each online course.

Chapter Summary

Aman’s (2009) satisfaction questionnaire was used to obtain data regarding student satisfaction in online courses that had been faculty peer reviewed and online courses that had not been faculty peer reviewed. Institutions were contacted requesting participation and those who agreed to participate were included in the sample for this study. The hypotheses were tested through a one-way ANOVA, a *t*-test analysis, a simple linear regression analysis, and a Pearson correlation analysis.

CHAPTER 4

RESULTS

Introduction

This chapter analyzes the response rates, demographics, and research questions associated with the study. Qualitative data obtained from the QM Institutional Representatives and the course designers are also evaluated.

Response Rates

The “recognized” category included participant solicitation from 334 students enrolled in eight online courses across four institutions. Of those, 22 students chose to participate and were included in the sample for the “recognized” category. The “subscribed” category included participant solicitation from 764 students enrolled in 26 online courses across three institutions. Of those, 48 students chose to participate and were included in the sample for the “subscribed” category. The “non-affiliated” category included participant solicitation from 676 students enrolled in 24 online courses across three institutions. Of those, 87 students chose to participate and were included in the sample for the “non-affiliated” category. This comes to a total of 157 responses out of 1,774 solicited, which is a 9% student response rate. This low response rate most likely contributed to the insignificance of the statistical analyses.

Additionally, one Quality Matters Institutional Representative (out of four solicited) chose to participate in the qualitative course designer survey for the “recognized” category. Three course designers (out of 26 solicited) chose to participate in the qualitative course designer

survey for the “subscribed category. Three course designers (out of 24 solicited) chose to participate in the qualitative course designer survey for the “non-affiliated” category. This comes to a total of 7 responses out of 54 solicited, which is a 13% course designer response rate. The low participant rate reduces the level of significance for this study.

Demographics

The following demographic variables were included in this study: age, gender, comfort with distance learning, and number of prior online courses taken. As shown in Table 4, the age range of participants was 20 years old to 58 years old, with a mean age of 33.87. The gender was split between 107 female respondents and 49 male respondents, with one respondent’s gender unknown. Using a Likert-type scale of 1 to 5 (with one being *very uncomfortable* and 5 being *very comfortable*), the reported comfort level with distance education was varied with a mean of 3.54. This diversity may be attributed to the range of previous online courses taken, which was reported between 0 courses to 42 courses, with a mean of 10.68.

Table 4

Demographic Statistics

	N	Range	Minimum	Maximum	<i>M</i>	<i>SD</i>
Age	150	38	20	58	33.87	10.608
Comfortability	156	4	1	5	3.54	1.555
Gender	156	1	1	2	1.69	.466
Previous Online Courses	157	42	0	42	10.68	8.627

Gender

A one-way ANOVA determined if there was a mean difference between gender and overall student satisfaction in their online course. Table 5 shows that overall satisfaction was reported slightly higher in females ($M = 3.98$, $SD = 1.258$) than in males ($M = 3.75$, $SD = 1.102$). The differences between the means were non-significant at the .05 level ($p = .300$), as shown in Table 6.

Table 5

Gender Descriptives

	N	M	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Male	44	3.75	1.102	.166	3.41	4.09	1	5
Female	97	3.98	1.258	.128	3.73	4.23	1	5

Table 6

Gender One-Way ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.593	1	1.593	1.084	.300
Within Groups	204.209	139	1.469		

Age

A one-way ANOVA determined if there was a mean difference between age and overall student satisfaction in their online course. The results of this factor were categorized into six groups: the first group included results where age was not reported, the second group included

results reported as less than 25 years old, the third group included results reported as between 25-35 years old, the fourth group included results reported as between 35-45 years old, the fifth group included results reported as between 45-55 years old, and the sixth group included results reported as 55 years of age or older. Data in Table 7 indicate that overall satisfaction was reported higher in the age groups 25 to 35 years ($M = 4.21$, $SD = .925$) and 55 years or older ($M = 4.20$, $SD = .447$) than in the other age groups: less than 25 years ($M = 3.73$, $SD = 1.202$), 35 to 45 years ($M = 3.86$, $SD = 1.357$), 45 to 55 years ($M = 3.75$, $SD = 1.372$), and not answered ($M = 3.29$, $SD = 1.704$). Table 8, however, shows the differences between the means were non-significant at the .05 level ($p = .326$).

Table 7

Age Descriptives

	N	M	SD	Std. Error	95% Confidence Interval for Mean			
					Lower Bound	Upper Bound	Minimum	Maximum
Not Answered	7	3.29	1.704	.644	1.71	4.86	1	5
Less than 25	30	3.73	1.202	.219	3.28	4.18	1	5
Between 25 and 35	42	4.21	.925	.143	3.93	4.50	2	5
Between 35 and 45	37	3.86	1.357	.223	3.41	4.32	1	5
Between 45 and 55	20	3.75	1.372	.307	3.11	4.39	1	5
Greater than or equal to 55	5	4.20	.447	.200	3.64	4.76	4	5

Table 8

Age One-Way ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.560	5	1.712	1.172	.326
Within Groups	197.241	135	1.461		

Prior Online Courses Taken

A one-way ANOVA determined if there was a mean difference between number of prior online courses taken and overall student satisfaction in their online course. The results of this factor were categorized into two groups: the first group included results reported as less than 10 previous online courses; and the second group included results reported as 10 or more previous online courses. Overall satisfaction was reported slightly higher from students who had taken 10 or more previous online courses ($M = 3.94, SD = 1.282$) than from students who had taken less than 10 previous online courses ($M = 3.88, SD = 1.150$), as shown in Table 9. Table 10 indicates the differences between the means were non-significant at the .05 level ($p = .744$).

Table 9

Prior Online Courses Taken Descriptives

	N	M	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Less than 10	72	3.88	1.150	.136	3.60	4.15	1	5
10 or more	69	3.94	1.282	.154	3.63	4.25	1	5

Table 10

Prior Online Courses Taken One-Way ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.158	1	.158	.107	.744
Within Groups	205.643	139	1.479		

Comfort with Distance Learning

A one-way ANOVA determined if there was a mean difference between comfort with distance learning and overall student satisfaction in their online course. The results of this factor were categorized into two groups: the first group included results reported as *very uncomfortable*, *uncomfortable*, and *neutral*; and the second group included results reported as *comfortable* and *very comfortable*. Table 11 showed overall satisfaction was reported higher from students who were reportedly *very comfortable* and *comfortable* with distance learning ($M = 4.06$, $SD = 1.131$) than from students who were *neutral*, *uncomfortable*, or *very uncomfortable* with distance learning ($M = 3.58$, $SD = 1.323$). The differences between the means were significant at the .05 level ($p = .026$), as shown in Table 12.

Table 11

Comfort with Distance Learning Descriptives

	N	M	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Very Uncomfortable, Uncomfortable, Neutral	45	3.58	1.323	.197	3.18	3.98	1	5
Comfortable, Very Comfortable	96	4.06	1.131	.115	3.83	4.29	1	5

Table 12

Comfort with Distance Learning One-Way ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.199	1	7.199	5.038	.026
Within Groups	198.603	139	1.429		

Background Data

Descriptive statistics were calculated to assess background information about the online course, including course introduction, technology support, and student support, which were measured in questions 2, 3, and 4. According to the reported results in Table 13, most participants agreed that a clear course introduction was available at the beginning of the course ($M = 4.19$, $SD = .956$), technology support was available for using the online features of the course ($M = 3.96$, $SD = .992$), and student support was available in using the online format of the course ($M = 3.89$, $SD = 1.025$).

Table 13

Background Data Descriptive Statistics

	N	Minimum	Maximum	<i>M</i>	<i>SD</i>
Q2	141	1	5	4.19	.956
Q3	139	1	5	3.96	.992
Q4	140	1	5	3.89	1.025

Research Question 1

The first research question asked, “Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process and online courses that have not undergone a systematic faculty peer review process?” A *t*-test analysis determined if the satisfaction score means of the peer reviewed group (“recognized”) were different from the two groups that had not been peer reviewed (“subscribed” and “non-affiliated”).

t Test Overall Satisfaction: Peer Reviewed versus Not Peer Reviewed

Statistical significance of student overall satisfaction between the peer reviewed group and the non-peer reviewed group was determined with a two-tailed independent sample *t* test with a significance measured at $p < .05$. Peer review was identified as the independent variable, while overall satisfaction was defined as the dependent variable. Using a Likert-type scale of 1-5 (with 1 being *strongly disagree* and 5 being *strongly agree*) the mean overall satisfaction for the peer reviewed group was higher ($M = 4.14, SD = .910$) than the mean overall satisfaction for the two groups that were not peer reviewed ($M = 3.87, SD = 1.256$), as shown in Table 14. Because the Levene's test for equality of variances, shown in Table 15, showed a sig. value of .201, which is greater than .05, equal variances are assumed (Holcomb, 2006). The difference between the means was determined to be non-significant at the .05 level ($p = .337$), as shown in Table 16.

Table 14

Statistics for Overall Satisfaction in Peer Reviewed Courses

	Peer Reviewed	N	<i>M</i>	<i>SD</i>	Std. Error Mean
Q30 dimension1	Yes	21	4.14	.910	.199
	No	120	3.87	1.256	.115

Table 15

Levene's Test for Equality of Variances for Overall Satisfaction in Peer Reviewed Courses

		Levene's Test for Equality of Variances	
		<i>F</i>	Sig.
Q30	Equal variances assumed	1.651	.201
	Equal variances not assumed		

Table 16

t Test Overall Satisfaction in Peer Reviewed Courses

		<i>t</i> test for Equality of Means					95% Confidence Interval of the Difference	
		<i>t</i>	<i>df</i>	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Q30	Equal variances assumed	.963	139	.337	.276	.287	-.291	.843
	Equal variances not assumed	1.204	34.909	.237	.276	.229	-.190	.742

t-Test Mean of QM Factor Means: Peer Reviewed versus Not Peer Reviewed

Because the *t* test for overall satisfaction was non-significant, an additional *t*-test analysis was calculated based on the mean of QM factor means. Statistical significance of the mean of QM factor means between the peer reviewed group and the non-peer reviewed group was determined with a two-tailed independent sample *t* test with a significance measured at $p < .05$. Peer review was identified as the independent variable, while the mean of QM factor means was defined as the dependent variable. Using a Likert-type scale of 1-5 (with 1 being *strongly disagree* and 5 being *strongly agree*) the mean of QM factor means for the peer reviewed group was higher ($M = 4.2440$, $SD = .56130$) than the mean of QM factor means for the two groups that were not peer reviewed ($M = 4.1266$, $SD = .75574$), as shown in Table 17. Equal variances were assumed, as shown in Table 18. Table 19 showed the difference between the means was non-significant at the .05 level ($p = .509$).

Table 17

Statistics for Mean of QM Factor Means in Peer Reviewed Courses

	Peer Reviewed	N	M	SD	Std. Error Mean
Mean of QM Factor Means	dimension1 Yes	20	4.2440	.56130	.12551
	No	113	4.1266	.75574	.07109

Table 18

Levene's Test for Equality of Variances for Mean of QM Factor Means in Peer Reviewed Courses

		Levene's Test for Equality of Variances	
		F	Sig.
Mean of QM Factor Means	Equal variances assumed	.465	.497
	Equal variances not assumed		

Table 19

t Test for Mean of QM Factor Means in Peer Reviewed Courses

		t test for Equality of Means					95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Mean of QM Factor Means	Equal variances assumed	.662	131	.509	.11736	.17727	-.23332	.46805
	Equal variances not assumed	.814	32.579	.422	.11736	.14425	-.17625	.41098

Simple Linear Regression Analysis: Significance of Peer Review in Predicting Overall Student Satisfaction

A simple linear regression was calculated to predict overall student satisfaction based on a course that has been peer reviewed. Peer review was identified as the independent variable, while overall satisfaction was identified as the dependent variable. Tables 20, 21, and 22 showed the regression equation was not significant ($p = .337$), which indicated that peer review cannot be used to predict overall student satisfaction.

Table 20

Linear Regression Model Summary of Peer Review to Overall Satisfaction

Model	<i>R</i>	<i>R</i> ² Square	Adjusted <i>R</i> ² Square	Std. Error of the Estimate
Dimension 0 1	.081 ^a	.007	-.001	1.213

Table 21

Linear Regression ANOVA of Peer Review to Overall Satisfaction

Model	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
1 Regression	1.363	1	1.363	.927	.337 ^a
Residual	204.438	139	1.471		

Table 22

Linear Regression Coefficients of Peer Review to Overall Satisfaction

Model	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.
	β	Std. Error	β		
1 (Constant)	4.143	.265		15.654	.000
Peer Reviewed	-.276	.287	-.081	-.963	.337

Research Question 2

The second research question asked: “Is there a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review process but are affiliated with a peer review program and online courses that have no affiliation with a peer review program?” A two-tailed independent sample t test with a significance measured at $p < .05$ determined if the satisfaction score mean of the group that had not undergone a systematic faculty peer review process, but was affiliated with a peer review program (“subscribed”), was different from the group that had no affiliation with a peer review program (“non-affiliated”).

t-Test Overall Satisfaction: Subscribed versus Non-Affiliated

Statistical significance of student overall satisfaction between the group that has not undergone a systematic faculty peer review process but is affiliated with a peer review program (“subscribed”) and the group that has no affiliation with a peer review program (“non-affiliated”) was determined with a two-tailed independent sample t test with a significance measured at $p < .05$. Subscription to a peer review program was identified as the independent variable, while overall satisfaction was defined as the dependent variable. Using a Likert-type scale of 1-5 (with 1 being *strongly disagree* and 5 being *strongly agree*), the mean overall satisfaction for the group that is subscribed to a peer review program was actually lower ($M = 3.73$, $SD = 1.245$) than the mean overall satisfaction for the group that had no affiliation with a peer review program ($M = 3.94$, $SD = 1.264$), as shown in Table 23. Equal variances were assumed, as shown in Table 24. Table 25 showed the difference between the means was non-significant at the .05 level ($p = .399$).

Table 23

Statistics for Overall Satisfaction in Subscribed Courses

	Category	N	M	SD	Std. Error Mean
Q30	Subscribed	41	3.73	1.245	.195
	NonAffiliated	79	3.94	1.264	.142

Table 24

Levene's Test for Equality of Variances for Overall Satisfaction in Subscribed Courses

		Levene's Test for Equality of Variances		
		F	Sig.	
Q30	Equal variances assumed		.019	.891
	Equal variances not assumed			

Table 25

t Test Overall Satisfaction in Subscribed Courses

		t test for Equality of Means					95% Confidence Interval of the Difference	
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Q30	Equal variances assumed	-.847	118	.399	-.205	.242	-.684	.274
	Equal variances not assumed	-.851	82.173	.397	-.205	.241	-.684	.274

t-Test Mean of QM Factor Means: Subscribed versus Non-Affiliated

Since the *t* test for overall satisfaction was non-significant, an additional *t*-test analysis was calculated based on the mean of QM factor means. Statistical significance of the mean of QM factor means between the subscribed group and the non-affiliated group was determined with a two-tailed independent sample *t* test with a significance measured at $p < .05$. Having a subscription to peer review tools, trainings, and materials was identified as the independent variable, while the mean of QM factor means was defined as the dependent variable. Using a Likert-type scale of 1-5 (with 1 being *Strongly Disagree* and 5 being *Strongly Agree*), data in Table 26 indicated the mean of QM factor means for the subscribed group was actually lower ($M = 4.1085$, $SD = .61886$) than the mean of QM factor means for the non-affiliated group ($M = 4.1369$, $SD = .82758$). Equal variances were assumed, as shown in Table 27. Table 28 showed the difference between the means was non-significant at the .05 level ($p = .849$).

Table 26

Statistics for Mean of QM Factor Means in Subscribed Courses

	Category	N	<i>M</i>	<i>SD</i>	Std. Error Mean
Mean of QM Factor Means	Subscribed	41	4.1085	.61886	.09665
	Non-affiliated	72	4.1369	.82758	.09753

Table 27

Levene's Test for Equality of Variances for Mean of QM Factor Means in Subscribed Courses

		Levene's Test for Equality of Variances	
		<i>F</i>	Sig.
Mean of QM Factor Means	Equal variances assumed	.695	.406
	Equal variances not assumed		

Table 28

t Test for Mean of QM Factor Means in Subscribed Courses

		<i>t</i> test for Equality of Means					95% Confidence Interval of the Difference	
		<i>t</i>	<i>df</i>	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Mean of QM Factor Means	Equal variances assumed	-.191	111	.849	-.02841	.14850	-.32267	.26586
	Equal variances not assumed	-.207	102.855	.837	-.02841	.13731	-.30073	.24392

Simple Linear Regression Analysis: Significance of a Subscription to Peer Review Tools in Predicting Overall Student Satisfaction

A simple linear regression was calculated to predict overall student satisfaction based on a course that is offered at an institution that is subscribed to peer review tools, trainings, and materials; although the course has not been formally peer reviewed. Subscription was identified as the independent variable, while overall satisfaction was identified as the dependent variable. Tables 29, 30, and 31 showed the regression equation was not significant ($p = .399$), which indicated that subscribing to a peer review program cannot be used to predict overall student satisfaction.

Table 29

Linear Regression Model Summary of Subscription to Overall Satisfaction

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	Std. Error of the Estimate
Dimension 0	1	.078 ^a	.006	1.258

Table 30

Linear Regression ANOVA of Subscription to Overall Satisfaction

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.134	1	1.134	.717	.399 ^a
	Residual	186.732	118	1.582		

Table 31

Linear Regression Coefficients of Subscription to Overall Satisfaction

Model		Unstandardized Coefficients		Standardized	t	Sig.
		β	Std. Error	Coefficients		
1	(Constant)	3.732	.196		18.995	.000
	Subscribed	.205	.242	.078	.847	.399

Research Question 3

The third research question asked, “Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have been faculty peer reviewed?” A correlation analysis determined if there was a relationship between peer review and student satisfaction with each of the five QM factors included in this study.

Correlation Analysis: Relationship of Factors in Peer Reviewed Courses to Overall Satisfaction

A Pearson correlation coefficient was calculated for the relationship between peer review and student satisfaction with each of the five factors included in this study: learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and online course technology. Table 32 showed that all correlations were non-significant at the .05 level (p

= .485, $p = .221$, $p = .415$, $p = .787$, $p = .564$), indicating that peer review is not related to student perceived satisfaction with each of the five factors.

Table 32

Correlation Matrix of Peer Review to Factors

		Learning Outcomes	Assessment Measurement	Learning Resources Materials	Learner Interactions	Online Course Technology	Peer Reviewed
Learning Outcomes	Pearson Correlation	1	.815**	.821**	.699**	.713**	-.060
	Sig. (2-tailed)		.000	.000	.000	.000	.485
	N	139	135	137	139	139	139
Assessment Measurement	Pearson Correlation	.815**	1	.786**	.673**	.641**	-.106
	Sig. (2-tailed)	.000		.000	.000	.000	.221
	N	135	136	134	136	136	136
Learning Resources Materials	Pearson Correlation	.821**	.786**	1	.679**	.758**	-.070
	Sig. (2-tailed)	.000	.000		.000	.000	.415
	N	137	134	138	138	138	138
Learner Interactions	Pearson Correlation	.699**	.673**	.679**	1	.611**	-.023
	Sig. (2-tailed)	.000	.000	.000		.000	.787
	N	139	136	138	140	140	140
Online Course Technology	Pearson Correlation	.713**	.641**	.758**	.611**	1	-.049
	Sig. (2-tailed)	.000	.000	.000	.000		.564
	N	139	136	138	140	140	140
Peer Reviewed	Pearson Correlation	-.060	-.106	-.070	-.023	-.049	1
	Sig. (2-tailed)	.485	.221	.415	.787	.564	
	N	139	136	138	140	140	157

Research Question 4

The fourth research question asked, “Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have not been faculty peer reviewed but are affiliated with a peer review program?” A correlation analysis determined if there was a relationship between being subscribed to peer review tools, trainings, and materials and student satisfaction with each of the five QM factors included in this study.

Correlation Analysis: Relationship of Factors in Subscribed Courses to Overall Satisfaction

A Pearson correlation coefficient was calculated for the relationship between peer review and student satisfaction with each of the five factors included in this study: learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and online course technology. Table 33 showed that all correlations were non-significant at the .05 level ($p = .565$, $p = .866$, $p = .950$, $p = .913$, $p = .997$), indicating that subscribing to a peer review program is not related to student perceived satisfaction with each of the five factors.

Table 33

Correlation Matrix of Subscription to Factors

		Learning Outcomes	Assessment Measurement	Learning Resources Materials	Learner Interactions	Online Course Technology	Subscribed
Learning Outcomes	Pearson Correlation	1	.815**	.821**	.699**	.713**	.054
	Sig. (2-tailed)		.000	.000	.000	.000	.565
	N	139	135	137	139	139	118
Assessment Measurement	Pearson Correlation	.815**	1	.786**	.673**	.641**	.016
	Sig. (2-tailed)	.000		.000	.000	.000	.866
	N	135	136	134	136	136	116
Learning Resources Materials	Pearson Correlation	.821**	.786**	1	.679**	.758**	.006
	Sig. (2-tailed)	.000	.000		.000	.000	.950
	N	137	134	138	138	138	117
Learner Interactions	Pearson Correlation	.699**	.673**	.679**	1	.611**	.010
	Sig. (2-tailed)	.000	.000	.000		.000	.913
	N	139	136	138	140	140	119
Online Course Technology	Pearson Correlation	.713**	.641**	.758**	.611**	1	.000
	Sig. (2-tailed)	.000	.000	.000	.000		.997
	N	139	136	138	140	140	119
Subscribed	Pearson Correlation	.054	.016	.006	.010	.000	1
	Sig. (2-tailed)	.565	.866	.950	.913	.997	
	N	118	116	117	119	119	135

Qualitative Data

Results of the “recognized” course designer survey indicated that the one institution that responded had online courses formally recognized by the QM program and used the rubric, faculty development, the course development checklist, and QM peer review tools. None of the seven institutions reported using the self-study tool. Results of the “subscribed” course designer survey indicated that all three of the institutions that are subscribed to the Quality Matters program used the QM rubric to guide course design, while two of those (66.7%) used the course development checklists, and one (33.3%) used the faculty development tool. Zero participants indicated using the self-study tool. When asked how the QM rubric was being used, all seven participants reported using the rubric for improvement in existing courses, while only one (33.3%) reported using the rubric as a blueprint for designing new courses. While two (66.7%) of

the institutions agreed that a subscription to the Quality Matters Program required all courses at their institutions to use the available tools, one (33.3%) declared that these tools were not required of every online course at their institution. Results of the “non-affiliated” course designer survey indicated that none of the three institutions were subscribed to any type of peer review program.

Chapter Summary

This chapter provided a description of the response rate and demographics of participants in the study. The first two research questions were analyzed via a *t*-test analysis and a simple linear regression analysis, while the last two research questions were analyzed via a Pearson correlation analysis. Finally, the qualitative data collected from the QM Institutional Representatives and the course designers were discussed.

CHAPTER 5

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

This chapter concludes the study summarizing the purpose, framework, and research questions of this study. Also included is the discussion of findings, conclusions, recommendations for practices, limitations of the study, and recommendations for future research. This chapter closes with the researcher's concluding remarks.

Purpose, Framework, and Research Questions

The purpose of this study was to examine student perceptions of quality and satisfaction in regionally accredited online courses. A review of the literature suggested there may be specific factors in online courses that increase students' perceived quality of that course (Ross et al., 2002), which, in turn, would increase students' perceived satisfaction with the course (McGorry, 2003; Sloan Consortium, 2011; Sun et al., 2008; Zhao, 2008). The factors identified as promoting quality vary depending on the researcher, including frameworks from Best Practices (WCET, 2009), Sloan-C (Sloan-C, 2011), QM (Quality Matters, 2010), and U21G (Chua & Lam, 2007). The factors identified as promoting satisfaction also vary, including frameworks from Seven Principles (Chickering & Gamson, 1983), Sloan-C (Sloan-C, 2011), TAM (Arbaugh, 2000), Determinants of Learning Effectiveness (Piccoli, Ahmad, & Ives, 2001), ADL Network (Artino, 2008), Sun, Tsai, Finger, Chen, and Yeh Framework (Sun et al., 2008), and Observational Case Study Design (Bogdan & Biklen, 1998).

The Quality Matters (QM) program was chosen as the framework for this study. QM is a peer-based approach structured around eight general standards: course overview and introduction, learning objectives (competencies), assessment and measurement, instructional materials, learner interaction and engagement, course technology, learner support, and accessibility. The QM program is comparable to traditional accreditation processes; however, QM focuses on evaluating the quality of individual online courses, rather than overall programs and institutions (Legon, 2006).

The four research questions identified in this study were as follows:

1. Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process and online courses that have not undergone a systematic faculty peer review process?

2. Is there a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review process but are affiliated with a peer review program and online courses that have no affiliation with a peer review program?

3. Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have been faculty peer reviewed?

4. Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have not been faculty peer reviewed but are affiliated with a peer review program?

Discussion of Findings

Demographics

Age, gender, comfort with distance learning, and previous online courses taken were included in this study as demographic variables. The descriptive statistics showed that the mean age of participants was 33.87, while the gender was primarily female (68%). Students' comfort with distance learning was varied, possibly because the number of previous online courses ranged from 0-42. A one-way ANOVA was calculated for each of these demographic variables to determine if there was a mean difference between the variable and overall satisfaction reported. The analyses showed that gender, age, and prior online courses taken were non-significant to student perceptions of overall satisfaction of their online course. Student comfort with distance learning, however, was shown to have a significant relationship with student perceptions of overall satisfaction with their online course.

The significant results for the comfort with distance learning factor were supported by the literature. Abdous and Yen (2010) agreed that comfort with distance learning was a useful predictor of overall satisfaction, although it should be noted that the significance of the contribution was weak. Lim (2001) also found that students who had more years of experience with computer use, especially in an online class, reported higher levels of satisfaction with their online course. Thurmond et al. (2002) also found a positive relationship between student comfort with distance learning and overall satisfaction.

The review of literature supported the researcher's finding by indicating that age was non-significant to student satisfaction. Richardson and Swan (2003) found that age was not significant to students' perceptions of an online course. Thurmond et al. (2002) found that age does not help predict a student's level of satisfaction. Hong (2002) also found no relationship

between student age and student satisfaction in an online course. The review of literature regarding gender as a predictor for student satisfaction in an online course was varied. Richardson and Swan (2003) found gender to be positively related to student satisfaction in an online course. Neither Hong (2002) nor Lim (2001) found a statistical significance between gender and student satisfaction in an online course. The literature mostly indicated that the number of prior online courses taken was non-significant to student satisfaction with online education (Richardson & Swan, 2003; Thurmond et al., 2002); although, Arbaugh and Duray (2002) argued that students with more experience in online learning showed a positive relationship to student satisfaction with an online course.

Research Question 1

Research Question 1 asked, “Is there a significant difference in levels of student satisfaction between online courses that have undergone a systematic faculty peer review process and online courses that have not undergone a systematic faculty peer review process?” A two-tailed independent samples *t*-test analysis determined that the overall satisfaction mean of the peer reviewed group (“recognized”) was higher ($M = 4.14$, $SD = .910$) than the overall satisfaction mean of the two groups that had not been peer reviewed (“subscribed” and “non-affiliated”) ($M = 3.87$, $SD = 1.256$). This finding was determined to be non-significant at the .05 level ($p = .337$). Next, a *t*-test analysis was calculated based on the mean of QM factor means, which included the means from all questions included in the five factors of this study: learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and course technology. A two-tailed independent samples *t*-test analysis determined that the mean of QM factor means for the peer reviewed group was higher ($M = 4.2440$, $SD = .56130$)

than the mean of QM factor means for the two groups that were not peer reviewed ($M = 4.1266$, $SD = .75574$). This finding was determined to be non-significant at the .05 level ($p = .509$).

Although non-significant, these results are supported by Ralston-Berg and Nath (2008) who found that students who claimed higher perceived satisfaction in an online course was positively correlated with all Quality Matters features embedded in the course design: learning objectives, assessment and measurement, instructional materials, learner interaction and engagement, course technology, learner support, and accessibility. Artino's (2011) study also found that students viewed almost all of the QM standards as valuable to their online course. Swan et al. (2011) and Aman (2009) also found peer review to be significantly related to student satisfaction in an online course.

A simple linear regression analysis was also calculated to predict overall student satisfaction based on a course that has been peer reviewed. The regression analysis was non-significant at the .05 level ($p = .509$), indicating that peer review cannot be used to predict overall student satisfaction. This contradicts the researcher's hypothesis that courses that have undergone a formal peer review will lead to higher student satisfaction than courses that have not undergone a formal peer review. This also contradicts Aman's (2009) study, which found that undergoing a formal peer review would lead to higher student perceived satisfaction in an online course, and Swan et al. (2011) who found that a formal peer review would lead to higher student satisfaction in an online course.

Research Question 2

Research Question 2 asked, "Is there a significant difference in levels of student satisfaction between online courses that have not undergone a systematic faculty peer review

process but are affiliated with a peer review program and online courses that have no affiliation with a peer review program?” A two-tailed independent samples *t*-test analysis determined that the overall satisfaction mean of the group that had not undergone a systematic faculty peer review process but were subscribed to a peer review program’s tools, trainings, and materials (“subscribed”) was actually lower ($M = 3.73, SD = 1.245$) than the overall satisfaction mean of the group with no affiliation to a peer review program (“non-affiliated”) ($M = 3.94, SD = 1.264$). The difference was determined to be non-significant at the .05 level ($p = .399$). Next, a *t*-test analysis was calculated based on the mean of QM factor means, which included the means from all questions included in the five factors of this study: learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and course technology. A two-tailed independent samples *t*-test analysis determined that the mean of QM factor means for the subscribed group was lower ($M = 4.1369, SD = .82758$) than the mean of QM factor means for the non-affiliated group ($M = 4.1369, SD = .82758$). The difference was determined to be non-significant at the .05 level ($p = .849$).

The findings did not support the hypothesis for this study. The findings also contradicted Ralston-Berg and Nath (2008), Artino (2011), Swan et al. (2011), and Aman (2009), who found peer review tools, trainings, and materials to be positively related to increased student satisfaction in an online course.

Finally, a simple linear regression analysis was calculated to predict overall student satisfaction based on a course offered from an institution that is subscribed to a peer review program, although the course had not undergone a formal peer review process. The regression analysis was non-significant at the .05 level ($p = .849$), indicating that subscription to peer review tools cannot be used to predict overall student satisfaction. This contradicted the

researcher's hypothesis that being subscribed to a peer review program, even without undergoing a formal peer review, would lead to higher student satisfaction with their online course. The findings also contradicted Ralston-Berg and Nath (2008), Artino (2011), Swan et al. (2011), and Aman (2009), who found peer review tools, trainings, and materials to be positively related to increased student satisfaction in an online course.

Research Question 3

Research Question 3 asked, "Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have been faculty peer reviewed?" A Pearson correlation coefficient was calculated to determine the relationship between peer review and each of the five factors included in this study: learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and online course technology. All correlations were non-significant at the .05 level ($p = .485$, $p = .221$, $p = .415$, $p = .787$, $p = .564$), indicating that peer review is not related to student perceptions of satisfaction with any of the five factors. This contradicts previous literature regarding peer review and online course quality. Ralston-Berg and Nath (2008) and Artino (2011) both found all five of these factors to be positively related to increased student satisfaction in an online course. Aman (2009) actually found learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and online course technology to all be positively related to increased student satisfaction with an online course, with learning resources and materials being the most significant predictor of student satisfaction.

Research Question 4

Research Question 4 asked, “Which factors of quality instruction most directly relate to increased levels of student satisfaction in online courses that have not been faculty peer reviewed but are affiliated with a peer review program?” A Pearson correlation coefficient was calculated to determine the relationship between subscription to peer review tools, trainings, and materials and each of the five factors included in this study: learning outcomes, assessment and measurement, learning resources and materials, learner interactions, and online course technology. All correlations were non-significant at the .05 level ($p = .565$, $p = .866$, $p = .950$, $p = .913$, $p = .997$), indicating that a subscription to peer review tools is not related to student perceptions of satisfaction with any of the five factors. This contradicts Ralston-Berg and Nath (2008), Artino (2011), Swan et al. (2011), and Aman (2009), who found peer review programs to be positively related to increased student satisfaction in an online course.

Conclusions

Three major conclusions can be drawn from this study. First, the results indicated that a formal peer review of an online course may lead to higher student satisfaction of that course. The results of this study were non-significant, most likely due to the low response rate of participants. However, since the mean overall satisfaction was higher in the groups that had been peer reviewed, this is still a good sign that peer review of online course design may lead to higher student satisfaction in a course. More research is needed to validate this finding. Second, results of the *t*-test analyses indicated higher satisfaction rates of those in the group with no affiliation to a peer review program (“non-affiliated”) than of those in the group affiliated with a peer review program, although no systematic faculty peer review had been completed (“subscribed”).

Although these results were non-significant, this poses a supplementary question concerning whether or not subscribing to peer review program tools, trainings, and materials (without a formal peer review) provides any benefit to the quality of online course design. Third, the Pearson correlation analyses showed that all correlations were non-significant, indicating that (1) peer review is not related to student perceived satisfaction with each of the five quality factors and (2) subscribing to faculty peer review tools, trainings, and materials without a formal peer review is not related to student perceived satisfaction with each of the five quality factors. This is a contradiction of the literature, which showed that peer review was a predictor for higher levels of student satisfaction in online courses.

The high level of statistical insignificance found reduces the value of the researcher's findings. Because so many of the findings were determined non-significant, the researcher concluded that the sample size was insufficient and that further research is needed (Johnson, 1999).

Recommendations for Practice

The researcher recommends that course designers strongly consider implementing a formal peer review of online courses being developed because this research showed that the mean overall student satisfaction of a peer reviewed online course was higher than the mean overall student satisfaction for the two groups that had not been peer reviewed. Although this finding was non-significant, it still indicated that a formal peer review of an online course may be beneficial to student satisfaction of the course. This study did not find a subscription to peer review tools, trainings, and materials to be beneficial to student satisfaction in an online course. Therefore, it is recommended that those who are subscribed to peer review tools, trainings, and

materials follow through with a formal peer review process to maximize the quality and student satisfaction of their online courses.

Limitations

Limitations of this study should be taken into consideration with regard to the findings and conclusions. There were four limitations identified as significant to this study, which are discussed further under recommendations for future research.

The first limitation of the study was the population from which participation was invited. The setting of this study included only senior institutions accredited by the Southern Association of Colleges and Schools in which upper-level and/or graduate courses were offered in an online format. Additionally, only 10 schools were selected from each study category (recognized, subscribed, and non-affiliated) for potential participation in the study.

The second limitation of the study was the sample size of participants. Although 1,774 students were solicited for participation, only 157 chose to respond. Additionally, out of 54 QM Institutional Representatives and course designers solicited for participation, only 7 chose to respond to the qualitative course designer questionnaire.

The third limitation of the study was in the specifications of the survey. The online survey did not collect IP addresses, names, or any other identifiable information of its participants. Although follow-up research invitations were sent out at 2-week intervals, it was impossible to personalize each follow-up invitation due to the anonymity of the survey data collected.

Finally, the fourth limitation was identified as the structure of the student satisfaction survey. Because all questions asked in this study were closed-ended questions, it was impossible for participants to express supplementary information regarding their course.

Recommendations for Future Research

One recommendation for future research includes expanding the study to include all QM “recognized” courses and all institutions who are currently “subscribed” to QM, which, in turn, would call for a greater population from the “non-affiliated” category. Expanding the population from which participants were solicited may result in a larger sample size.

A second recommendation for future research includes using a different technique for soliciting participation to appeal to a greater sample of participants. An anonymous online survey was implemented for data collection in this study. Because responses were collected anonymously, it was impossible to personalize the research invitation or follow-ups to potential participants. Wright (2005) suggested offering some type of financial incentive to increase response rates, although implementing an incentive would require the questionnaire to obtain identifiable information from its participants. Shannon and Bradshaw (2002) indicated that response rates from electronic surveys are typically lower due to participants’ concern of anonymity and confidentiality. Evans and Mathur (2005) suggested that low response rates to online surveys may be a result of individuals perceiving the research invitation as internet spam. Aman (2009) suggested that securing faculty acceptance of the study might lead to higher student response rates of online surveys, as faculty may encourage their students to participate.

A third recommendation for future research is for a modification of the student survey instrument to allow participants the opportunity to provide supplementary information via

open-ended questions, such as which online course the survey responses represent. This recommendation came from an anonymous survey participant who contacted the researcher with the following comment:

I recently completed the emailed survey on Student Perceptions of Quality and Satisfaction in Online Education. I need to share with you that many of my answers are marked Neutral, not because I am neutral about the sentiment, but because I am enrolled in three online courses and would have marked Strongly Agree for two courses and Strongly Disagree for the other one on those questions. Please, if you do this survey again, I would recommend asking the participant how many online courses he or she is currently enrolled in and then asking the same set of questions that many times (once for each online course) to get accurate data from your survey. My data is not an accurate reflection of my experience.

Finally, a fourth recommendation is for future research to be conducted on the significance of being subscribed to peer review tools, trainings, and materials. The researcher expected to find that courses offered from institutions who were “subscribed” to peer review tools, trainings, and materials (even without a formal peer review) would result in higher satisfaction rates than courses offered from institutions that have no affiliation with a peer review process. The analysis showed otherwise, although it should be noted that the analysis was determined non-significant.

Concluding Remarks

The purpose of this study was to determine if a formal peer review process, or if subscription to peer review tools, trainings, and materials (even without a formal peer review), would affect student perceptions of quality and satisfaction in online education. Using data collected through a Likert-type scale online questionnaire, a *t*-test analysis determined that online courses that had undergone a formal peer review resulted in a higher mean overall satisfaction than online courses that had not undergone a formal peer review; however this difference was

found to be non-significant. Additionally, a simple linear regression analysis determined that peer review could not be used to predict student overall satisfaction.

On the other hand, a *t*-test analysis determined that online courses that had not undergone a formal peer review but that were subscribed to peer review tools, trainings, and materials, resulted in a lower mean overall satisfaction than online courses that had no affiliation with a peer review program. This difference, too, was found to be non-significant. A simple linear regression analysis determined that subscription to peer review tools, trainings, and materials could not be used to predict student overall satisfaction.

This study also considered which factors of quality instruction were related to overall student satisfaction in both courses that have undergone a formal peer review and in courses that have not undergone a formal peer review but that are offered at institutions with a subscription to peer review tools, trainings, and materials. A Pearson correlation determined that satisfaction with the five factors included in this study were not significantly related to peer review or to a peer review subscription.

Finally, a one-way ANOVA determined whether there was a relationship between four demographic variables (age, gender, comfort with distance learning, and number of previous online courses taken) and overall student satisfaction in their online course. This analysis showed no statistical significance in age, gender, or number of previous online courses taken. However, a statistical significance was found between overall satisfaction and student comfort with distance learning. This analysis showed that students who were reportedly *comfortable* or *very comfortable* with distance learning were more satisfied overall with their online course.

Implications from this study were difficult to project because most of the results were found to be non-significant. However, although non-significant, the results indicated that a formal peer review of an online course would lead to higher student satisfaction of that course.

It is recommended that further research be conducted to include an expansion of the population/sample size, a revision of the solicitation procedures, and a revision of the survey instrument to include open-ended questions. Also, it is recommended that further research take place to determine whether being subscribed to a peer review program (without undergoing a formal peer review) offers any benefit to online course design.

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APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL

Office for Research
Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

May 24, 2012

Jill Simpson
ELPTS
College of Education
Box 870302

Re: IRB #: EX-12-CM-026, "Student Perceptions of Quality and Satisfaction in Online Education"

Dear Ms. Simpson:

The University of Alabama Institutional Review Board has granted approval for your proposed research. Your application has been given exempt approval according to 45 CFR part 46.101(b)(1) as outlined below:

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula or classroom management methods.

The UA IRB has approved this research study at the following institutions:

If you modify the application, please complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants.

This approval expires on April 24, 2013. If the study continues beyond that date, you must complete the appropriate portion of the Continuing Review Form. When the study closes, please complete the appropriate Closure form. Should you need to submit any further correspondence regarding this application, please include the assigned IRB application number.

Good luck with your research.

Sincerely,



358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127

APPENDIX B

PERMISSION TO UTILIZE AMAN'S STUDENT SATISFACTION QUESTIONNAIRE

From: Rick Aman <rickaman@cwidaho.cc>
To: 'Jill Simpson'
Cc:
Subject: RE: Request to use survey instrument

Sent: Thu 4/19/2012 12:4

Jill –

I am flattered with your request to utilize my work regarding peer review of online courses and student satisfaction.

Feel free to utilize my satisfaction survey instrument as desired. I would be very interested in your research findings regarding student satisfaction with online course courses.

Best wishes in your research and road to a PhD

Regards,
Rick

Rick Aman, Ph.D.
Vice President of Instruction
College of Western Idaho
5500 Opportunity Way
Nampa, ID 83687
Direct: (208) 562-3257
Cell: (208) 850-6707
Fax: (208) 562.3111
rickaman@cwidaho.cc

APPENDIX C

AMAN'S STUDENT SATISFACTION QUESTIONNAIRE

QUESTION		ANSWER
1.	How comfortable are you with online learning technology?	<input type="radio"/> Very uncomfortable with online learning technology <input type="radio"/> Uncomfortable with online learning technology <input type="radio"/> Neutral <input type="radio"/> Comfortable with online learning technology <input type="radio"/> Very comfortable with online learning technology
2.	A clear introduction (including overall design, navigation, and faculty information) was available at the beginning of this on-line course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
3.	Technology support was available for using the online features of this course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
4.	Student support (for example, advising, financial aid, registration) was available in using the online format of this course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
5.	I find it important to be provided with the learning objectives of a course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
6.	The objectives for this online course were provided at the beginning of this course and were clearly described.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
7.	The course objectives for this online course were closely related to what I was expected to learn.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
8.	The course objectives for this online course assisted with guiding my learning activities.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree

9.	I find it important to be provided with the course assessment methods at the beginning of a course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
10.	The course assessment methods for this online course were provided at the beginning of the course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
11.	The course assessment methods for this online course were clearly described.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
12.	The course assessment methods for this online course included a variety of assessment methods.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
13.	The course assessment methods for this online course were closely related to the course objectives.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
14.	I find it important to be provided with the course resources and materials during a course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
15.	The course resources and materials for this online course were easily accessible during the course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
16.	The purpose of course resources and materials for this online course were clearly described.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
17.	The course resources and materials for this online course helped me reach the course objectives.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree

18.	The course resources and materials for this online course included a wide variety of resources and materials.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
19.	I find it important to interact with the instructor during a course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
20.	The course instructor for this online course interacted with me in a timely fashion.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
21.	The course interaction with the instructor for this online course helped me reach the course objectives.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
22.	The amount of course interaction with other students for this online course was helpful in reaching the course objectives.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
23.	I find it important to be provided with course technology that enhances learning during a course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
24.	The course technology for this online course was readily available during the course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
25.	The course technology for this online course functioned very well.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree
26.	The course technology for this online course was helpful in reaching the course objectives.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree

27.	What is your gender?	<input type="radio"/> Female <input type="radio"/> Male
28.	How many online courses have you taken in the past (enter number)?	
29.	What is your age (optional)?	
30.	Overall, I am satisfied with this online course.	<input type="radio"/> Strongly Disagree <input type="radio"/> Disagree <input type="radio"/> Neutral <input type="radio"/> Agree <input type="radio"/> Strongly Agree

(Aman, 2009, pp. 187-190)

APPENDIX D

RESEARCH INVITATION TO QM INSTITUTIONAL REPRESENTATIVE AND/OR
COURSE DESIGNER

Dear _____ QM Institutional Representative or Course Designer (whichever is applicable for the given institution),

You are being asked to take part in a research study. The study is called “*Student Perceptions of Quality and Satisfaction in Online Education.*” The study is being conducted by principal investigator Jill Simpson, a doctoral student in the College of Education at the University of Alabama. The purpose of this study is to identify factors of online course design that are significant to increased course quality and student satisfaction.

You must be 19 years old to take part in this study. The study involves completing a web survey that will take about 10 minutes. This survey includes 1-4 questions (depending on the research category the institution falls within).

To complete the survey, click here: _____*

This survey is completely anonymous and confidential. At no point will you be asked to give your name, student number, or any other identification. As well, the link to this survey contains no identifying information connected with your email address. The investigator is the only person that will have access to the password-protected research data. Only summarized data from all participants will be presented in publications or at meetings.

You will not be paid or receive any tangible benefits from this study. However, the results of the study may benefit the online education community at large. There are no foreseen risks involved with this study.

If you have questions about this study, you may contact the investigator, Jill Simpson, at (256) 335-1270 or by email at jmsimpson@crimson.ua.edu, or you may contact the investigator’s advisor, Dr. Angela Benson at (205) 348-7824 or by email at abenson@bamaed.ua.edu . If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at (205)-348-1355 or toll free at (877) 820-3066.

You may also ask questions, make suggestion, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email them at participantoutreach@bama.ua.edu.

Your participation is completely voluntary. You are free not to participate or stop participating at any time.

Sincerely,

Jill M. Simpson
Doctoral Student
University of Alabama

* Institutions in the “recognized” category will be directed to this survey
<https://www.surveymonkey.com/s/B3Y7N8Q>.

Institutions in the “subscribed” category will be directed to this survey
<https://www.surveymonkey.com/s/BB7HJGQ>

Institutions in the “non-affiliated” category will be directed to this survey
<https://www.surveymonkey.com/s/BP8DCNY>

APPENDIX E
QUALITATIVE COURSE DESIGNER QUESTIONNAIRE

Recognized

1. What QM tools/resources do you have implemented in your QM-recognized online course(s)? Select all that apply.
 - a. Rubric
 - b. Faculty development
 - c. Course development checklists
 - d. QM peer-review
 - e. Self-study
 - f. Other (please describe)

Subscribed

1. What QM tools/resources do you have implemented in your online course(s)? Select all that apply.
 - Rubric
 - Faculty development
 - Course development checklists
 - QM peer-review
 - Self-study
 - Other (please describe)
2. If using the QM rubric, how are you using it?
 - As a blueprint for designing courses
 - For improvement in courses that have already been designed
 - Both
 - Other (please describe)

3. Are these tools/resources required of every online course?

- Select Yes or No

4. How are these tools/resources being used?

Non-affiliated

1. Are you subscribed to any type of peer-review quality assurance program for your online courses/programs?

- Select Yes or No

If yes,

- What tools/resources are implemented in your online courses?
- Are these tools/resources required of every online course?
- How are these tools/resources being used?

APPENDIX F
RESEARCH INVITATION TO STUDENTS

Dear _____ Student*,

You are being asked to take part in a research study. The study is called “*Student Perceptions of Quality and Satisfaction in Online Education.*” The study is being conducted by principal investigator Jill Simpson, a doctoral student in the College of Education at the University of Alabama. The purpose of this study is to identify factors of online course design that are significant to increased course quality and student satisfaction.

You must be 19 years old to take part in this study. The study involves completing a web survey that will take about 10 minutes. This survey includes 11 questions (which is broken down into 30 sub-questions).

To complete the survey, click here: <https://www.surveymonkey.com/s/BCPZD9M>

This survey is completely anonymous and confidential. At no point will you be asked to give your name, student number, or any other identification. As well, the link to this survey contains no identifying information connected with your email address. The investigator is the only person that will have access to the password-protected research data. Only summarized data from all participants will be presented in publications or at meetings.

You will not be paid or receive any tangible benefits from this study. However, the results of the study may benefit the online education community at large. There are no foreseen risks involved with this study.

If you have questions about this study, you may contact the investigator, Jill Simpson, at (256) 335-1270 or by email at jmsimpson@crimson.ua.edu, or you may contact the investigator’s advisor, Dr. Angela Benson at (205) 348-7824 or by email at abenson@bamaed.ua.edu. If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at (205)-348-1355 or toll free at (877) 820-3066.

You may also ask questions, make suggestion, or file complaints and concerns through the IRB Outreach website at http://osp.ua.edu/site/PRCO_Welcome.html or email them at participantoutreach@bama.ua.edu.

Your participation is completely voluntary. You are free not to participate or stop participating at any time.

Sincerely,

Jill M. Simpson
Doctoral Student
University of Alabama

*Greeting personalized to each institution being invited to participate.

APPENDIX G
INFORMED CONSENT FOR STUDENTS

Jill M. Simpson, Principal Investigator from the University of Alabama, is conducting a study called “Student Perceptions of Quality and Satisfaction in Online Education. She wishes to find out which factors in online course design are significant to higher course quality and student satisfaction.

Taking part in this study involves completing a web survey of 30 questions that will take about 10 minutes to complete. This survey contains questions about demographic and your level of satisfaction in the online course in which you are enrolled.

We will protect your confidentiality by collecting survey results anonymously. This survey will not collect Internet Protocol (IP) addresses, or any other identifiable information, of its participants. Only the investigator will have access to the data. Only summarized data will be presented at meetings or in publications.

There will be no direct benefits to you. The findings will be useful to online educators for determining which factors in online course design are significant to student satisfaction of the course.

The chief risk is that some of the questions may make you uncomfortable. You may skip any questions you do not want to answer.

If you have questions about this study, please contact Jill Simpson at (256) 335-1270 or by email at jmsimpson@crimson.ua.edu. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html. Also, if you participate, you are encouraged to complete the short Survey for Research Participants online at this website. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

If you understand the statements above, are at least 19 years old, and freely consent to be in this study, click on the CONTINUE button to begin.

APPENDIX H
INFORMED CONSENT FOR COURSE DESIGNERS

Jill M. Simpson, Principal Investigator from the University of Alabama, is conducting a study called “Student Perceptions of Quality and Satisfaction in Online Education. She wishes to find out which factors in online course design are significant to higher course quality and student satisfaction.

Taking part in this study involves completing a web survey of 1-4 questions (depending on your research category classification) that will take about 10 minutes to complete. This survey contains questions about the level of peer-review resources implemented in the design of your online course.

We will protect your confidentiality by collecting survey results anonymously. This survey will not collect Internet Protocol (IP) addresses, or any other identifiable information, of its participants. Only the investigator will have access to the data. Only summarized data will be presented at meetings or in publications.

There will be no direct benefits to you. The findings will be useful to online educators for determining which factors in online course design are significant to student satisfaction of the course.

The chief risk is that some of the questions may make you uncomfortable. You may skip any questions you do not want to answer.

If you have questions about this study, please contact Jill Simpson at (256) 335-1270 or by email at jmsimpson@crimson.ua.edu. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html. Also, if you participate, you are encouraged to complete the short Survey for Research Participants online at this website. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

If you understand the statements above, are at least 19 years old, and freely consent to be in this study, click on the CONTINUE button to begin.

APPENDIX I
HUMAN SUBJECTS TRAINING COMPLETION CERTIFICATES



CITI Collaborative Institutional Training Initiative (CITI)

Responsible Conduct of Research Curriculum Completion Report Printed on 4/25/2012

Learner: Jill Simpson (username: jmsimpson)

Institution: University of Alabama

Contact Information Phone: 2567654860

Email: jmsimpson@crimson.ua.edu

Humanities Responsible Conduct of Research Course 1:

Stage 1. Basic Course Passed on 04/25/12 (Ref # 7831501)

Required Modules	Date Completed	Score
The CITI Course in the Responsible Conduct of Research	04/23/12	no quiz
Introduction to the Responsible Conduct of Research	04/23/12	no quiz
Research Misconduct 4-1497	04/23/12	5/5 (100%)
Data Acquisition, Management, Sharing and Ownership 4-1525	04/23/12	5/5 (100%)
Publication Practices and Responsible Authorship 4-1533	04/25/12	5/5 (100%)
Peer Review 4-1534	04/25/12	5/5 (100%)
Mentor and Trainee Responsibilities 01234 1250	04/25/12	5/5 (100%)
Mentoring Case Study: O, What a Tangled Web We Weave	04/25/12	4/4 (100%)
Mentoring Case Study: The Graduate Student Laborer	04/25/12	3/3 (100%)
Mentoring Case Study: Sherry's Secret	04/25/12	4/4 (100%)
Mentoring Case Study: Lisa Bach's Case	04/25/12	3/3 (100%)
Mentoring Case Study: The Business of Mentoring	04/25/12	4/4 (100%)
Mentoring Case Study: Too Much Help is Just Too Much!	04/25/12	3/3 (100%)
Conflicts of Interest and Commitment 4-1624	04/25/12	5/5 (100%)
Collaborative Research 4-1058	04/25/12	5/5 (100%)