A Case Study Comparing Quality of Three Modes of Educational Delivery In a Two-Year Radiologic Technology Program

Wendy Inguaggiato-Chiesa
St. John Fisher College

Recommended Citation

Please note that the Recommended Citation provides general citation information and may not be appropriate for your discipline. To receive help in creating a citation based on your discipline, please visit http://libguides.sjfc.edu/citations.

How has open access to Fisher Digital Publications benefited you?
Follow this and additional works at: https://fisherpub.sjfc.edu/education_etd
Part of the Education Commons

This document is posted at https://fisherpub.sjfc.edu/education_etd/56 and is brought to you for free and open access by Fisher Digital Publications at St. John Fisher College. For more information, please contact fisherpub@sjfc.edu.
A Case Study Comparing Quality of Three Modes of Educational Delivery In a Two-Year Radiologic Technology Program

Abstract
The continued increasing demand for online education has raised important questions as to the quality of online educational programs. Quality is a concern of all stakeholders involved in higher education. This study examines the state of online education, specifically in regard to the quality of a two-year Radiologic Technology distance (online) program compared to its traditional and hybrid counterparts—in a single institution—in support of continuous quality improvement. All three tracks (traditional, hybrid, and online) are identical, the only difference being the mode of delivery. A qualitative case study method is used to address various elements of the Radiography program using the Sloan Consortium's Quality Framework. The case study used four instruments of measure: the Radiography program's 2005 Self-Study report—Guide for Program Analysis (GPA)—submitted for accreditation with the Joint Review Committee on Education in Radiologic Technology (JRCERT), structured interviews with administrators of the Radiography program, A Quality Scorecard for the Administrators of Online Education Programs, as well as post 2005 Self Study data not yet submitted to the JRCERT. Data were analyzed and compared holistically in order to evaluate the program as a whole. Results from all four instruments were in agreement in indicating that the overall quality of the Radiography program is high, yet would benefit from improvements in access to student services, faculty and student support, and in formal program evaluation practices.

Document Type
Dissertation

Degree Name
Doctor of Education (EdD)

Department
Executive Leadership

First Supervisor
Mary S. Collins

Second Supervisor
Timothy Madigan

Subject Categories
Education

This dissertation is available at Fisher Digital Publications: https://fisherpub.sjfc.edu/education_etd/56
A Case Study Comparing Quality of Three Modes of Educational Delivery
In a Two-Year Radiologic Technology Program

By

Wendy Inguaggiato-Chiesa

Submitted in partial fulfillment
of the requirements for the degree
Ed.D. in Executive Leadership

Supervised by
Dr. Mary S. Collins

Committee Member
Dr. Timothy Madigan

Ralph C. Wilson, Jr. School of Education
St. John Fisher College

August 2011
Dedication

First and foremost, I would like to thank my husband and daughter for all their support and encouragement. I would not have been able to complete this journey without it.

Second, I would like to thank the staff and faculty of the Executive Leadership program at St. John Fisher College for all their support and guidance, especially my dissertation Chair Dr. Mary S. Collins. I would like to offer a special thank you to Dr. Chester J. Burton, Dean of Business and my undergraduate advisor at SUNY Cobleskill, for believing in me and encouraging me to not only pursue my doctorate, but to believe in myself. Lastly, I would like to thank my dear friends in cohort 4, especially my team members—DC United. I will forever cherish the bonding friendships we cultivated along the way.
Biographical Sketch

Ms. Wendy Inguaggiato-Chiesa is a healthcare professional specializing in Radiological Sciences since 1995, and more recently in healthcare IT—electronic healthcare systems. Ms. Inguaggiato-Chiesa completed her undergraduate work at SUNY Cobleskill, graduating with honors with a Bachelor of Science degree in Business Management in 2007. She completed her Master’s of Business Administration and Fraud Management at Utica College in 2009. She began doctoral studies at St. John Fisher College in the summer of 2009 in the Ed.D. Program in Executive Leadership and pursuing research in higher education, specifically online education in Radiologic Technology. She received her Ed.D in 2011 under the direction of Dr. Mary S. Collins.
Abstract

The continued increasing demand for online education has raised important questions as to the quality of online educational programs. Quality is a concern of all stakeholders involved in higher education. This study examines the state of online education, specifically in regard to the quality of a two-year Radiologic Technology distance (online) program compared to its traditional and hybrid counterparts—in a single institution—in support of continuous quality improvement. All three tracks (traditional, hybrid, and online) are identical, the only difference being the mode of delivery. A qualitative case study method is used to address various elements of the Radiography program using the Sloan Consortium’s Quality Framework. The case study used four instruments of measure: the Radiography program’s 2005 Self-Study report—Guide for Program Analysis (GPA)—submitted for accreditation with the Joint Review Committee on Education in Radiologic Technology (JRCERT), structured interviews with administrators of the Radiography program, A Quality Scorecard for the Administrators of Online Education Programs, as well as post 2005 Self Study data not yet submitted to the JRCERT. Data were analyzed and compared holistically in order to evaluate the program as a whole. Results from all four instruments were in agreement in indicating that the overall quality of the Radiography program is high, yet would benefit from improvements in access to student services, faculty and student support, and in formal program evaluation practices.
# Table of Contents

Dedication ........................................................................................................................... ii  

Biographical Sketch ........................................................................................................... iii 

Abstract .............................................................................................................................. iv 

List of Tables ................................................................................................................... viii 

List of Figures ..................................................................................................................... x 

List of Abbreviations ......................................................................................................... xi 

Chapter 1: Introduction ....................................................................................................... 1  

Introduction ..................................................................................................................... 1  

History of Distance Learning ........................................................................................ 10  

Statement of the Problem .............................................................................................. 14  

Theoretical Rationale .................................................................................................... 17  

Sloan Consortium Quality Framework ......................................................................... 20  

Purpose of the Study ..................................................................................................... 27  

Research Question ........................................................................................................ 27  

Potential Significance of the Study ............................................................................... 28  

Definitions of Terms ..................................................................................................... 29  

Chapter Summary ......................................................................................................... 33  

Summary of Remaining Chapters ................................................................................. 33  

Chapter 2: Literature Review ............................................................................................ 35  

Introduction and Purpose ................................................................................................. 35
List of Tables

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>Total and Online Enrollment in Degree-Granting Postsecondary Institutions, Fall 2002 Through Fall 2009</td>
<td>7</td>
</tr>
<tr>
<td>Table 2.1</td>
<td>Evaluation Guidelines/Best Practices for Online Education – Summary</td>
<td>67</td>
</tr>
<tr>
<td>Table 2.2</td>
<td>Evaluation Guidelines in Accordance to the Sloan-Consortium’s Quality Framework</td>
<td>69</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>ARRT National Board Exam Pass Rate (5-year average) for the Radiography Program</td>
<td>101</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Job placement Rate (5-year average) for the Radiography Program</td>
<td>102</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Program Completion Rate (5-year average) for the Radiography Program</td>
<td>103</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Employer Survey (5-year average) for the Radiography Program</td>
<td>104</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>Traditional Student Retention Rates for the Radiography Program 2005-2010</td>
<td>105</td>
</tr>
<tr>
<td>Table 4.6</td>
<td>Distance and Hybrid Student Retention Rates for the Radiography Program 2005-2010</td>
<td>106</td>
</tr>
<tr>
<td>Table 4.7</td>
<td>Course Evaluations for the Radiography Program</td>
<td>120</td>
</tr>
<tr>
<td>Table 4.8</td>
<td>Clinical Instructor Evaluations for the Radiography Program</td>
<td>121</td>
</tr>
<tr>
<td>Table 4.9</td>
<td>Clinical Site Evaluations for the Radiography Program</td>
<td>122</td>
</tr>
<tr>
<td>Table 4.10</td>
<td>Graduate Survey for the Radiography Program</td>
<td>123</td>
</tr>
<tr>
<td>Table 4.11</td>
<td>Percentage of Radiography Program Students Residing Within Range of the College</td>
<td>125</td>
</tr>
</tbody>
</table>
Table 4.12  Respondents’ Quality Scorecard Point Results by Sloan-C’s Quality Framework’s Five Pillars  139

Table 4.13  Respondents’ Quality Scorecard Percentages by Sloan-C’s Quality Framework’s Five Pillars  140

Table 4.14  Quality Scorecard Rating of Faculty Satisfaction by Sloan-C Pillar  141
List of Figures

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1</td>
<td>Quality Framework: Sloan-C Five Pillars of Quality Online Education</td>
<td>22</td>
</tr>
<tr>
<td>Figure 3.1</td>
<td>Joint Review Committee on Education in Radiologic Technology (JRCERT) Accreditation Process Flowchart</td>
<td>79</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Radiography Program Organizational Chart</td>
<td>109</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>Institution Organizational Chart</td>
<td>110</td>
</tr>
</tbody>
</table>
**List of Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>AABC</td>
<td>Accrediting Association of Biblical Colleges Commission on Accreditation</td>
</tr>
<tr>
<td>ABHES</td>
<td>Accrediting Bureau of Health Education Schools</td>
</tr>
<tr>
<td>ACCET</td>
<td>Accrediting Council for Continuing Education and Training</td>
</tr>
<tr>
<td>ACCJC</td>
<td>Accrediting Commission for Community and Junior Colleges</td>
</tr>
<tr>
<td>ACCSCT</td>
<td>Accrediting Commission of Career Schools and Colleges of Technology</td>
</tr>
<tr>
<td>ACICS</td>
<td>Accrediting Council for Independent Colleges and Schools</td>
</tr>
<tr>
<td>ACSCU</td>
<td>Accrediting Commission for Senior Colleges and Universities</td>
</tr>
<tr>
<td>ALN</td>
<td>Asynchronous learning networks</td>
</tr>
<tr>
<td>ASHA</td>
<td>Council on Academic Accreditation in Audiology and Speech-Language Pathology</td>
</tr>
<tr>
<td>ASRT</td>
<td>American Society of Radiologic Technology</td>
</tr>
<tr>
<td>ATS</td>
<td>Association of Theological Schools in the United States and Canada</td>
</tr>
<tr>
<td>CHEA</td>
<td>Council for Higher Education Accreditation</td>
</tr>
<tr>
<td>CIHE</td>
<td>Commission on Institutions of Higher Education</td>
</tr>
<tr>
<td>COE</td>
<td>Council on Occupational Education</td>
</tr>
<tr>
<td>CQI</td>
<td>Continuous quality improvement</td>
</tr>
<tr>
<td>CTCI</td>
<td>Commission on Technical and Career Institutions</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Phrase</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DETC</td>
<td>Accrediting Commission of the Distance Education and Training Council</td>
</tr>
<tr>
<td>GAO</td>
<td>U.S. Government Accountability Office</td>
</tr>
<tr>
<td>MSACS</td>
<td>Middle States Association of Schools and Colleges Commission on Higher Education</td>
</tr>
<tr>
<td>NEASC</td>
<td>New England Association of Schools and Colleges Commission on Institutions of Higher Education</td>
</tr>
<tr>
<td>NCA</td>
<td>North Central Association of Schools and Colleges Commission on Institutions of Higher Education</td>
</tr>
<tr>
<td>NCA-HLC</td>
<td>North Central Association of Colleges and Schools The Higher Learning Commission</td>
</tr>
<tr>
<td>NCES</td>
<td>National Center for Education Statistics</td>
</tr>
<tr>
<td>NWCCU</td>
<td>Northwest Association of Schools and Colleges</td>
</tr>
<tr>
<td>SACS</td>
<td>Southern Association of Colleges and Schools Commission on Colleges</td>
</tr>
<tr>
<td>SLE</td>
<td>Synchronous Learning Environment</td>
</tr>
<tr>
<td>Sloan-C</td>
<td>Sloan Consortium</td>
</tr>
<tr>
<td>TRACS</td>
<td>Transnational Association of Christian Colleges and Schools Accrediting Commission</td>
</tr>
<tr>
<td>USDE</td>
<td>United States Department of Education</td>
</tr>
<tr>
<td>WASC</td>
<td>Western Association of Schools and Colleges Accrediting Commission</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Phrase</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>WCET</td>
<td>WICHE Cooperative for Educational Technologies</td>
</tr>
<tr>
<td>WWW</td>
<td>World Wide Web</td>
</tr>
</tbody>
</table>
Chapter 1: Introduction

Introduction

The methods by which distance education are delivered have been changing drastically under the profound influence of computer technology and the increase in access and Internet usage (U.S. Department of Education, 1999). The growth of distance education has historically been driven by the development of new technologies (Claus & Dooley, 2005). In the past, the postal system, telecommunications systems, video and audio conferencing, and interactive television were utilized. Today, computer and network technology are the primary means of access to distance education (Deskman & Davis, 2008; Huang, 2000). As distance education has evolved through the use of computer and network technology and the Internet, the term Online Learning, also known as Online Education, has been coined.

“Historically, the main step in the adoption of a new educational technology is to study and contrast the benefits of the new technology to those of the old” (Huang, 2000, p. 41). A primary benefit of distance education (also referred to as online education/learning) is convenience; it has helped to meet students’ needs offering flexibility around work, family, and other obligations. Online learning provides students with access to higher education living outside the immediate geographical areas of colleges and universities. “Online learning has become popular because of its potential for providing more flexible access to content and instruction at any time, from any place” (U.S. Department of Education, 2010, p. 1). Another benefit to online learning is the
ability to communicate easily and quickly with others (students and instructors) who may be located anywhere on the globe.

The use of the Internet has increased opportunities for online students. Online communication affords greater interaction between students and instructors via email, online discussions, live chat, and video and audio conferencing. Huang (2000) noted that “The Internet has significantly increased the speed of distance education [online education] activities” (p. 43), providing learners and instructors with more interaction and greater exchange of information. Electronic communications (e.g., email, online discussions, live chat) facilitate the learning process and have facilitated the rapid growth of online learning communities (Kilpatrick, Barratt, & Jones, 2003). “Asynchronous learning networks (ALN) – an important variant within what is commonly known as ‘online learning’ or ‘e-learning’—emphasizes computer and Internet technologies to facilitate interactive communications between instructor(s) and students inside an online learning environment” (Lorenzo & Moore, 2002, p. 3). Asynchronous communication provides participants the freedom to access course materials and to do coursework anytime from anywhere. It also provides participants time for reflection and encourages more critical thinking (Huang). In addition, the exchange of information over the Internet happens instantaneously rather than over the course of days as was typically the case with previously employed methods—correspondence courses offered via postal service, for example. Dykman and Davis (2008) noted that “Coursework that is delivered online can also provide timely access to the latest academic theories, research, paradigms, and ideas in a manner and scope that have never been possible before” (p. 12). This instant exchange of information allows students and instructors to communicate freely without
the barriers of time and distance, allowing instructors to provide immediate feedback to students (Huang).

This study is, in part, driven by the adoption of this new educational technology (i.e., online education) in order to compare the quality of online education to that of traditional (i.e., classroom) and hybrid (i.e., combination of traditional and online) education. Therefore, this study is conducted at a community college that offers the same two-year Radiologic Technology Program via three different modes: distance (online) traditional, and hybrid in a single institution. The college was chosen primarily because it offers the same program using the three modes of delivery without changing the instructional content or program—the only difference being the mode of delivery.

Since the introduction of computer network technology, there has been a proliferation of distance education courses and programs taught online, significantly increasing the number of student enrollments in educational institutions. Due to rapid growth, certain sectors of higher education have reported being unable to meet student demand for online education (Oblinger, 2007). Online enrollment among community colleges is one such sector (Oblinger). Oblinger noted that a 2006 study of community colleges conducted by the Instructional Technology Council reported a growth of 15% in online enrollments compared with a 2% growth in on-campus enrollments. In 1987, it was reported that fewer than 10 states in the United States offered distance education programs, yet only two years later, by 1989, nearly all 50 states offered such programs (Jonassen, 1996). The proliferation of online courses and programs has brought with it concern for maintaining quality in higher education.
The U.S. Department of Education (USDE) referred to online learning as “one of the fastest growing trends in educational uses of technology” (U.S. Department of Education, 2010, p. xi), reporting in the 1997-1998 academic year, that out of a total of 5,010 institutions, 1,680 offered distance education courses (U.S. Department of Education, 1999). The total number of enrollments in online courses in the 1994-95 academic year was reported as 753,640, and by 1997-98, the total number of enrollments in college-level, credit-granting distance education courses had nearly doubled, to 1,343,580. By the 2006-2007 academic year, there was an estimated 12.2 million enrollments (or registrations) in college-level, credit-granting distance education courses (U.S. Department of Education, 2008). (See Appendix A: Total number and percentage distribution of students formally enrolled in the institution’s distance education courses in academic year 1994-1995, by institutional characteristics. See Appendix B: Total number of enrollments in all distance education courses and the number of enrollments in college-level, credit-granting distance education courses offered by 2-year and 4-year postsecondary education institutions in 1997-1998, by institutional characteristics. See Appendix C: Number of 2-year and 4-year Title IV degree-granting institutions that offered distance education courses, total enrollment in all distance education courses, and enrollment in college-level, credit-granting distance education courses, by institutional type and size: 2000-2001. See Appendix D: Total number of enrollments in college-level, credit-granting distance education courses at 2-year and 4-year Title IV degree-granting postsecondary institutions, by course type, institution size: 2006-07.)

The USDE’s 1994-1995 survey was the first in a series of surveys conducted, in conjunction with the National Center for Education Statistics (NCES), on distance
education. A second survey was conducted in 1997-1998, a third in 2000-2001, and a fourth in 2006-2007. The first report, Distance Education in Higher Education Institutions (U.S. Department of Education, 1997), provided a baseline for the status of distance education for the nation. Subsequent reports update and expand upon the findings in the previous reports. The U.S. Department of Education (2003) noted that the studies conducted for the 1994-1995 and the 1997-1998 school years looked at slightly different populations, and the fourth report (2008), conducted for the 2006-2007 school year, clearly noted that criteria included in the definition of distance learning had changed. These variations in data populations and definitions make it difficult to compare data across reports.

The Sloan Consortium (Sloan-C) also reported on growth of online education. The Sloan-C is a non-profit organization dedicated to integrating online education into the mainstream of higher education. The organization is committed to improving the quality of online educational programs by assisting institutions of higher education with a collaborative process of sharing knowledge and effective practices. The Sloan-C reported “for the seventh consecutive year the number of students taking at least one online course continued to expand at a rate far in excess of the growth of overall higher education enrollments” (Allen & Seaman, 2010, p. 8). For the fall of 2002, The Sloan-C reported more than 1.6 million students taking at least one online course, and by the fall of 2008 that number had nearly tripled to more than 4.6 million students taking at least one online course. By the fall of 2009, the number of students taking at least one online course reached almost 5.6 million (see Table 1.1). Table 1.1 lists total and online enrollments in degree-granting postsecondary institutions from the fall of 2002 through the fall of 2009.
The table demonstrates a continual increase in total online enrollments and a significant increase in the number of students taking at least one online course. Table 1.1 also illustrates a steady increase of online enrollment as a percentage of total enrollments. This number has more than tripled, from 9.6% as of fall 2002 to 29.3% as of fall 2009. Allen and Seaman (2010) noted that:

The growth from 1.6 million students taking at least one online course in fall 2002 to the 5.6 million for fall 2009 translates into a compound annual growth rate of nineteen percent for this time period. For comparison, the overall higher education student body has only grown at an annual rate of less than two percent during this same period – from 16.6 million in fall 2002 to 19.0 million for fall 2009. (Note: Projections of Education Statistics to 2018, National Center for Education Statistics). (p. 8)

According to the USDE (2003), 90% of the institutions offering distance education courses reported using Internet asynchronous computer-based instruction as a primary mode of instructional delivery, along with two-way video with two-way audio (51%), Internet (43%), and one-way prerecorded video (41%) by the year 2000. Today, the use of computers and computer network technology—high-speed Internet connections and Wi-Fi—has become the primary vehicle of delivery for distance education, using Web-based instruction, chat rooms, threaded discussions, video conferencing, and email. WebCT and Blackboard are two software applications used to facilitate online instruction, which has led to employing several means of content delivery, such as Web-enhanced instruction, hybrid (or blended) learning, and online instruction. Web-enhanced instruction uses computer technology, various software
Table 1.1

*Total and Online Enrollment in Degree-Granting Postsecondary Institutions – Fall 2002 through Fall 2009*

<table>
<thead>
<tr>
<th>Academic year</th>
<th>Total enrollment</th>
<th>Annual growth rate total enrollment</th>
<th>Students taking at least one online course</th>
<th>Annual growth rate online enrollment</th>
<th>Online enrollment as a percent of total enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2002</td>
<td>16,611,710</td>
<td>1.2%</td>
<td>1,602,970</td>
<td>11.7%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Fall 2003</td>
<td>16,911,481</td>
<td>1.8%</td>
<td>1,971,397</td>
<td>23.0%</td>
<td>11.7%</td>
</tr>
<tr>
<td>Fall 2004</td>
<td>17,272,043</td>
<td>2.1%</td>
<td>2,329,783</td>
<td>18.2%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Fall 2005</td>
<td>17,487,481</td>
<td>1.2%</td>
<td>3,180,050</td>
<td>36.5%</td>
<td>18.2%</td>
</tr>
<tr>
<td>Fall 2006</td>
<td>17,758,872</td>
<td>1.6%</td>
<td>3,488,381</td>
<td>9.7%</td>
<td>19.6%</td>
</tr>
<tr>
<td>Fall 2007</td>
<td>18,248,133</td>
<td>2.8%</td>
<td>3,938,111</td>
<td>12.9%</td>
<td>21.6%</td>
</tr>
<tr>
<td>Fall 2008</td>
<td>18,698,630</td>
<td>2.5%</td>
<td>4,606,353</td>
<td>16.9%</td>
<td>24.6%</td>
</tr>
<tr>
<td>Fall 2009</td>
<td>19,036,860</td>
<td>1.2%</td>
<td>5,579,022</td>
<td>21.1%</td>
<td>29.3%</td>
</tr>
</tbody>
</table>


Applications, and the Internet to deliver additional educational content for instructional purposes in the traditional classroom setting. In contrast, online education delivers instructional content solely through the use of computer technology and the Internet, with no face-to-face component, so students and instructor are not at the same location. Therefore, instruction is conducted totally online. Hybrid (or blended) learning is a combination of traditional and online learning.
Since the inception of distance education, the influence of technology has greatly changed the means by which education is delivered. In particular, just as digital technology has permeated everyday life, older technologies for delivering distance education (e.g., interactive video, television, and satellite) in many cases have been phased out and/or replaced by newer, digital technologies (e.g., computers, networking technologies, the Internet, and the World Wide Web). Digital technology has blossomed to such an extent that distance education is now nearly synonymous with online education. This is significant because technology has changed drastically over the last 10 years, and the growing popularity of distance education and online programs as well as the use of computers and computer network technologies “raises important questions about whether a total academic program delivered by technology compares favorably with a program provided on campus” (The Institute for Higher Education Policy, 1999, p. 5). Such a favorable comparison would amount to a determination that an online program was of good quality.

Research has introduced concepts such as quality, best practices, accreditation, and evaluation. In 2002, Lorenzo & Moore noted that quality in online education is often thought to mean “leaning effectiveness,” and that is certainly one element. Research has reported quality in terms of learning outcomes/effectiveness, retention and completion rates, and student and faculty satisfaction, but academic leaders believe evaluating quality of online instruction is no more difficult than is evaluating quality of traditional instruction (Allen & Seaman, 2007). A best practice is a commonly accepted procedure regarded as the most effective method, procedure, or process identified for delivering a particular outcome. Simply said, it is the way a majority of people believe things should
be done in order to get optimal results. It is often defined by the collective experience of professionals working in a particular field. According to Merriam-Webster, to accredit is to give official authorization to or approval of—to recognize (as in an educational institution) as maintaining standards that qualify the graduates for admission to higher or more specialized institutions or for professional practice (http://www.merriam-webster.com/dictionary/accreditation). Michael Scriven, one of the founders of evaluation, defines evaluation as “the process of determining the merit, worth and value of things, and evaluations are the products of that process” (Scriven, 1991, p.1).

The United States Department of Education (USDE), various national and regional accrediting agencies, and organizations for higher education have prepared guidelines and developed best practices for reviewing quality of distance educational programs. “Accrediting agencies are organizations (or bodies) that establish operating standards for educational or professional institutions and programs, determine the extent to which the standards are met, and publicly announce their findings” (U.S. Department of Education, n.d.). The USDE is not an accrediting agency in and of itself, but it is required by law to publish a list of nationally recognized accrediting agencies that the Secretary determines to be reliable authorities as to the quality of education or training provided by the institutions of higher education and the higher education programs they accredit (U.S. Department of Education, n.d.), and in accordance with the Higher Education Act of 1965, as amended (U.S. Department of Education, n.d.). Mariasingam and Hanna (2006) noted that the development and implementation of a framework in which the quality of online degree programs can be assessed is “critical to future program growth and expansion” (p. 1). This is true,
especially in order for institutions of higher education to demonstrate that they are delivering programs of quality (Lockhart & Lacy, 2002).

History of Distance Learning

One of the first universities to use distance learning was the University of London. The University of London was established in 1836 and has the oldest academic distance learning program in the world, known today as the External System, which has offered distance learning programs since 1858. The External System made education accessible beyond the confines of the university campus/classrooms. At that time any male students were allowed access, regardless of where they studied, provided they met the same standards as students attending the University itself.

The University did not, however, offer any kind of teaching to these ‘non-collegiate’ students or what were later called ‘external’ students, so that they had to find ways of learning themselves – perhaps through a local college, or by using a tutor, or enrolling with a correspondence college, or just by reading the textbooks on their own. The concept of ‘distance learning’ is quite a recent one and would not have been recognized in this period. (C. Kenyon Jones, personal communication, November 6, 2010)

In other words, non-collegiate students were allowed access to higher education in the sense that they could earn a college degree without attending classes on campus, but due to the format of learning at the time (via correspondence), students had to find their own way of learning. Students did not have the ability to readily interact with the university awarding their degree. Today, the University of London’s External System has more than 41,000 students worldwide in over 180 different countries and offering more
than 100 different academic programs. Kenyon Jones (2008) noted that the External System is recognized for its profound influence on higher education in which it was ahead of its time.

The university underwent many changes as well as challenges over the course of the last 150 years, which has attributed to their success. The 1858 charter of the University of London, clause 36, seemed to be the most profound of all. Clause 36 “opened the London degree to all those who could fulfil [sic] its entry requirements and pay its fees, and meant that students no longer had to study in a specified place or institution in order to graduate” (Kenyon Jones, 2008, p. 7), regardless of social class, religion, or occupation. The charter also made access possible for those who could not attend the traditional brick and mortar building due to constraints much like those today: time, distance, location, family obligations, or having to earn a living while attending school. “Although, the terms of the 1858 charter still applied only to male students” (p. 8), this was a great advance for the university and for higher education in general. By the mid-1860s, access became possible overseas in increasing numbers of countries. Various affiliations with other schools further increased enrollments; these relations played a vital role in the university becoming known and accessible worldwide (Kenyon Jones). In 1878, the University of London was the first university in the United Kingdom to admit women to its degree programs, of which more than 10% of the graduates in 1895 were women, increasing to 30% by 1900.

In the late 19th and early 20th centuries, enrollments in the University of London’s External Program increased steadily. The effects of the wars were extremely challenging for the university, but during the World Wars further increases in enrollments
were attributed to students who had to flee their homelands due to persecution (http://www.londonexternal.ac.uk/150/history/wartime_quotes.shtml), British soldiers stationed abroad, and British soldiers imprisoned in German prisoner of war (POW) camps.

After perhaps a rather slow start in adapting to the effects of the First World War, the University made immense contributions to enabling people to continue studying and to pass exams while serving in the Armed Forces, while being uprooted and moved from place to place and—particularly—while serving as internees and prisoners of war. (Kenyon Jones, 2008, p. 77)

Under the Geneva Convention of 1929, prisoners of war had the right to exchange correspondences and receive parcels, which allowed the passing of educational materials and communication between the POWs and educational institutions (http://www.londonexternal.ac.uk/150/history/wartime.shtml). During World War II, the External System experienced a “phenomenal rise in the number of External students from about 10,000 to 16,000 in 1945” (Kenyon Jones, 2008, p. 86), which proved beneficial because by the end of the war, educated people were desperately needed at home. Also, “During the 1960s and 1970s the number of students going to university in the UK [United Kingdom] expanded enormously” (http://www.london.ac.uk/history.html#c32), which threatened the viability of the External system due to having too many students enrolled.

Again [now in the 1970s and early 1980s] it was a growth—not a diminution—in the number of External students that caused the problem, and again [as in the late
1880s and 1890s] the concern was that the Internal side of the University was suffering because of the needs of the External side. (Kenyon Jones, 2008, p. 196)

In other words, the External System’s ability to support the enormous growth is what threatened the university as a whole, not a lack of enrollments.

Changes that took effect in response to the 1880s and 1890s, as well as in response to the crises in the 1970s and 1980s, demonstrated the university’s ability to adapt and develop to meet the challenges they faced, much like the online learning today. Educators can learn from the University of London’s 150 years of experience with distance education and how it has “grown and transformed over the past century and a half” (Kenyon Jones, 2008, p. 189). In spite of all the challenges the university has faced, “it has nevertheless survived, developed and successfully adapted to accommodate” (Kenyon Jones, 2008, p. 189), without compromising its high standards for higher education and distance learning.

In the later 19th century, the university was established as a federal Teaching University. Today, it is one of the world’s leading universities, internationally recognized as a center of excellence and earning academic distinction in teaching and research. (http://www.londonexternal.ac.uk/about_us/index.shtml). The University of London Act of 1994, Statute 66(2) states that academic standards are irrespective of mode of delivery, place of study, or examination (Kenyon Jones, 2008). Distance courses were first delivered via postal mail, later incorporating radio, broadcast television, videotape, interactive television, and telephone (Huang, 2000). Kenyon Jones noted that,

Even before the 1858 charter opened London degrees to non-collegiate students it was the new technologies of the time—the development of fast and reliable
transport and communication systems—that enabled students outside London, in the affiliated institutions, to connect to the University at a distance and to take the University’s degrees. (p. 163)

Today, distance education is primarily delivered online via the use of computer technology, the Internet, and the World Wide Web (WWW). This recent mode of delivery is commonly referred to as online education/learning. Online learning utilizes various technologies such as email, chat, audio, podcasts, and various software applications such as WebCT, Blackboard, and Angel Learning. The American Society of Radiologic Technology (ASRT) noted, “These technologies have provided new dimensions to education” (2008, p. 9). Today’s students have increasingly grown up with and are accustomed to several new technologies with which their instructors may be less familiar. Instructors need to learn how to incorporate these into an educational experience that captures and holds the attention of the 21st century learner. Technologies such as cellular telephones, text messaging, and online chat have become ubiquitous, giving students greater expectations in the area of instructor availability and accessibility. The role of the instructor now tends to become a twenty-four-hour, seven-day-a-week responsibility. As Wang (2006) noted, “Online education is incredibly dynamic and constantly driven by changes in demand and technology” (p. 273). The introduction of globalization via the WWW has compelled educators everywhere to rethink higher education, reshaping it to meet the needs of the 21st century learner.

Statement of the Problem

With the growing popularity of distance education and online programs, educators and institutions of higher education have been charged with the task of assessing and
identifying factors that define quality online education (Wang, 2006). Past research
(Arbaugh, 2000; Braun, 2008; Dobbs, Waid, & del Carmen, 2009; Eom, Wen, & Ashill,
2006; Hale, Mirakian, & Day, 2009; Ortiz-Rodriguez, Telg, Irani, Roberts & Rhoades,
2005; Pullen, 2006; Reisetter & Boris, 2004; Reynolds, Rice, & Uddin, 2007; Seiler &
Billings, 2004; Stodel, Thompson & MacDonald, 2006; Swan, 2001; Tanner, Noser &
Totaro, 2009; Totaro, Tanner, Noser, Fitzgerald & Birch, 2005) has placed emphasis on
individual courses, not on entire academic programs. “This raises important questions
about whether a total academic program delivered by technology compares favorably
with a program provided on campus” (The Institute for Higher Education Policy, 1999, p.
5). This emphasis has left a significant gap in the research, which lacks focus on entire
degree programs taught via distance learning (Buck, 2001; The Institute for Higher
Education Policy, 1999), which still remains the case today.

As noted by Meyer (2002), defining and measuring quality has proven to be a
difficult task due to the lack of consistency in terminology in the literature. “The goal of
measuring quality has been quite elusive in past research, as there are many other
intangible dimensions of ‘quality’ that make the measurement of the concept quite
challenging;” therefore, “more attention must be dedicated to the nature and quality of
online higher education” (McGorry, 2003, p. 160). Although many institutions have
expanded online course offerings, many have not considered the issue of evaluating an
entire program (Fresen, 2002; McGorry, 2003; Sonwalkar, 2002). More recent research
from Mariasingam and Hanna (2006) indicates that the rapid growth of online education
“has superceded [sic] our understanding” (p. 1) of how to evaluate programs effectively
and that the issue of program evaluation has become of vital importance. Mariasingam
and Hanna also noted that the development and implementation of a framework in which the quality of online degree programs can be assessed is “critical to future program growth and expansion” (p. 1). This is true, especially in order for institutions of higher education to demonstrate that they are delivering programs of quality (Johnstone & Krauth, 1996; Lockhart & Lacy, 2002). The challenge is what methods (best practices), metrics, and standards to include when evaluating programs.

The proliferation of online programs, questions of instructional quality, and the need for implementing a quality framework make it imperative that institutions of higher education focus on how to measure the quality of online programs. The literature review, which is in Chapter Two of this study, has made it evident that two problems exist, the solutions of which are imperative for the process. First, is the lack of consensus as to what quality is, and second, is the lack of a standardized process and set of measures for determining the quality of online programs. The ability to measure quality of online programs would provide prospective students (consumers), as well as other stakeholders, with a tool to compare online programs. Due to the lack of research regarding online educational programs, this study uses of a quality framework for evaluating an online program to ensure its equivalency to other modes of delivery (traditional and hybrid). Therefore, this study sought a college offering the same educational program via all three modes of delivery—online, traditional, and hybrid—in a single institution, in order to implement the Sloan-C’s Quality Framework. The Sloan-C and the Quality Framework are discussed in detail later in this chapter.
Theoretical Rationale

Educational theory and practice builds on Piaget’s Constructivism Theory of cognitive development, otherwise known as the Developmental Stage Theory, and field of Genetic Epistemology—a study of child development and the continuous process of how children acquire, construct, and use knowledge throughout the different stages of development (Piaget, 1970). “The main proposition of constructivism is that learning means constructing, creating, inventing, and developing our own knowledge” (Marlowe & Page, 1998, p. 10). The Constructivism Theory focuses on epistemology and the process of how learning occurs, how learners construct or build their own learning, and the growth of knowledge (Piaget, 1970). Piaget defines growth of knowledge as a “progressive construction of logically embedded structures superseding one another by a process of inclusion of lower less powerful logical means into higher and more powerful ones up to adulthood (Jean Piaget Society, 2000). The Constructivism Theory places emphasis on the individual learner.

By contrast, Vygotsky’s Social Constructivism places emphasis specifically on the interactions that take place among individuals while learning in a group or collaborative environment (Tryphon & Vonèche, 1996). Emphasis is placed on the social aspects of learning and the belief that the acquisition of knowledge is the result of these social interactions (Doolittle, 1999). The intertwining of Constructivist and Social Constructivist views imply that learners are active participants socializing, collaborating, digesting, synthesizing, and applying knowledge, rather than simply regurgitating information (Ali, Hodson-Carlton, & Ryan, 2004; Driscoll, 2000; Marlowe & Page,
There are several benefits to Constructivist learning. Constructivism promotes collaboration creating an environment that emphasized the exchange of personal experiences, thoughtful ideas, and analytical thinking. Learning is thus transferred from student to student through the collaborative process. Students enjoy learning and, therefore, learn more when they are actively involved. Students are also engaged in the learning process creating a sense of ownership in their education and are, therefore, more likely to retain and transfer the new knowledge to real life. Applying learning in the context of the real world stimulates and engages students. The online learning environment, where students socialize, communicate, and collaborate using modern technology, is such an environment and is well grounded in the learning theories of Constructivism and Social Constructivism. Learners in the online learning environment are enacting the behaviors of Constructivism and Social Constructivism.

Though Piaget’s and Vygotsky’s theories of Constructivism can be applied to any learning environment, whether traditional or online, in considering educational programs one must consider more than simply the aspects of learning theories. In the case of this study, the focus is on evaluating the quality of a two-year Radiologic Technology distance education (online) program compared to its traditional and hybrid counterparts. The Equivalency Theory is an emerging approach to theory in distance education, which provides an appropriate theoretical foundation. “The Equivalency Theory provides the understanding that while the environment is different; [sic] the learning experience
should be of equal value, hence equal in the quality of instruction through distance

The Equivalency Theory has five key elements: equivalency, learning experiences, appropriate application, students, and outcomes (Simonson, 1999; Simonson, Schlosser & Hanson, 1999). Equivalency is the central component; it advocates the structure and design of distance (online) and traditional programs/tracks are fundamentally different, yet ultimately provide equivalent learning experiences (Simonson). Simonson provides the following analogy:

A triangle and a square that have the same area are considered equivalent even though they are quite different geometrical shapes. Similarly, the experiences of the local [traditional] learner and the distant [online] learner should have equivalent value even though specific experiences might be quite different.

Also a key to this approach is the concept of learning experiences. A learning experience is anything that happens to or with the student that promotes learning, including what is observed, felt, heard, or done. (p. 7)

Appropriate application implies that learning experiences, whether traditional or online, need to be tailored to the capabilities of individual learners, so that learners are not barred from instructional ideas by limitations of, for example, the technologies available to them. The next concept, students, implies that students should be defined by what course they are enrolled in; for example, business, or law, rather than the mode of delivery. Outcomes, being the final concept, are defined as “those obvious, measurable, and significant changes that occur cognitively and effectively in learners because of their participation in the course or unit” (Simonson, 1999, p. 8). The focus is primarily on the
outcomes of the learning experience and is further broken down into two categories: instructor determined (course goals/learning objectives) and learner-determined (what the learner hopes to accomplish).

*Sloan Consortium Quality Framework*

To assist educators and institutions of higher education in measuring the quality of online programs, the Sloan-C, an organization dedicated to integrating online education into the mainstream of higher education, developed and published a Quality Framework, which is supported by empirical evidence (Moore, 2002, 2005). The Sloan-C’s Quality Framework is important because it is designed to be a tool, a set of guidelines, rather than a distinct set of metrics, which each institution can modify. The Framework is “flexible enough to include alternatives as understood and applied by each institution as appropriate to its distinct quality” (Moore, 2002, p. 54). Standards set forth in The Sloan-C’s Quality Framework stating that “The goal is that online learning is at least equivalent to learning through the institution’s other delivery modes, in particular through its traditional face-to-face, classroom-based instruction” (Moore, p. 54) mirror those set forth in the University of London Act of 1994, Statute 66(2). The act states that academic standards are irrespective of mode of delivery, place of study, or examination (Kenyon Jones, 2008). In addition, the standards set forth in the Sloan-C Quality Framework support the Equivalency Theory in that while the online learning environment is fundamentally different than the traditional and hybrid environments, the learning experience should be of equal value and quality (Claus & Dooley, 2005; Simonson, 1999). This study utilized the Sloan-C’s Quality Framework for evaluating an online Radiologic Technology Program to ensure its equivalency to other modes of
delivery—traditional and hybrid—offered at the same institution. The Framework consists of five pillars, which are “considered to be the building blocks for quality online learning” (Shelton, 2010, p. 25): Learning Effectiveness, Scale (Cost Effectiveness and Commitment), Access, Faculty Satisfaction, and Student Satisfaction (see Figure 1.1). Figure 1.1 demonstrates the interdependency of the five pillars. The five pillars support the Quality Framework and are interdependent in that “what institutions do in each area affects outcomes in all other areas” (Moore, p. 53).

Moore stated that the Quality Framework was designed to:

help learning organizations continually improve quality, scale, and breadth according to their own distinctive missions, so that education will become a part of everyday life, accessible and affordable for anyone anywhere, at any time, in a wide variety of disciplines (2005, p. 1).

by emphasizing “principles and metrics that can help establish benchmarks and standards for quality based on continuous quality improvement (CQI)” (2005, p. 1). As effective practices are identified by the Sloan-C, they are categorized by pillar and shared with the online teaching community for other educators to examine, to emulate, and to substantiate that online learning does work (Lorenzo & Moore, 2002).

It is important to keep in mind that the quality framework is a continual work in progress (Moore, 2005) that requires continual monitoring. The pillars are not mutually exclusive either; they are “the values, principles and goals of asynchronous learning networks” (Lorenzo & Moore, 2002, p. 3). The five pillars are all interrelated (Moore, 2002). Also worth noting is that the underlying epistemological stance of online education is that of constructivism and social constructivism, whose stance is reflected
throughout the Sloan-C’s Quality Framework. For *learning effectiveness*, the key practice area is interaction—student interaction. Other key practice areas include pedagogy, constructivist strategies for instruction, emphasis on communication, and community building. Key practice areas for *access* include technical infrastructure, learning resources, and support services that can assist students in the learning process. Key practice areas for *faculty satisfaction* include faculty participation and faculty endorsement of online education. Key practice areas for *student satisfaction* emphasize such things as academic and administrative services, the use of technologies, student-student and student-faculty interaction, and learning community involvement (Moore, 2002, 2005), all of which are directly related to constructivist practices.

*Figure 1.1. Quality Framework: Sloan-C Five Pillars of Quality Online Education.*

Learning effectiveness. Interaction and learning of a higher order are essential elements to learning effectiveness (Lorenzo & Moore, 2002; Moore, 2005). Interaction with classmates, instructor, and content (active learning) is a key element of the learning experience in making online learning effective. Online learning environments need to involve learning of a higher order (collaboration), generating meaningful discourse and deep reflection between students and their instructor as well as among themselves. Course design should take advantage of the medium (i.e., technology) to improve the overall learning experience and achieve comparable learning outcomes to that of traditional modes of delivery.

Learning effectiveness is often thought of and used interchangeably when referring to quality of online education. “However, learning effectiveness has greater meaning when it is combined within a framework that encompasses all five pillars” (Lorenzo & Moore, 2002, p. 3).

LEARNING EFFECTIVENESS means that learners who complete an online program receive educations that represent the distinctive quality of the institution. The goal is that online learning is at least equivalent to learning through the institution’s other delivery modes, in particular through its traditional face-to-face, classroom-based instruction. . . . Online curricula are subject to, and thereby receive the same benefits of practice, process, and criteria that the institution applies to traditional forms of instruction. (Moore, 2002, p. 54)

Scale (cost effectiveness and commitment). The main premise of scale is institutional commitment of continuously improving services while at the same time reducing costs. Competition for educational dollars, increasingly limited fiscal resources,
and the increased use of technology have raised concerns regarding effectively controlling costs while at the same time remaining competitive (Lorenzo & Moore, 2002; Bourne & Moore, 2003). Cost effectiveness can be accomplished through the use of cost effectiveness models using various methods and targeting curriculum and course redesign, tuition and fees, scalability, and building consortiums and/or collaborations; these all align with already existing institutional objectives focused on cost control (Bourne & Moore, 2003). An important element of scalability is that online programs are able to generate the revenues necessary to not only meet present costs, but to also generate additional revenue in order to develop additional classes/programs and hire additional faculty and staff as needed.

Access. Improving student access is the primary objective identified among institutions (Allen & Seaman, 2007). The significance of access is apparent by the increasing number of online courses and programs offered by institutions and the increasingly high enrollments. According to Bourne and Moore (2003), “Gaining the attention of prospective online learners is the foundational access issue” (p. 119), so public awareness of the opportunities that online learning can provide is a vital piece. However, accessibility not only focuses on access to education at anytime from anyplace but also on accessibility to a wide array of programs and courses, the availability of integrated support services (e.g., library and 24/7 technical support), and overcoming barriers such as unequal access to computer technology and the Internet across geographic and income groups. In addition, the lack of acceptance of online instruction among faculty members has been identified in research as one of the primary barriers
(Allen & Seaman, 2007), so improving access involves the removal of current barriers and creating new opportunities.

Categories used to identify effective access practices by the Sloan-C include program access (i.e., basic program information, marketing, and program options); course access (i.e., general course information and scheduling); learning resources (i.e., faculty, other students, and support content); academic (i.e., orientation, advising, and library services) and administrative services (i.e., registration, student records, and bill payment); technical infrastructure (i.e., technical support and technology reliability/uptime); and faculty support services (Bourne & Moore, 2003).

The driving force for developing online learning was to widen access to education through using technology, which is still evolving today. “In the meantime, access remains the foundational issue in the evolution of online learning, and dealing with access issues will remain essential for the continued success of online education” (Bourne & Moore, 2003, p. 134).

Faculty satisfaction. Faculty satisfaction should demonstrate that faculty members are pleased with their online teaching experience, meaning that “instructors find the online teaching experience personally rewarding and professionally beneficial” (Moore, 2002, p. 58). Faculty satisfaction is dependent upon institutional support, professional recognition, and personal rewards (Bourne & Moore, 2003), which are accomplished through faculty participation regarding matters involving online education, high student achievement, teaching flexibility, and convenience (i.e., work hours and location), opportunities for research and professional recognition, and adequate support for faculty in-course preparation and course delivery (Bourne & Moore). Much like the driving
forces behind access, faculty satisfaction is continually evolving due to the dynamic environment of online learning. Many institutions and faculty members are still new to online learning and are, therefore, uncertain as to what constitutes best practices (Bourne & Moore), so at this point the factors discussed contributing to faculty satisfaction merely represent attainable goals rather than a specific set of standards or best practices.

Student satisfaction. The purpose of research regarding students’ perceptions of online education is to help educators develop a deeper understanding of how students’ perceptions play a role in perceived quality of online instruction. It also gives students a voice in the design and development of online courses and programs. This insight can be significant for course developers. Increased student satisfaction potentially may translate to an increase in student enrollments, an increase in retention rates, and an increase in the number of courses and programs offered by institutions.

“Student satisfaction is a vital element in determining the overall quality, success, and evolution of online learning environments” (Bourne & Moore, 2003, p. 246).

According to Wang (2006), quality metrics start with the consumer, and in the case of online learning, the consumer is the student. Students’ perceptions are “critically important to the development and future of online course and degree offerings—as consumers and providers” (Wilkes, Simon, & Brooks, 2006, p. 131). Wang also noted that “consumers” (i.e., students) are becoming part of a potentially huge market of life-long learners and that this market has stirred much competition in the realm of higher education. “Competition brings choices and choices empower consumers, who can now shop around for the best products and services at the most reasonable prices” (p. 267). Student satisfaction should demonstrate that students are pleased with the online learning
experience. Student satisfaction surveys and graduation and retention rates are good indicators of student satisfaction. “As online education continues to evolve in complexity, the need to evaluate students’ satisfaction with their overall learning experiences and with key elements of those experiences grows accordingly” (Bourne & Moore, p. 246).

Purpose of the Study

The purpose of this study is to examine the state of online education, specifically in regard to quality of a two-year Radiologic Technology distance education (online) program, compared to its traditional and hybrid counterparts in a single institution. The primary focus of this study is to address the various elements of online education in meeting the Sloan-C criteria (see Appendix E) “that online learning is at least equivalent to learning through the institution’s other delivery modes” (Moore, 2002, p. 54). Few studies have been conducted exploring the quality of online programs (McGorry, 2003), and even fewer studies have been conducted specifically in allied health.

Research Question

The following research question is the focus of this study:

In a single institution, are the quality outcomes of a two-year distance (online) education program in Radiologic Technology the same as or different from its traditional and hybrid counterparts, when assessed in terms of:

1. Learning effectiveness?
2. Scale (cost effectiveness and commitment)?
3. Access?
4. Faculty satisfaction?
5. Student satisfaction?
Potential Significance of the Study

The proliferation of distance (online) learning programs and continually increasing enrollments has brought about a surge of interest in this field on the part of researchers. Researchers have delved into several areas within distance learning, but there remains an ongoing debate in higher education, regarding the delivery of online education, its quality, integrity, and use of technology, which are not likely to abate anytime soon. For these reasons, more research is needed regarding the impact of technology on the online learning environment (ASRT, 2008; Huang, 2000; U.S. Department of Education, 2010).

Numerous studies have been conducted comparing traditional face-to-face course instruction to online course instruction (Bernard, Abrami, Lou, Borokhovski, Wade, Wozney, et al., 2004; Jahng, Krug, & Zhang, 2007; Shachar & Neumann, 2003; Sitzmann, Kraiger, Stewart, & Wisher, 2006; Zhao, Lei, Yan, & Tan, 2005), and research has already established that, in general, online learning is at least as effective as traditional face-to-face instruction (Russell, 1999). However, less frequently studied is the quality and effectiveness of online instruction, especially in online programs. Recent studies of online learning have noted the lack of empirical evidence on the effectiveness of online instructional strategies (ASRT, 2008), lack of research on the effects of specific strategies used for online design and instruction (Hiltz, Zhang, & Turoff, 2002), and the need for additional information about conditions under which online learning is effective (Lorenzo & Moore, 2002; U.S. Department of Education, 2010), “thus, learning effectiveness must be the first measure by which online education is judged” (Bourne & Moore, 2003, p. 14). For these reasons, this case study sought to fill the gap in research
regarding quality of online learning programs, specifically in the field of allied health. This case study is, in part, driven by the adoption of new educational technology (online education) in order to contrast the benefits of the new technology to that of traditional and hybrid education. The study is conducted at a community college that offers the same two-year Radiologic Technology Program via three different modes: traditional, hybrid, and online—in a single institution. The only difference being the mode of delivery.

Ideally, this study will contribute to the body of existing research and literature in the realm of online instruction, adding value to the ongoing investigation assisting educators and institutions of higher education in the quest to measure quality of online programs. “If the quality of online coursework can be assured, this technology [Internet and online education] has the potential to rapidly revolutionize higher education” (Dykman & Davis, 2008, p. 12). “Evaluation activities that assess alignment of pedagogy, educational activities, and desired learning outcomes, plus address specific issues of usability and benchmark achievement, provide valuable information for continual improvement” (Balanko, 2002, p. 8). Defining quality metrics and best practices can serve as a baseline ensuring the integrity, validity, and success of online programs. Given the incredibly dynamic nature of online education, driven by changes in technology and customer demand, this study can serve as a baseline for institutions seeking an infrastructure supporting continuous quality improvement (CQI) along all modes of educational delivery.

*Definitions of Terms*

The following definitions are used to provide a context for the major concepts explored in this study:
Accountability - the obligation or willingness to accept responsibility for one’s actions (http://www.merriam-webster.com/dictionary/accountability?show=0&t=1288453979).

Access – all learners who wish to learn online can access learning in a wide array of programs and courses (http://sloanconsortium.org/5pillars).

Accreditation – a process of external peer review of the quality of higher education institutions and programs to ensure that education provided by institutions meets acceptable levels of academic quality (CHEA, 2002; U.S. Department of Education, n.d.).

Asynchronous Learning Network (ALN) – a mode of online delivery allowing participants the freedom to access course materials and to do coursework on their own schedules.

Audio Conferencing – two-way voice communication among individuals using telecommunication technology.

Distance Education – an instructional system designed to deliver education to students using methods other than the traditional classroom setting, in particular where the instructor and student are not at the same location.

Distance Program – online didactic courses and primary clinical education outside the community housing the primary campus (Anonymous, personal communication, August 14, 2010).

Email (e-mail or electronic mail) – the exchange of computer-stored messages/information over a distance by electronic means.
Faculty Satisfaction – faculty are pleased with teaching online, citing appreciation and happiness (http://sloanconsortium.org/5pillars).

Hybrid/Blended learning – a combination of online and traditional education.

Hybrid Program – local students taking didactic classes online and performing clinical education within the community housing the primary campus (Anonymous, personal communication, August 14, 2010).

Learning Effectiveness – the provider demonstrates that online learning outcomes meet or exceed institutional, industry, and/or community standards (http://sloanconsortium.org/5pillars).

Online Chat – an interactive means of communicating allowing two or more persons to communicate in real time through the use of computer technology.

Online Communication – the exchange of information over the Internet and World Wide Web (WWW) facilitated through the use of a computer.

Online Discussions – a means of communicating allowing individual users to post messages online for others to see or access, but without the capacity for real-time interactive exchanges.

Online Education/Learning – the delivery of distance education using computer network technology, the WWW, and the Internet to facilitate interactive communications between instructor and students.

Scale (Cost effectiveness and commitment) – the provider continuously improves services while reducing costs (http://sloanconsortium.org/5pillars).

Standard – using something established by authority, custom, or general consent as a model or example; as criterion. Something set up and established by authority as a
rule for the measure of quantity, weight, extent, value, or quality (http://www.merriam-webster.com/dictionary/standard).

Student Satisfaction – students are pleased with their experiences in learning online, including interaction with instructors (http://sloanconsortium.org/5pillars).

Synchronous Learning Environment (SLE) – a mode of online delivery requiring all participants of a class to be present at the same time in order to join in on an online lesson.

Traditional/face-to-face instruction – conventional instructional method where instruction takes place in a classroom or designated area and where the instructor and students are both physically present at the same time.

Traditional Program – didactic classroom courses with clinical education within the community housing the primary campus (Anonymous, personal communication, August 14, 2010).

Video Conferencing – interactive telecommunication technology that allows two or more people at different locations to interact simultaneously.

Web-enhanced instruction – the use of the computer technology, software applications, and the WWW for the delivery of educational content for instructional purposes in a traditional classroom setting.

World Wide Web (WWW) – commonly referred to as The Web; a system of inter-linked documents (text, images, videos, and other multimedia) accessed via the Internet through computer technology.
Chapter Summary

The growing popularity of distance education and online programs has charged educators and institutions of higher education with the task of assessing and identifying factors that define quality in online education (Wang, 2006). At the same time, competition is also intensifying. Defining quality metrics and best practices can serve as a baseline insuring the integrity, validity, and success of online programs. Given the incredibly dynamic nature of online education, driven by changes in technology and customer demand, The Sloan-C’s Quality Framework—learning effectiveness, scale, access, faculty satisfaction, and student satisfaction—can serve as a baseline for institutions seeking an infrastructure supporting continuous quality improvement (CQI).

It is important to keep in mind that the Sloan-C’s Quality Framework is a continual work in progress (Moore, 2005), which requires continual monitoring and flexibility remaining open to newly emerging ideals and best practices. Researchers continue to explore the endless possibilities that can potentially influence these factors. On that note, this study serves merely as a starting point in the process of identifying best practices in the realm of online education and in the evaluation process of online programs.

Summary of Remaining Chapters

The following provides a brief description of the remaining chapters in this study. Chapter 2 reviews existing knowledge and current research pertaining to the history of online education and how quality is defined in higher education. Discussed is the traditional definition of quality in higher education including the idea of distinctiveness, which is analogous with Oxford and Cambridge Universities, the notion of selectivity,
using ACT and SAT scores as entrance equipments, and using measures such as contact hours, instructor credentials, and library holdings. The industrial definition of quality focuses on customer satisfaction, which uses models such as Total Quality Management (TQM) and Continuous Quality Improvement (CQI), and the Baldrige Program.

Chapter 3 defines the research design methodology as it relates to the research question, identifies the participants of the study, and discusses the procedures used for data collection and analysis. Chapter 4 presents the data analysis and findings resulting from the data collection process. Data is separated and analyzed in accordance with the framework used in this study. Chapter 5 discusses and interprets the results, implications of the findings, limitations of the study, as well as any recommendations for organizational procedures or practices as they relate to this study. Chapter 5 concludes with a summary based on the analysis and results.
Chapter 2: Literature Review

Introduction and Purpose

The purpose of this study is to examine the state of online education, specifically in regard to the quality of a two-year Radiologic Technology distance education (online) program, compared to its traditional and hybrid counterparts in a single institution. The primary focus is to address the various elements of online education in meeting the Sloan Consortium (Sloan-C) criteria (see Appendix E) “that online learning is at least equivalent to learning through the institution’s other delivery modes” (Moore, 2002, p. 54). The evaluation process uses the Sloan-C’s Quality Framework as a basis for this study.

Since Russell’s (1999) no significant difference findings, researchers continue to focus on comparison studies of distance and traditional education and still placing emphasis on individual courses rather than on entire programs. This emphasis has left a significant gap in the research, lacking focus on entire degree programs taught via distance learning (Buck, 2001; The Institute for Higher Education Policy, 1999). This gap in the research “raises important questions about whether a total academic program delivered by technology compares favorably with a program provided on campus” (The Institute for Higher Education Policy, 1999, p. 5). More recent research indicates that the rapid growth of online education “has superceded [sic] our understanding” of how to evaluate programs effectively (Mariasingam & Hanna, 2006, p. 1).
Review of the Literature

The purpose of this chapter is to review the literature regarding the quality of online programs. When evaluating quality of online programs, one must first consider the meaning of *quality* by answering two vital questions:

1. How is quality defined in higher education?
2. How is quality defined in distance (online) education?

Issues surrounding quality programs in higher education in general are applicable to that of online programs and ultimately guide the evaluation process. This study, which is driven by the rapid growth in online learning, will be filling a much needed gap in research on how to best evaluate quality of online programs. The review of the literature begins with a review of quality in higher education, followed by a review of quality in online education and research specific to the Sloan-C, and concluding with a review of quality evaluation and the role of accreditation. The studies examined are not exhaustive, but rather are representative of the types of approaches taken in the effort to define and evaluate online education.

Quality in Higher Education

In order to evaluate programs of higher education for quality, one must first define quality, or at minimum articulate a universally accepted definition of quality. Authors have noted that defining and measuring quality has proven to be a difficult task (Meyer, 2002; Sallis, 2002) because there is the presence of multiple meanings of quality; quality means different things to different people (Claus & Dooley, 2005; Fresen, 2002; Harvey & Green, 1993).
In higher education, “Traditionally, the concept of quality has been associated with the notion of distinctiveness, of something special or ‘high class’. A quality product confers status on the owner or users” (Harvey & Green, 1993, p. 4). Defining quality included such measures as contact hours, instructor credentials, physical attendance, and library holdings (Meyer, 2002; Pond, 2002), and analogous with most people’s perceptions of Oxford and Cambridge Universities (Green, 1994). Koslowski (2006) refers to this as the resource view, which holds that the quality of an institution is determined by assessing its internal resources, for example library holdings, number of faculty with terminal degrees, size of endowments, and its reputation.

Kuh and Pascarella (2004) noted that

In the minds of people, the best colleges are those that are the most selective. In large part, this view is driven by the popular U.S. News and World Report rankings that use ACT or SAT scores of entering students—a proxy for selectivity—as a primary measure of quality. (p. 53)

However, selectivity is not the only measure used for quality, nor should it be. In fact, Kuh and Pascarella’s (2004) report found that institutional selectivity had little impact on educational effectiveness. They suggested that “it would be much more productive to focus on developing indicators that more accurately represent what happens to students during college” (p. 58), and that this information needs to be accessible to all stakeholders (i.e., prospective students, policymakers, and institutional leaders).

Scott (1994) noted that “the very factors that have made quality a central policy concern in higher education . . . have also made it difficult to agree on a common definition of academic quality” (p. 62). McGorry (2003) further substantiates this stating,
“The goal of measuring quality has been quite elusive in past research, as there are many other intangible dimensions of ‘quality’ that make the measurement of the concept quite challenging” (p.160). How one defines quality greatly depends on one’s role, or position as a stakeholder, which has led to differences of opinion as to what quality means. Meyer (2002), in regard to online education, identified stakeholders as the federal government, accreditors, state regulators, faculty organizations, and students alike.

The issue regarding defining quality education is universal. In reference to Western European higher education, Westerheijden, Brennan, and Maassen (1994) noted:

Besides the plethora of different possible definitions of quality, it should be realized that in any higher education system many actors or stakeholders are involved (higher education institutions with their governors, managers, teachers and researchers, support staff, students, governmental agencies, employers, academic and professional organizations, etc.), and nothing detains these actors from choosing their own definition of quality. (p. 17)

The traditional industrial definition of quality states that quality “is an essential measurable aspect of a product or service and is achieved when expectations or requirements are met” (Koslowski, 2006, p.278). Koslowski furthermore states, that quality is defined by the customer. In general, the quality of something depends on the criteria being applied, which are subjective, resulting from one’s perception and expectation. W. Edward Deming is credited with launching the Total Quality Management (TQM) movement and continuous quality improvement (CQI) in the business sector. TQM is a philosophy of management as well as a methodology (Sallis, 1996, 2002) for CQI of products and processes to regain competitiveness and achieve
high customer satisfaction, and is based on the premise that the quality of products and processes is the responsibility of everyone involved. “Customer satisfaction is the central goal of TQM” (Sakthivel & Raju, 2006, p. 25). Both TQM and CQI have been applied in higher education and their movement into academe has been recent, mostly since the 1990s (Sallis, 1996, 2002). Sakthivel & Raju (2006) stated that TQM is seen by some as a management system, with customer/student satisfactions as the crucial element, and others see TQM as a philosophy fostering change in the educational institution. Harvey and Green (1993) believe that TQM is not so much a view of quality, but rather “a way of confronting organisational [sic] challenges” (p. 23). Widely differing conceptualizations of quality can be grouped into five discrete, but interrelated ways of thinking about quality:

1. **Quality as exceptional** as in terms of excellence/high standards.

2. **Quality as perfection or consistency** focused on process and sets specifications that aim to meet perfectly (zero defects, and getting things right the first time).

3. **Quality as fitness of purpose** of a product or service in meeting customer requirements and in meeting the organizational mission.

4. **Quality as value for money** equated with level of specification and that it is directly related to cost.

5. **Quality as transformation** rooted in the notion of qualitative change, a fundamental change form. For example, when ice is transformed into water if it experiences an increase in temperature. This notion is well established in Western philosophy and can be found in the discussion of dialectical transformation in the works of Aristotle, Kant, Hegel and Marx. It is at the heart of transcendental philosophies.
around the world, such as Buddhism and Jainism. Education is not a service for a customer, rather an ongoing process of transformation of the participant, which leads to two notions that quality in education is enhancing the consumer and empowering the consumer (Harvey & Green, 1993; Harvey & Knight, 1996).

Harvey and Knight (1996) make the argument that all five dimensions are interrelated. The first four dimensions—quality as exceptional, quality as perfection or consistency, quality as fitness of purpose, and quality as value for money—are not necessarily end products, rather they are all interrelated; the fifth dimension—quality as transformative—can incorporate the other four dimensions to some extent.

Green (1994) identified six different concepts of quality used in higher education:

1. The traditional concept of quality based on the notion of distinctiveness.
2. Conformance to specification or standards as basis for measurement based on the notion of quality control in the manufacturing industry.
3. Quality as fitness for purpose. Quality as judged in terms of the extent to which a product or service meets its stated purpose(s) and objective(s).
4. Quality as effectiveness in achieving institutional goals, evaluating quality in higher education at the institutional level.
5. Quality as meeting customers’ needs, drawing on industries' approach to quality, as a crucial factor in the design of a product or service.
6. The pragmatic definition accepting the concept that quality is a relative concept consisting of different meanings in different contexts (pp. 13-17).

Sallis (1996, 2002) noted that to promote quality and excellence in business, the quality movement introduced various quality standards and awards, such as the UK’s
Citizen’s Charter, the Business Excellence Model, and the Investors in People standard. 
Japan has the Deming Prize, and the European Foundation for Quality Management has 
the European Quality Award, while internationally there is the International Standard 
ISO9000 series. The U.S. has the Malcolm Baldrige National Quality Award. 

The Baldrige Program, that administrates the Malcolm Baldrige National Quality 
Award, was initially established by the Malcolm Bridge National Quality Improvement 
Act of 1987 (Public Law 100-107). Initially, the goal of the Act was to heighten 
competiveness of businesses in the U.S. and raise awareness about the importance of 
excellence in business, while focusing primarily on customer satisfaction (Mizikaci, 
2006). Its scope has since (in 1999) been expanded to include education as well 
(http://www.nist.gov/index.html); as such, the Malcolm Baldrige is a widely used model 
in higher education today (Mizikaci, 2006). “The Baldrige criteria provide a 
comprehensive way to achieve and sustain high performance across the entire 
[educational] organization” (http://www.nist.gov/baldrige/enter/education.cfm). 

Green (1994) noted that “Central to the debate about quality in the educational 
context is the issue of whether concepts derived from the profit-centered private sector 
can be readily transferred to public service organizations” (p. 7). It can be argued that 
academia differs greatly from the business sector with a very different mission, objectives 
and role, therefore requiring different treatment. Nonetheless, business applications still 
continue to move into academia. Meanwhile, the adoption of TQM in higher education 
continues to remain controversial and slow moving in the realm of academia. The 
National Survey of Student Engagement (NSSE) of undergraduate education is another 
source used as a quality indicator for higher education. The NSSE Institute for Effective
Educational Practice conducts a national survey annually assessing students’ perceptions of student engagement to document dimensions of quality in higher education. The NSSE is representative of what they believe to be the two critical factors of collegiate quality: (a) the amount of time and effort students put forth in their studies and other educational activities considered purposeful and (b) how the institution deploys its resources and organizes the curriculum and other learning opportunities to get students to participate in activities linked to student learning (http://nsse.iub.edu/html/about.cfm). The assessment is empirically based on principles of good practices in undergraduate education, such as student-faculty interaction, active/collaborative learning, high expectations, and a supportive campus environment (Kuh & Pascarella, 2004; NSSE, 2008; Shelton, 2010).

**Quality in Distance (Online) Education**

Now with the growing popularity of distance education and online programs, educators and institutions of higher education have been charged with the task of assessing and identifying factors that define quality online education (Wang, 2006). However, quality online education has been equally difficult to define; there is no universally accepted definition (Claus & Dooley, 2005), which may be because quality has yet to be defined for the traditional classroom setting (Meyer, 2002), and not all colleges and universities providing online programs are created equal. As with quality of higher education in general, how one defines online quality greatly depends on one’s role or position. “Each participant group [students and faculty] might conceivably hold differing opinions about, and perceptions of, what constitutes online course quality” (Tanner, Noser & Totaro, 2009, p. 30), which has conceivably led to differences of opinion as to what quality means.
The Institute for Higher Education Policy (2000) noted that “Internet-based distance education is, in many ways, fundamentally different than traditional classroom-based education. Among other things, it is this distinctly different concept of time that engenders concern and skepticism from many in the higher education community” (p. 7). Still, many of the same elements apply to both traditional and online and “just because a course is online does not mean that the quality is any less” (Oblinger, 2007, p. 32) than in a traditionally delivered course. However, online in particular presents additional challenges, which “requires that we abandon traditional indicators of ‘quality’ such as ‘contact hours,’ ‘library holdings,’ and ‘physical attendance’ among others in favor of more meaningful measures” (Pond, 2002, p. 5).

The challenge is to determine what measure(s) to use, and whether some measures should be given more weight than others when evaluating quality (Oblinger, 2007). Typically, research has measured quality online instruction in such terms as learning outcomes/effectiveness as judged by the students’ level of understanding, retention and completion rates, student and faculty perceptions/satisfaction, access, and cost. While numerous studies have focused on the effectiveness of online learning, few studies have focused on understanding and measuring perceptions relating specifically to quality of online learning, and much of the past research in regard to online quality has focused on comparison studies, comparing courses in distance and traditional education (Pond, 2002), rather than on programs.

As noted by Meyer (2002), one of the most quoted and perhaps most misunderstood bodies of research on distance education was conducted by Thomas L. Russell. Russell’s (1999) meta-analysis compiled 355 studies, dating from 1928 to 1998,
on the use of technology for distance education and whether the medium used had any impact on course learning outcomes; his findings resulted in the “no significant difference phenomenon.” Russell’s study concluded that no matter what type of technology was used (i.e., interactive video, television, or satellite), in and of itself, technology did not improve course learning outcomes (but it also did not degenerate instruction); technology is simply a means of delivering course content. In addition, Meyer noted that Russell’s meta-analysis revealed that prior research had focused primarily on individual courses, not on entire academic programs, and that “Only 40 of the 355 studies specifically included computer-based instruction, and the compilation was completed before the blossoming of courses using the Web [World Wide Web]” (p. 14). This is significant because technology has changed drastically since Russell’s 1999 study. Technology such as interactive video and television in many cases have been phased out and/or replaced with newer technologies such as computers and the Internet.

Since 1999, researchers continue to focus on comparison studies of distance and traditional education evaluating quality (Meyer, 2002) as well as on individual’s perceptions of quality while still placing emphasis on individual courses rather than on entire programs. In fact, there is quite a large body of literature regarding online quality that focuses on individual perceptions/experiences of students and faculty (Meyer). With the emerging trends of identifying quality in the business sector, which place emphasis on customer satisfaction (e.g., TQM and Malcolm Bridge), it is no wonder that research in higher education has focused so intently on perceptions/satisfaction as a means of identifying and defining quality in higher and distance education. Johnson, Aragon, Shaik, & Palma-Rivas, (2000) noted:
Attempts to compare online and face-to-face learning environments are often discounted because of the great dissimilarity between the two learning environments. This is a classic example of comparing apples to oranges. Studies of this type should not attempt to determine if one fruit is better than the other, instead they should demonstrate that, if grown properly, different fruits can be equal in terms of taste and nutritional value. (p. 31)

 Nonetheless, attempts to determine if differing environments can be equivalent in terms of learning and satisfaction can be significant. Student satisfaction is considered to be an important element in determining quality of distance education (Moore, 2002); therefore, evaluators should monitor quality to include technology and support services and to ascertain student satisfaction in order to evaluate course design and instruction (Rovai, 2003). Wang (2006) noted that quality assurance measures start with the consumer, and in the case of online learning, the consumer is the student and students’ perceptions are the best criteria for assessment. In addition, Wang noted how consumers (i.e., students) are becoming part of a potentially huge market of life-long learners, and this market has stirred much competition in the realm of higher education. “Competition brings choices and choices empower consumers, who can now shop around for the best products and services at the most reasonable prices” (Wang, p. 267). Therefore, students’ perceptions are “critically important to the development and future of online course and degree offerings—as consumers and providers” (Wilkes, Simon, & Brooks, 2006, p. 131). The key element for student satisfaction is to determine what is important to the learner in the context of online learning.
Faculty perceptions are equally important; they are a driving force of an institution and their perceptions weigh heavily on the image of distance learning programs and have a strong impact on the institutions that support them” (Hines, 2008, p. ii). However, the paucity of literature pertaining to faculty perceptions about quality of online programs is startling considering its importance. The key element for faculty satisfaction is to determine what is important to the instructor in the context of online learning.

The purpose of research regarding individuals’ perceptions on distance education, specifically online education, is to help educators develop a deeper understanding of how students’ and faculty’s perceptions play a role in perceived quality and efficacy of online instruction. It also gives both students and faculty a voice in the design and development of online courses and programs. This insight can be significant. Increased student satisfaction potentially may translate to an increase in student enrollments, increase in retention rates, and increase in the number of courses and programs offered by institutions. Improved faculty satisfaction potentially may translate to recruitment of highly skilled staff and faculty members, reduced employee turnover rates, and ultimately highly productive employees. Perceptions of these subject populations can also assist in the future design of various models and frameworks for online learning, serve as a benchmark to formulate program goals, and assist in the development of online policies. Ultimately this will have a positive impact on learning outcomes and improve the overall experience and quality of distance educational programs. Appendix F highlights the articles used for this literature review to determine where quality was being evaluated in regard to online education.
The literature has demonstrated that assessing quality at the course, program, faculty, and student levels has been highly individualistic and varies greatly from one study to the next (see Appendix F). A broad and variegated array of methods and metrics have been used, including numerous comparison studies, which has made it difficult for researchers to come to any absolute conclusions regarding what quality is and how to define it. The studies listed in Appendix F are representative of research on quality (since 1999) of distance (online) education based on individual experiences. Studies were selected based on two factors: (a) those with the intent to identify elements related to improving and ensuring quality in online education and (b) those based on the concept that perceptions can assist in improving online education—therefore driving quality. Appendix F identifies the primary focus, method, population, and primary variables/metrics for each of the selected studies.

The review of the literature on individuals’ perceptions listed in Appendix F has demonstrated an increasing number of studies with overall high rates of satisfaction with online learning since 1999. This may be attributed to improvements in technology and increased experience of the individuals using such technology over the last decade. Most students reported that their computer and Internet skills were good to excellent. Computer skills for instructors varied from little to excellent. Students continually reported the importance of several critical factors related to the quality of online. Areas most frequently mentioned as being of high or very high importance to students were interaction (student-instructor and student-student), communication (i.e., emails, discussions, and chats), timely feedback, the need for the teacher’s voice, and technology support services. Areas in which students most commonly voiced concerns were issues
relating to technology and the lack of interaction in the online learning environment. In addition, students voiced the need for additional course information or links to further referencing other sites and offering information on the same course topic. Students’ perceptions and expectations of online discussions were mixed. Comments included that the discussions were used to merely report, were too drawn out, and/or did not progress to a point of critical thinking. Yet overall, students seemed to value the reflective nature of online discussions. Accessibility, convenience, and flexibility have remained the top three reasons why students take online courses.

Areas most frequently mentioned as being of high or very high importance to faculty were flexibility (for students and instructors) and student access. Concerns of faculty regarding online instruction were the need for students to teach themselves the material and to be more self-disciplined and that developing and teaching courses online was more time consuming than traditional teaching providing no additional compensation. In addition, the majority of faculty felt the textbook was much more crucial in online than traditional. Interestingly, for both groups of participants, experience teaching or learning online tended to matter in relation to perceptions of quality. The majority of faculty with no experience teaching and/or developing online courses believed that online is inferior to traditional, while faculty who had experience teaching and/or developing online courses believed that online is as good as or better than traditional. Similarly, students who had taken online courses believed that the quality of online courses was as good as that of traditional courses; whereas, students who had not taken online courses disagreed.
When students and faculty were asked what was working with online learning, common responses were it is engaging fostering a sense of belonging, encourages critical thinking, offers the opportunity to connect with people across the country, and increases content knowledge. Also, discussions allow time for reflection, courses are individually paced and foster a sense of equality, and students were typically supportive of each other. When students and faculty were asked what was not working with online learning, common responses that arose were issues regarding technology and support, lack of student-student and student-faculty interaction leading to a sense of isolation, lack of accessibility of course materials, lack of personal connection with faculty, testing concerns, and an element of anonymity. Another major concern was that online learning was more time consuming than traditional.

Overall, the studies listed in Appendix F identified that quality of online courses and programs was rated high, and in some cases as good as or even better than traditional. Most students stated they would take another online course again as well as recommend online courses to others. A majority of faculty also stated they had either recommended or would recommend an online course, but many also expressed they would not teach as many courses as possible online. In general, enthusiasm for this method of learning by all participants (student and faculty) was positive and, therefore, promising for the future of online learning.

Administrators’ perceptions regarding quality online programs are not without merit. Kaye Shelton (2010) recently developed the Quality Scorecard (see Appendix G), a tool for the administration of online educational programs. The study was in response to the increasing demands for public accountability in higher education, specifically in
distance (online) education. The intention of the Quality Scorecard is for use by institutions that are seeking methods for CQI to demonstrate the overall quality within their educational programs. The Quality Scorecard is just that—an instrument for assessing quality within online education programs. The method of scoring is based on the original set of quality indicators from the Institute for Higher Education Policy (2000) study titled, Quality on the Line: Benchmarks for Success in Internet-Based Distance Education (Shelton, 2010). Further development of the benchmarks from the IHEP study resulted in nine final categories used in the Quality Scorecard. Each category is further broken down into a list of quality indicators. At the onset of this study, the Quality Scorecard was being considered for use by the Sloan-C as an “interactive [tool] on their [Sloan-C] website and further become a quality seal given by them [Sloan-C] with an evaluation process” (K. Shelton, personal communication, November 18, 2010). The final indicators are intended to be used by administrators in determining strengths and weaknesses of their educational programs. The nine categories, including quality indicators for each, 70 in all, are: institutional support, technology support, course development and institutional design, course structure, teaching and learning, social and student engagement, faculty support, student support, and evaluation and assessment.

Research revealed few studies that included components related specifically to online programs; the majority of the literature focuses solely on online courses. Harroff and Valentine (2006) conducted research focusing on identifying the dimensions of program quality specific to Web-based adult education. Their research identified the “six-factor” (p. 10) solution for dimensions of program quality: quality of instruction, quality of administrative recognition and support, quality of advisement, quality of technical
support, quality of advance information to potential students, and the quality of course evaluation procedures.

According to Harroff and Valentine (2006):

1. The quality of instruction focuses on the quality of course materials and strategies, quality of feedback, course clarity, and learner-centeredness.

2. The quality of administrative recognition and support focuses on institutional administrators’ recognition of the special demands involved in Web-based instruction as well as the adequacy of resources and compensation.

3. The quality of advisement focuses on the quality of information and support enrolled online students receive from the organization.

4. The quality of technical support focuses on the technical assistance and training available to online faculty.

5. The quality of advance information to potential students focuses on the quality and accuracy of information received by potential students during the recruitment and admissions process.

6. The quality of course evaluation procedures focuses on the opportunities provided online students to evaluate courses with frankness and safety. (p. 10)

Quality Standards for Program Evaluation

Although many institutions have expanded online course offerings, many institutions have still not considered the issue of program evaluation (Fresen, 2002; McGorry, 2003; Sonwalkar, 2002). There have been several studies on quality indicators for evaluating online courses and programs, but few studies have attempted to implement the use of a quality framework or model for evaluating quality of an online program. The
need for a comprehensive assessment model that can be used as a tool for evaluating online programs is strong (Carnevale, 2001; Lockhart & Lacy, 2002); this is “critical to future program growth and expansion” (Mariasingam & Hanna, 2006, p. 1). With the increased student demand for distance education, the issue of program evaluation has become of vital importance (Mariasingam & Hanna) in order for institutions of higher education to demonstrate that they are delivering programs of high quality (Lockhart & Lacy, 2002). Identifying which measures to use, though, requires developing a universally agreed upon set of quality standards (Pond, 2002) and a model for program evaluation. The issue of program evaluation introduces the development of best practices—a commonly accepted procedure regarded as the most effective method, procedure, or process identified for delivering a particular outcome—and the role of accreditation and evaluation.

The Council for Higher Education Accreditation (CHEA), in its glossary of key terms for International Quality Review, stated that accreditation is “The process of external quality review used in higher education to scrutinize colleges, universities, and higher education programs” and, that quality “refers to ‘fitness for purpose’—meeting or conforming to generally accepted standards as defined by an accrediting or quality assurance body” (http://www.chea.org/international/inter_glossary01.html#qa). A standard, according to Merriam-Webster, is defined as “something established by authority, custom, or general consent as a model or example; as criterion”, and as “something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality” (http://www.merriam-webster.com/dictionary/standard). Quality standards for higher education are held at the federal and state level, which holds
institutions of higher education accountable, accepting responsibility for quality in higher education. Accreditation by a governing body is needed to assure stakeholders that the program meets all the appropriate criteria for quality.

The goal of accreditation in higher education is to ensure that education provided by institutions meets acceptable levels of academic quality (CHEA, 2002; U.S. Department of Education, n.d.). Such agencies include the six regional institutional accreditors in the United States: (a) Middle States Association of Schools and Colleges Commission on Higher Education (MSACS), (b) New England Association of Schools and Colleges Commission on Institutions of Higher Education (NEASC), (c) North Central Association of Schools and Colleges Commission on Institutions of Higher Education (NCA), (d) Southern Association of Colleges and Schools Commission on Colleges (SACS), (e) Northwest Association of Schools and Colleges (NWCCU), and (f) the Western Association of Schools and Colleges Accrediting Commission (WASC), as well as other organizations that are recognized by the United States Department of Education (USDE) such as the Council for Higher Education Accreditation (CHEA).

The USDE is not an accrediting agency in and of itself, but it is: required by law to publish a list of nationally recognized accrediting agencies that the Secretary determines to be reliable authorities as to the quality of education or training provided by the institutions of higher education and the higher education programs they accredit (U.S. Department of Education, n.d.) and in accordance with the Higher Education Act of 1965, as amended (U.S. Department of Education, n.d.). In effect, then, the recognition of such agencies (regional and national) and their accreditation standards by the U.S. Secretary of Education can be
considered an endorsement on the part of the Secretary as to what defines quality education.

The USDE, various national and regional accrediting agencies, and organizations for higher education have prepared guidelines and developed best practices for reviewing distance education programs (see Appendix H). The first set of best practices, also referred to as guidelines, for distance education were developed as early as 1995 by the Western Cooperative for Educational Telecommunications (Meyer, 2002), now known as WICHE Cooperative for Educational Technologies (WCET). The document entitled *Principles of Good Practice for Electronically Offered Academic Degree and Certificate Programs* became known as the hallmark of best practices in technology-mediated learning (http://wcet.wiche.edu/advance/resources). The principles were adopted by the regional commissions in response to the fast-paced growth in distance education and the commissions’ commitment to ensuring high quality in distance education programs (WICHE Cooperative for Educational Technologies, n.d.). The initial three principles were curriculum and instruction, evaluation and assessment, and institutional context and commitment. The latter of these was further subdivided into role and mission, faculty support, resources for learning, students and student services, and commitment to support. The following were the final seven principles adopted.

1. Curriculum and Instruction
2. Role and Mission
3. Faculty Support
4. Resources for Learning
5. Students and Student Services
6. Commitment to Support

7. Evaluation and Assessment (WCET, 1995)

Curriculum and instruction is curriculum that is pedagogically driven to ensure (a) that learning outcomes are appropriate for the rigor and breadth of the award (i.e., degree or certificate), (b) that the program is coherent and complete, (c) that faculty and students are provided with both real-time and delayed means of interaction, and (d) that oversight is being provided by qualified faculty members. Role and mission ensures that the program is in line with the institution’s role and mission and that processes are in place for the review and approval of the appropriateness of the technology being used. Faculty support ensures that the appropriate support services are provided to faculty, including training for faculty who teach using technology. Resources for learning ensures that students have the appropriate learning resources that they will need. Students and student services are intended to reach out to all students ensuring the program clearly and fully informs students regarding curriculum, program requirements, faculty/student relationships, necessary equipment requirements and technology skills, and other resources such as support services. It also ensures (a) that financial policies and procedures are in place, (b) that support services are accessible to all students, (c) that accepted students have the necessary background in terms of knowledge and technical skills needed for the program, and (d) that the program and services are accurately represented to potential students. Commitment to support focuses on the institution’s role of ensuring not only that policies support faculty evaluation and growth, but that the institution is committed to all aspects of continuity of the program. Evaluation and assessment ensures that the institution continually evaluates the effectiveness of the
program and that students have access to such data. It also ensures that the institution evaluates and reports student achievement at the course and program levels (WCET, 1995). According to the WCET (1995), the seven principles were designed to be sufficiently flexible to allow their application to a wide range of programs. Johnstone and Krauth (1996) noted that the principles “are based on research on state policies governing interstate program delivery and on extensive reviews, discussions, and comments by higher education leaders in the West” (p. 39). Appendix H details the principle actions for each category.

In 2000, the Institute for Higher Education Policy (IHEP) reported on quality of Internet-based distance learning in order to provide more tangible measures of quality in distance education. The study was timely as well as important due to the fast “pace of growth” (p. vii) in online learning and how drastically different online learning is from traditional face-to-face learning (IHEP). The study aimed to answer one main question, whether the current benchmarks that were initially developed for all types of distance learning are or were applicable to Internet-based (online) learning.

The IHEP case study consisted of three sequential phases: phase 1, an extensive literature review; phase 2, identification of institutions that had substantial experience in distance education; and phase 3, site visits to the institution’s identified in phase 2. Phase 1, the literature review, was conducted in order to compile a list of benchmarks for Internet-based (online) distance learning as identified in the literature as well as benchmarks recommended by other organizations and groups. A total of 45 benchmarks were identified, and the final analysis resulted in a total of 24 benchmarks. Phase 2, the process of selecting institutions, used the following criteria: (a) the institution must have
substantial experience in distance education, (b) the institution must be recognized as among the leaders in distance education, (c) the institution must be regionally accredited, and (d) the institution must offer more than one degree program via online distance learning. The search resulted in the participation of six institutions: Brevard Community College, Regents College, the University of Illinois and Urbana-Champaign, the University of Maryland College, Utah State University, and Weber State University (IHEP, 2000). Phase 3, conducting site visits, was to assess the degree and manner in which the institutions were incorporating the benchmarks in practice. According to IHEP (2000):

The results of the study revealed that, for the most part, the benchmarks for quality Internet-based distance education were considered important and, in general, the institutions strove to incorporate them into their policies, practices, and procedures. At the same time, several benchmarks did not enjoy consensus among administrators, faculty, and students at the institutions and, in some instances, were not considered mandatory to ensure quality in distance education. (p.2)

The 24 benchmarks identified were organized into seven categories of quality measures considered essential to ensuring quality in Internet-based distance learning. The final seven categories are as follows.

1. Institutional Support Benchmarks

   - A documented technology plan that includes electronic security measures (i.e., password protection, encryption, back-up systems) is in
place and operational to ensure both quality standards and the integrity and validity of information.

- The reliability of the technology delivery system is as failsafe as possible.
- A centralized system provides support for building and maintaining the distance education infrastructure.

2. Course Development Benchmarks

- Guidelines regarding minimum standards are used for course development, design, and delivery, while learning outcomes—not the availability of existing technology—determine the technology being used to deliver course content.
- Instructional materials are reviewed periodically to ensure they meet program standards.
- Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements.

3. Teaching/Learning Benchmarks

- Student interaction with faculty and other students is an essential characteristic and is facilitated through a variety of ways, including voice-mail and/or e-mail.
- Feedback to student assignments and questions is constructive and provided in a timely manner.
Students are instructed in the proper methods of effective research, including assessment of the validity of resources.

4. Course Structure Benchmarks

- Before starting an online program, students are advised about the program to determine (1) if they possess the self-motivation and commitment to learn at a distance and (2) if they have access to the minimal technology required by the course design.
- Students are provided with supplemental course information that outlines course objectives, concepts, and ideas, and learning outcomes for each course are summarized in a clearly written, straightforward statement.
- Students have access to sufficient library resources that may include a ‘virtual library’ accessible through the World Wide Web.
- Faculty and students agree upon expectations regarding times for student assignment completion and faculty response.

5. Student Support Benchmarks

- Students receive information about programs, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services.
- Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources.
Throughout the duration of the course/program, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course, and convenient access to technical support staff.

Questions directed to student service personnel are answered accurately and quickly, with a structured system in place to address student complaints.

6. Faculty Support Benchmarks

- Technical assistance in course development is available to faculty, who are encouraged to use it.
- Faculty members are assisted in the transition from classroom teaching to online instruction and are assessed during the process.
- Instructor training and assistance, including peer mentoring, continues through the progression of the online course.
- Faculty members are provided with written resources to deal with issues arising from student use of electronically-accessed data.

7. Evaluation and Assessment Benchmarks

- The program’s educational effectiveness and teaching/learning process is assessed through an evaluation process that uses several methods and applies specific standards.
- Data on enrollment, costs, and successful/innovative uses of technology are used to evaluate program effectiveness.
Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness (see Appendix H). (Institute for Higher Education Policy, 2000, pp. 25-26)

In 2002, the Council for Higher Education Accreditation (CHEA) reported on the scope and impact of distance learning and what the accrediting community was doing to assure quality in distance education. The report included eight regional accrediting agencies: (a) the Middle States Association of Schools and Colleges Commission on Higher Education (MSACS); (b) the New England Association of Schools and Colleges (NEASC), the Commission on Institutions of Higher Education (CIHE); (c) the New England Association of Schools and Colleges (NEASC), the Commission on Technical and Career Institutions (CTCI); (d) the North Central Association of Colleges and Schools The Higher Learning Commission (NCA-HLC); (e) the Northwest Association of Schools and Colleges Commission on Colleges and Universities (NWCCU); (f) the Southern Association of Colleges and Schools Commission on Colleges (SACS); (g) the Western Association of Schools and Colleges (WASC), the Accrediting Commission for Community and Junior Colleges (ACCJC); and (h) the Western Association of Schools and Colleges (WASC), Accrediting Commission for Senior Colleges and Universities (ACSCU). The report also included nine national accrediting agencies: (a) the Accrediting Association of Biblical Colleges Commission on Accreditation (AABC); (b) the Accrediting Bureau of Health Education Schools (ABHES); (c) the Accrediting Commission of Career Schools and Colleges of Technology (ACCSCCT); (d) the Accrediting Commission of the Distance Education and Training Council (DETC); (e) the Accrediting Council for Continuing Education and Training (ACCET); (f) the
Accrediting Council for Independent Colleges and Schools (ACICS); (g) the Association of Theological Schools in the United States and Canada (ATS); (h) the Council on Occupational Education (COE); and (i) the Transnational Association of Christian Colleges and Schools Accrediting Commission (TRACS). All of the agencies were recognized by either the USDE or Council for Higher Education Accreditation (CHEA).

The report examined the 17 institutional accreditors, regional and national, collecting data to obtain information on distance learning from the institutions which they accredit. In all, they accredit 5,655 degree-granting and non-degree-granting postsecondary institutions within the United States (CHEA, 2002). The report described the scope and impact of distance learning on higher education, identified the primary challenges that distance learning posed for accreditation, and most importantly, “it described the thoughtful and comprehensive response to date [2002] of the accrediting community to assure quality in distance learning” (p. 1). The accrediting organizations have responded to the challenges by making significant changes. The eight regional accrediting organizations responded by adopting a common platform for review of distance learning, and the nine national accrediting organizations responded by independently developing standards, policies, or processes for the evaluation of distance learning. According to CHEA:

Accrediting organizations routinely review seven key areas of institutional activity when examining the quality of distance learning.

1. Institutional Mission. Does offering distance learning make sense in this institution?
2. Institutional Organizational Structure. Is the institution suitably structured to offer quality distance learning?

3. Institutional Resources. Does the institution sustain adequate financing to offer quality distance learning?

4. Curriculum and Instruction. Does the institution have appropriate curricula and design of instruction to offer quality distance learning?

5. Faculty Support. Are faculty competent engaged in offering distance learning and do they have adequate resources, facilities, and equipment?

6. Student Support. Do students have needed counseling, advising, equipment, facilities, and instructional materials to pursue distance learning?

7. Student Learning Outcomes. Does the institution routinely evaluate the quality of distance learning based on evidence of student achievement (see Appendix H)? (p. 7)

Later, in 2004, The U.S. Government Accountability Office (GAO) reported on Distance Education (GAO-04-279), recommending that the Secretary of Education “…develop guidelines with accrediting agencies and schools on assessing distance education quality” (U.S. Government Accountability Office, 2004). In response, in 2006, the USDE, Office of Post Secondary Education, engaged in discussions with representatives of seven of the regional accrediting agencies (MSACS, NEASC, NCA, NWCCU, SACS, WASC Junior, and WASC Senior) and from five of the national accrediting agencies (ACCSCT, ACCET, American Speech-Language-Hearing Association, Council on Academic Accreditation in Audiology, and Speech-Language Pathology [ASHA], ATS, and DETC) to identify guidelines in the form of best practices in the accreditation of distance education programs. The USDE discovered that in spite of
the differences in the accrediting organizations’ “there was remarkable consistency in how they evaluated distance education programs, and in what they considered to be [the] most important indicators” (2006, p. 2). Discussions generated an abundance of evidence in which they considered to be “indicative of quality in distance education” (p. 3). The evidence collected was categorized into six key areas.

1. Institutional Mission
2. Curriculum and Instruction
3. Faculty Support
4. Student and Academic Services
5. Planning for Sustainability and Growth

Institutional mission states the importance of ensuring that distance education is in line with the organization’s mission. Curriculum and instruction states that no matter what process an institution uses for the development of curriculum and instruction, the process will result in coherent curricula and well-designed courses, including appropriate academic oversight. Faculty support acknowledges that the online learning environment is much different than the traditional learning environment, therefore, needing to provide a range of faculty support services (i.e., faculty training and development, a designated unit/department providing ongoing support) and access to resources. Student and academic services states the need for providing the full range of services (i.e., admissions and registration, enrollment and academic advising, financial aid, career counseling, library resources, textbook ordering, technical assistance, and veterans and disability assistance) and resources (i.e., self-assessment of their skills and aptitude for distance
learning and orientation to distance education) convenient for distance education students. Planning for sustainability and growth states the importance of using “a systemic approach whereby student, academic and faculty services related to distance education are integrated into the various components of the institution” (U.S. Department of Education, 2006, p. 11). Simply put, instead of having a single department or central office responsible for all distance education programs, each department (i.e., school or college) would be responsible for providing their own services in the distance education format. In addition, it states that institutions need to be strategic regarding the sustainability and growth of their distance education programs, ensuring the availability of adequate resources (i.e., qualified and trained faculty to staff additional sections of courses, sufficient capacity in student and academic services and personnel, a robust scalable technical infrastructure, and funds for course development and marketing of new programs) in order to serve increasing numbers of student enrollments. Evaluation and assessment states the need for institutions to measure student learning, measure student experiences, and identify what changes it makes based on these assessments (U.S. Department of Education, 2006). Appendix H details the principle actions for each category.

One of the most recent developments in evaluation of online educational programs was by the Sloan-C. The Sloan-C developed a Quality Framework consisting of five pillars: learning effectiveness, scale (cost effectiveness and commitment), access, faculty satisfaction, and student satisfaction, which are considered the building blocks for quality online learning (see Appendix E). The five pillars or categories detail specific goals and
processes/practices, and include sample metrics as well as progress indices (see Appendix E). The categories and goals are as follows:

1. Learning Effectiveness – the provider demonstrates that online learning outcomes meet or exceed institutional, industry, and/or community standards.

2. Scale (Cost Effectiveness and Commitment) – the provider continuously improves services while reducing costs.

3. Access – all learners who wish to learn online can access learning in a wide array of programs and courses.

4. Faculty Satisfaction – faculty are pleased with teaching online, citing appreciation and happiness.

5. Student Satisfaction – students are pleased with their experiences in learning online, including interaction with instructors. (http://sloanconsortium.org/5pillars)

Table 2.1 is a brief summary of the organizations (WCET, IHEP, CHEA, USDE, and Sloan-C) and what each has identified as key areas for evaluating online educational programs. Details are provided in Appendix H regarding the principle action(s) for each of the key areas. Further evaluation of the principle actions revealed remarkable similarities in what each of the organizations considered important indicators. This finding is similar to that of the USDE in their 2006 study that noted a remarkable consistency in what the various organizations considered important.
Table 2.1

**Evaluation Guidelines/Best Practices for Online Education – Summary**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Students &amp; Student Services</td>
<td>5. Student Support</td>
<td>5. Faculty Support</td>
<td>5. Planning for Sustainability &amp; Growth</td>
<td>5. Student Satisfaction</td>
</tr>
</tbody>
</table>

CHEA – Council for Higher Education Accreditation  
IHEP – Institute for Higher Education Policy  
Sloan-C – Sloan Consortium  
USDE – United States Department of Education  
WCET – Western Cooperative for Educational Telecommunications

The relationships among the several organizations’ sets of key areas can be sorted and grouped according to the Sloan-C’s Quality Framework’s pillars (see Table 2.2).

Table 2.2 illustrates the key areas of each organization and how each falls within or overlaps with the Sloan-C’s Quality Framework’s five pillars: learning effectiveness, scale (cost effectiveness and commitment), access, faculty satisfaction, and student satisfaction. The WCET’s *Evaluation and Assessment* category includes elements of
student satisfaction, faculty satisfaction, and learning effectiveness. *Curriculum and Instruction* includes elements not only of learning effectiveness but also access. *Students and Student Services* and *Resources for Learning* include elements pertaining to access as well as student satisfaction. The IHEP’s *Institutional Support* contains elements of scale and access, and *Student Support* contains elements pertaining to access as well as student satisfaction. The CHEA’s *Student Support* contains elements of both access and student satisfaction. The USDE’s *Student and Academic Services* contains elements of student satisfaction as well as access, and *Curriculum and Instruction* contains elements of learning effectiveness and faculty satisfaction (see Table 2.2).

Although each organization may give different names or categorizations to measures of quality in online education, it appears they have converged upon highly similar sets of indicators (see Table 2.2). The Sloan-C’s Quality Framework is thus understood as encompassing and consolidating the commonalities of the best practices that have been identified across all of these organizations. As previously stated, research has revealed that the pursuit of quality requires the consideration of many overlapping measures of quality. These finding taken together, further substantiate the use of the Sloan-C’s Quality Framework as a basis for this case study, reinforcing its validity and reliability as a tool for evaluating online educational programs. Ultimately, the Quality Framework provides a summary of a program’s strengths and weaknesses and can be used as a guide for CQI.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Effectiveness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation &amp; Assessment</td>
<td>Evaluation &amp;</td>
<td>Student Learning</td>
<td>Evaluation &amp;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assessment</td>
<td>Outcomes</td>
<td>Assessment</td>
<td></td>
</tr>
<tr>
<td>Curriculum &amp; Instruction</td>
<td>Course</td>
<td>Curriculum &amp;</td>
<td>Curriculum &amp;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development</td>
<td>Instruction</td>
<td>&amp; Instruction</td>
<td></td>
</tr>
<tr>
<td><strong>Scale (Cost Effectiveness &amp; Commitment)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role &amp; Mission</td>
<td>Institutional</td>
<td>Institutional</td>
<td>Institutional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support</td>
<td>Mission</td>
<td>Mission</td>
<td></td>
</tr>
<tr>
<td>Commitment to Support</td>
<td></td>
<td></td>
<td>Planning for</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sustainability</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&amp; Growth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Institutional</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum &amp; Instruction</td>
<td>Course</td>
<td>Student</td>
<td>Student &amp;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structure</td>
<td>Support</td>
<td>Academic Services</td>
<td></td>
</tr>
<tr>
<td>Resources for Learning</td>
<td>Institutional</td>
<td>Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students &amp; Student Services</td>
<td>Student</td>
<td>Student</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support</td>
<td>Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Faculty Satisfaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Support</td>
<td>Faculty</td>
<td>Faculty</td>
<td>Faculty</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support</td>
<td>Support</td>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>Evaluation &amp; Assessment</td>
<td></td>
<td></td>
<td>Curriculum &amp;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Instruction</td>
<td></td>
</tr>
<tr>
<td><strong>Student Satisfaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students &amp; Student Services</td>
<td>Student</td>
<td>Student</td>
<td>Student &amp;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support</td>
<td>Support</td>
<td>Academic Services</td>
<td></td>
</tr>
<tr>
<td>Resources for Learning</td>
<td>Teaching &amp;</td>
<td>Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation &amp; Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sloan Consortium on Quality

The Quality Framework was designed to:

help learning organizations continually improve quality, scale, and breadth according to their own distinctive missions, so that education will become a part of everyday life, accessible and affordable for anyone anywhere, at any time, in a wide variety of disciplines. . . . that can help establish benchmarks and standards for quality based on continuous quality improvement (CQI). (Moore, 2005, p. 1)

Each pillar in the framework calls for metrics to measure progress towards the goal of achieving quality online learning (Moore, 2010).

The Sloan-C’s work is supported by empirical evidence; they conduct research, published and unpublished, in order to identify effective practices in online education. As effective practices are identified by the Sloan-C, they are shared with the online teaching community for other educators to examine, to emulate, and to substantiate the claim that online learning does work (Lorenzo & Moore, 2002). Effective practices are “prepared for publication and posted on the Sloan-C website at http://sloanconsortium.org/effective” (Lorenzo & Moore, 2002, p. 3). This is significant for the online learning community. The collaborative sharing of knowledge is an important component of CQI. This is important to keep in mind because the elements of the Quality Framework are a continual work in progress that require continual monitoring and support the concept of CQI. The pillars are not mutually exclusive either; “practices in one area affect quality in others, thus the pillars are related and interdependent” (Moore, 2010, p. 26).
Periodically, the Sloan-C provides the online learning community with a synthesis of the effective practices that have been identified and published. Effective practices are placed in categories and shared for the purpose of CQI. Presently, there are almost 300 effective practices listed on the Sloan-C website. A synthesis of effective practices identified by Sloan-C addresses the following questions for each of the five pillars:

1. Learning Effectiveness
   - How can learning design enhance interactions?
   - How can learning design enhance collaboration?
   - How can learning design inculcate academic honesty?
   - How can schools assess learning effectiveness?
   - How can technology support learning?

2. Scale (Cost Effectiveness and Commitment)
   - How can schools share resources to improve learning and avoid costs?
   - How can redesign improve access, affordability, and learning, and save effort?
   - How can schools use technology to improve strategic planning?
   - How can schools use technology to provide cost-effective services for faculty, students, and administrators?

3. Access
   - How can specialized online student services and resources make access easier?
   - How can schools help students access support and adapt to academic culture?
• How can schools provide access to special populations?
• How can schools use technology to improve access?

4. Faculty Satisfaction
• How can schools foster greater community among faculty?
• How can schools prepare faculty to teach online more effectively?
• How can schools encourage and support research opportunities for faculty?
• How can schools recognize and reward faculty who teach online?
• How can technology help organize and enhance faculty activities?

5. Student Satisfaction
• How can schools help learners get started with online learning?
• How can schools help learners make good choices?
• How can schools build community among learners?
• How can schools and faculty assess student satisfaction?
• How can schools increase student satisfactions with learning?
• How can schools use technology to enhance student satisfaction?

(Moore, 2010, pp. 24-25)

Summary

This literature review addressed two prevailing questions: (a) how is quality defined in higher education? and (b) how is quality defined in distance (online) education? As evidenced by this literature review, quality pertaining to traditional or distance (online) education is rather difficult to define. The definition of quality varies...
primarily because quality means different things to different people, depending on their role as a stakeholder.

Quality in higher education introduced concepts pertaining to the notion of distinctiveness and high class; perceptions of Cambridge and Oxford University; and measures such as contact hours, library holdings, and instructor credentials. The industrial definition of quality introduced concepts pertaining to the essential measurable aspect of a product or service as defined by the customer and philosophies that focus on customer service such as Total Quality Management (TQM) and the Baldrige Program. In addition, national surveys have been used such as the National Survey of Student Engagement (NSSE) that are believed to be representative of critical factors of collegiate quality focusing on such factors as the amount of time and effort students put forth in their studies and how the institution deploys resources and organizes curriculum.

Quality in distance (online) education introduced Russell’s (1999) *no significant difference phenomenon*. Russell’s research focused primarily on online courses rather than online programs and differences between online and traditional educational methods, dating from 1928 to 1998. Results indicated that technology in and of itself does not impact learning outcomes and that technology is merely a method for delivering course content. Russell’s study concluded that no matter what type of technology was used (i.e., interactive video, television, or satellite), in and of itself, technology did not improve course learning outcomes (but it also did not degenerate instruction); technology is simply a means of delivering course content. Since 1999, research measuring quality online education continued focusing on comparison studies of distance and traditional education as well as on individuals’ perceptions of quality and still placing emphasis on
individual courses rather than on entire programs. The literature has demonstrated that assessing quality at the course, program, faculty, and student levels has been highly individualistic and varies greatly from one study to the next (see Appendix F). A broad and variegated array of methods and metrics have been used, which has made it difficult for researchers to come to any absolute conclusions regarding what quality is and how to define it.

Lastly, concepts related to quality standards for program evaluation was discussed. The concept of program evaluation introduced the development of best practices and the role of accreditation and evaluation. Organizations such as the WCET, IHEP, CHEA, and the Sloan-C identified what they believe to be key factors involved with identifying and measuring quality of online educational programs.

Distance education is having, and will continue to have, a profound influence on higher education and the need for program evaluation has been established. As Meyer (2002) noted, “quality is a complex and difficult concept, one that depends on a range of factors arising from the student, the curriculum, the instructional design, technology used, faculty characteristics, and so on” (p. 101). The future of distance education programs depends on educators having an understanding of what is involved in identifying quality programs. Identifying these factors and implementing a universal framework that can be used to evaluate online programs will not only support stakeholders’ desire to be able to pinpoint quality programs, but will also support CQI. A detailed summary of how this study used the quality framework to evaluate an online educational program compared to its traditional and hybrid counterparts is addressed in the following, Chapter 3.
Chapter 3: Methodology

General Perspective

The growing popularity of distance education and online programs has charged educators and institutions of higher education with the task of assessing and identifying factors that define quality online education (Wang, 2006). The purpose of this study is to examine the state of online education, specifically in regard to the quality of a two-year Radiologic Technology Program, compared to its traditional and hybrid counterparts, at a single institution. Few studies have been conducted exploring the quality of online programs, and even fewer studies have been conducted specifically in allied health. The primary focus of this study is to analyze the similarities and differences among three modes of delivery of a Radiology Technology Program in one particular institution of higher education. The study addresses the various elements of quality online education in meeting the Sloan-C’s Quality Framework (see Appendix E) criteria, “that online learning is at least equivalent to learning through the institution’s other delivery modes” (Moore, 2002, p. 54).

The following research question is the focus of this study:

In a single institution, are the quality outcomes of a two-year distance (online) education program in Radiologic Technology the same as or different from its traditional and hybrid counterparts, when assessed in terms of:

1. Learning Effectiveness?
2. Scale (Cost Effectiveness and Commitment)?
3. Access?
4. Faculty Satisfaction?
5. Student Satisfaction?

A qualitative approach to case study research methods was chosen as the most appropriate way to address the research question, in accordance to Robert Yin’s (2003) case study design. Yin defines the case study research method as an empirical method of investigation that contributes to one’s knowledge base, and as being the “. . . method of choice when the phenomenon under study is not readily distinguishable from its context” (p. 4), in the case of online learning, the phenomenon being Russell’s (1999) no significant difference phenomenon. Therefore, a case study method is well suited to this study.

The case study approach requires a process—a series of steps to be followed—for the collection and presentation of detailed information about the program being studied to ensure the integrity, reliability, and validity of the study (Yin, 2003). The process involves the use of a well-planned out case-study protocol, containing the instrument(s) to be used as well as the “procedures and general rules to be followed in using the protocol” (Yin, p. 79). A case study protocol is intended to guide the researcher and should contain the following:

- an overview of the case study project (project objectives and auspices, case study issues, and relevant readings about the topic being investigated),
- field procedures (presentation of credentials, access to the case study “sites,” language pertaining to the protection of human subjects, sources of data, and procedural reminders),
case study questions (the specific questions that the case study investigator must keep in mind in collecting data, “table shells” for specific arrays of data, and the potential sources of information for answering each question, and

- a guide for the case study report (outline, format for the data, use and presentation of other documentation, and bibliographical information). (Yin, p. 81)

A content analysis of responses to the interview questions was conducted to identify potential indicators for data collection and statistics of the student body not identified in the Self-Study (Joint Review Committee on Education in Radiologic Technology [JRCERT], 2005). Content analysis is a coding operation used for various forms of qualitative data communicated to the researcher. According to Babbie (1995), “Content analysis is essentially a coding operation. Communications—oral, written, or other—are coded or classified according to some conceptual framework (p. 311). Various forms of communication, as in the case of this case study, include written materials, archival records, and one-on-one interviews.

For the purpose of this study, data were collected using a multi-modal approach by means of a site visit, archival records, and existing documentation, including an accreditation self-study, personal interviews, and a tool created for the administration of online education programs. The protocol was driven by the procedures and general rules, which were identified by the Sloan-C’s Quality Framework used to guide this study. A qualitative descriptive case study method was used drawing conclusions from the data collected within the Sloan-C’s Quality Framework. The case study looked intensely at each individual pillar of the Quality Framework as defined by the Sloan-C, drawing conclusions regarding the specific content within each pillar. A holistic approach—
drawing conclusions based on the data as a whole—was used for analyzing the data. A holistic approach is primarily concerned with the complete system, in this case, the program as a whole, rather than with the analysis of the individual parts. Findings are reported in Chapter 4 and further evaluated for any weaknesses in the study. In addition, any suggestions or recommendations are presented in the conclusion of the study.

The Sloan-C’s Quality Framework used for this case study consists of five pillars—learning effectiveness, scale (cost effectiveness and commitment), access, faculty satisfaction, and student satisfaction—which summarize the ideals of quality online education (Lorenzo and Moore, 2002). Each pillar identifies a goal, process or practice, sample metric, and progress indices of the provider and identifies the quality indicators used in this study (see Appendix E). Learning effectiveness shall demonstrate that online learning outcomes meet or exceed institutional, industry, and/or community standards; scale (cost effectiveness and commitment) is demonstrated by the provider continuously improving services while reducing costs; access ensures all learners who wish to learn online can access learning in a wide array of programs and courses; faculty satisfaction demonstrates that faculty are pleased with teaching online; and student satisfaction demonstrates that students are pleased with their experiences in learning online, including interaction with instructors (http://sloanconsortium.org/5pillars).

The metrics used within the Sloan-C Quality Framework are those already set forth by the college or in the School of Radiologic Technology’s Self-Study (JRCERT, 2005) for Joint Review Committee on Education in Radiologic Technology (JRCERT) accreditation. The JRCERT’s accreditation process promotes excellence in educational programs by promoting quality and safety of patient care. The flowchart in Figure 3.1
below is representative of the process in which institutions seeking accreditation with the JRCERT get experience from initial accreditation through final program notification.

Figure 3.1. Joint Review Committee on Education in Radiologic Technology (JRCERT) Accreditation Process Flowchart. Adapted From The Joint Review Committee on Education in Radiologic Technology (JRCERT) http://www.jrcert.org/acc_flowchart.html. Adapted with permission.
The accreditation process is quite stringent and can take up to several months before completing. Initial accreditation can take up to 18-21 months from the point in which an institution turns in the Self-Study (JRCERT) report until they receive their accreditation award (J. Hicks, personal communication, January 17, 2010).

Presently, the JRCERT is “the only agency recognized by the United States Department of Education for the accreditation of traditional and distance delivery educational programs in radiography, radiation therapy, magnetic resonance, and medical dosimetry” (http://www.jrcert.org/). The program under evaluation strongly believes in and is committed to the philosophy of continuous quality improvement (CQI); to being held accountable; and to promoting student learning through the provision of quality instruction, curriculum, and appropriate facilities, which is evidenced in their mission and values (Anonymous, personal communication, March 28, 2011; JRCERT, 2005). The college’s commitment to CQI makes them an excellent candidate for this study.

Research Context

The setting for the study is a two-year college in Midwestern United States—a comprehensive public and fully accredited institution of higher education. The college is fully accredited by the North Central Association of Colleges and Schools. The college has several campuses offering more than 50 programs of study including vocational, technical, college transfer, and continuing education and enrolling more than 10,000 students. Nearly 180 of their courses and several programs are presently offered totally online. The college prides itself on convenience (several locations and online), value (a low tuition rate of just $51 per credit hour in state and $63 per credit hour out of state), and placement (that 92% of their graduates find employment or continue their education).
The college's primary campus enrolls approximately 9,000 students and resides in a community of more than 250,000 residents.

The program under evaluation in this study is the college’s Associate of Applied Science degree program in Radiologic Technology, whose mission is simple, to prepare competent Radiologic Technologists. The program’s mission is in line with the mission for the college as a whole, to provide quality career/technical and academic educational opportunities for students, businesses, and the surrounding communities. This particular program was chosen because it is unique—the only one of its kind in the US—in that it is offered in three different ways at the same institution: (a) traditional (didactic classroom courses with clinical education within the community housing the primary campus), (b) distance (online) (online didactic courses and primary clinical education outside the community housing the primary campus), and (c) hybrid (local students taking didactic classes online and performing clinical education within the community housing the primary campus) (Anonymous, personal communication, August 14, 2010). It is important to note that the distance (online) and hybrid learning tracks are not separate programs from the traditional program, but rather alternative learning options with the same mission and goals. All students are required to meet the same objectives and standards. This institution is a perfect candidate for this study because it teaches a single curriculum with identical content in all three modes of delivery. The delivery mode is the only variable, which is precisely the variable driving this study.

Entrance into the program requires students to have completed all required prerequisite courses (46.0 credit hours) with a minimum grade of 75%. Once enrolled, a student must complete all Radiography program courses with a minimum grade of 75%
to remain in the program. All requirements for entrance throughout completion of the program are the same whether the student is a traditional, hybrid, or distance (online) learner. On average, the school graduates a total of 55 students each year among all three modes of delivery. Upon completion of the program, graduates are eligible to take the national examination given by the American Registry of Radiologic Technologists (ARRT) and to apply for state licensure.

The ARRT exam consists of five major content categories: Radiation Protection; Equipment Operation and Quality Control; Image Production and Evaluation; Radiographic Procedures; and Patient Care and Education, and each category represents a percentage (20%, 12%, 25%, 30%, and 13% respectively) of the total score of 100%.

“The purpose of the ARRT Examination in Radiography is to assess the knowledge and cognitive skills underlying the intelligent performance of the tasks typically required of the staff technologist at entry into the profession” (ARRT, 2007, p. 1).

Research Participants

The participant in the study is the program under evaluation, specifically the Radiologic Technology Program. The students of the Radiologic Technology Program are the participants for measuring student satisfaction, and results from their board exams (ARRT) are used for measuring learning effectiveness. The student population is broken down according to the three modes of delivery: traditional, hybrid, and distance (online) for comparison purposes. Student demographics were also taken into consideration when evaluating student satisfaction as well as access. The faculty members are the participants used for measuring faculty satisfaction. The School of Radiologic Technology has eight full-time faculty members and three adjunct instructors. The School of Radiologic
Technology as well as the college as a whole are the participants for evaluating scale (cost effectiveness and commitment) and access.

*Instruments Used in Data Collection*

This study used four instruments for data collection purposes. Each instrument offered a unique yet overlapping perspective. The first instrument used was the school of Radiologic Technology’s Self-Study (JRCERT, 2005) for accreditation with the JRCERT. To receive accreditation with the JRCERT, Schools of Radiologic Technology are required to submit a Self-Study Report—Guide to Program Analysis (GPA), to ensure the institution maintains “excellence in education and enhances quality and safety of patient care through the accreditation of educational programs” (http://www.jrcert.org/) on an ongoing basis. The self-study lays the groundwork identifying the indicators the college uses in meeting the JRCERT’s standards for accreditation; therefore, data already collected and complied by the college were used as an indicator as to how well the program is meeting the Sloan-C’s Quality Framework (see Appendix E).

Individual data elements were categorized according to the Sloan-C Quality Framework pillars that best described them. As a result of this categorization process, it became possible to evaluate the program according to the quality elements represented by the five pillars of the Sloan-C Quality Framework. Learning effectiveness was measured by examining learning outcomes of the ARRT national board exam, job placement rates, program completion rates, employer feedback, and retention rates. ARRT national board exams are taken by each student upon completion of the Radiologic Technology Program and reported back to the college by the ARRT. According to the JRCERT, the national board exam pass rate average over the past five years should not be less than 75% on first
attempt. Grades from the exam are reported separately for each of the three modes of delivery and compared.

Scale was measured through evaluating the financial and technical commitment provided by the institution and the impact these commitments have on the Radiography program. These commitments include financial resources, budgeting processes, program director participation, governance, organizational mission and goals, and tuition rates.

Access was measured by examining college offerings, recruitment and admissions processes, program policies and procedures, equitable learning opportunities, learning resources, student services, and student support services.

Faculty satisfaction was measured by evaluating faculty participation in matters particular to all modes of education, adequate support services, opportunities for continued professional development, and overall satisfaction. The School of Radiologic Technology collects faculty feedback using various methods. The various methods used were evaluated and discussed:

1. Staff meetings
2. Emails
3. Telephone calls
4. Clinical Instructor’s website (CIA)

Student satisfaction was measured by evaluating students’ learning experiences. The Radiography program collects student feedback using several methods. The following methods used were evaluated and discussed:

1. Each quarter, students provide feedback on didactic instruction through the use of Course Evaluations.
2. Clinical education is evaluated by students through two different methods: Clinical Instructor Evaluations and Clinical Site Evaluations.

3. Upon completion of the program, students assess the program in its entirety by completing a Final Program Evaluation as well as meet one on one with a program co-chair in an Exit Interview.

4. The college’s placement office collects feedback from alumni through the use of Graduate Surveys. Survey results are collected and compiled each spring by the College’s Testing Center and then reported to the head of the Radiologic Technology Program.

The second instrument used for data collection was structured interviews. Each school administrator was contacted in advance via email to introduce the study being conducted and to request their participation. All administrators agree to participate in the study. One-on-one interviews were scheduled at their convenience, allowing approximately 50-60 minutes with each administrator. One week prior to the site visit, a reminder/confirmation email was sent to each administrator along with a questionnaire (see Appendix I) to be filled out in advance of the interview. The questionnaire consisted of several closed-ended questions for the purpose of collecting additional information about the college under study. Data collected consisted of information on faculty members such as number of years experience in teaching traditional, hybrid, and distance (online); student demographics; teaching loads; and student-teacher ratios. The primary reason the questionnaire preceded the structured interviews was to reduce the amount of time spent at each interview.
Structured interviews were then conducted with all program administrators of the distance (online), hybrid, and traditional Radiologic Technology Program, with 100% participation. The interviews were recorded (with the consent of the interviewees) and the researcher also took notes. The purpose of conducting structured interviews was to gain Administrators’ insights into each of the three modes of educational delivery (traditional, hybrid, and distance [online]), regarding the quality of each of the three tracks and the student body that they serve. In addition, the structured interviews sought out information not already identified in the school’s Self-Study (JRCERT, 2005). Therefore, the interview questions were strategically chosen to fill any gaps identified between the school’s Self-Study and the five pillars of the Sloan-C’s Quality Framework (see Appendix J). Interview questions (Appendix J) were first pilot tested with a panel of experts in the field of Radiologic Technology to discern understanding and readability of the questions being asked. The members of the panel were chosen due to their number of years of experience in the fields of Radiologic Technology and higher education. Understanding and readability of the questions being asked was discerned by the panel of experts with minor adjustments to the questions being presented.

The third instrument used for data collection was the Quality Scorecard for the Administrators of Online Education Programs (see Appendix G). At completion of the structured interview process, each administrator was asked to complete the Quality Scorecard and return it via mail to the researcher within one to two weeks. A hard copy of the Quality Scorecard was provided to each administrator along with directions, including a self-addressed, stamped envelope for their convenience. The purpose of the Quality Scorecard was to gain a different perspective from each of the program
administrators, as to their perceptions of how well they felt their institution was doing at providing online education in Radiography and to identify any strengths—elements of quality—as well as any potential weaknesses.

The Quality Scorecard is a tool recently developed by Kaye Shelton for the administration of online educational programs. Shelton’s (2010) study was in response to the increasing demands for public accountability in higher education, specifically in distance (online) education. The intention of the Quality Scorecard is for use by institutions that are seeking methods for CQI in order to demonstrate the overall quality within their educational programs. The Quality Scorecard is just that—an instrument for assessing quality within online education programs. The method of scoring was based on the original set of quality indicators from the IHEP (2000) study titled, Quality on the Line: Benchmarks for Success in Internet-Based Distance Education (Shelton, 2010). Further development of the benchmarks from the IHEP study resulted in nine final categories used in the Quality Scorecard. Each category is further broken down into a list of quality indicators.

The final indicators are intended to be used by administrators in determining strengths and weaknesses of their educational programs. The nine categories including quality indicators for each (70 in all) are as follows:

1. Institutional Support
   
   • A governance structure is in place for decision making for distance learning,
   
   • Policies for student authentication are in place,
   
   • Policy for copyright ownership of course materials exists, and
The strategic value of distance learning is communicated throughout the institution.

2. Technology Support
   - A technology plan exists that includes security measures such as password protection,
   - The technology systems used for delivery are highly reliable and being measured for performance,
   - A centralized system to support the technology infrastructure is needed for quality distance learning programs,
   - The technology utilized for the distance learning program is considered mission critical by the institution and receives equivalent support,
   - A backup system is in place and maintained for data availability, and
   - Technological support is provided for faculty, students, and staff.

3. Course Development and Institutional Design
   - Minimum standards are required for course design,
   - Technology supports learning outcomes,
   - Course materials are reviewed periodically,
   - Course design supports learning outcomes including analysis, synthesis, and evaluation,
   - Learning outcomes must be measurable,
   - Appropriate assessments measure objectives,
   - Course design is based upon student-centered instruction,
   - Consistent course development for retention and quality is used,
• Faculty and student engagement is developed with course design,
• Technologies are evaluated for online learning,
• Instructional design is provided, and
• Faculty are in control of the curriculum development.

4. Course Structure
• A comprehensive syllabus is developed that includes objectives, outcomes, evaluation methods, textbook information, and transparent course requirements,
• Access to library and learning resources are provided,
• Student expectations for assessment and faculty response are provided in the syllabus,
• Student technical support is explained or linked in the course,
• Course materials are accessible and usable,
• Alternative instructional strategies are provided for disabled students,
• Student-to-student collaboration is encouraged with opportunity and available tools, and
• Documents are provided in formats easily accessed with a variety of operating systems and productivity software.

5. Teaching and Learning
• Student-to-student and faculty-to-student interaction, if present, are facilitated through a variety of ways,
• Instructor feedback is provided on assignments in a timely manner,
• Effective methods for research and evaluation of online resources are taught,
• Students have access to library professionals and online resources, and
• Instructors use specific strategies to create a presence in the course.

6. Social and Student Engagement where students are encouraged to form an online learning community and interact with other students.

7. Faculty Support
• The provision of faculty technical assistance,
• Faculty training,
• Opportunities for training about Fair Use, plagiarism, and legal concepts,
• Ongoing professional development provided,
• Clear standards established for faculty engagement and expectations, and
• Faculty workshops for emerging technologies provided.

8. Student Support
• Students are advised about program for motivation and commitment,
• Students are advised about minimal technology requirements,
• Program and support service information are provided to students
• Library access and support training are provided for students,
• Access to technical support is provided,
• Student support services are provided to address feedback and problems and to provide a complaint submission process,
• Academic, career and personal counseling are provided,

• Minimum technology standards exist,

• Student support services: financial aid, advising, peer support are provided,

• ADA [Americans with Disabilities Act] requirement support is provided,

• Access to course materials including ISBN numbers is provided,

• Student-centered focus is evident,

• Efforts for student engagement with institution and program are evident,

• Instruction is provided for methods of faculty and student communication,

• Guidance is provided for course delivery technology,

• Tutoring is available as a learning resource, and

• Instruction is provided to students for enlisting program help.

9. Evaluation and Assessment

• Program evaluation occurs with specific standards,

• A variety of data for evaluation and changes is being used,

• Program learning outcomes are reviewed regularly,

• Assessment of faculty and student support services is in place,

• Assessment of retention at the course level occurs,

• Assessment of retention and recruitment at the program level occurs,

• ADA standard compliance is demonstrated,

• Course evaluations are examined in relation to faculty performance,

• Faculty performance is regularly assessed,
• Alignment of learning outcomes is evident, and

• Course evaluations collect student feedback regarding the content and instruction.

The validity and reliability of the instruments is evidenced by the Delphi Method used in identifying the measures for the instrument. The Delphi Method is a structured interactive method that relies on a panel of experts through “an iterative process in which group consensus is gained, requiring several rounds or phases in which data are collected in an attempt to answer the proposed research questions (Shelton, 2010, p. 68). Shelton made note that:

Delphi studies usually collect experts’ opinions anonymously, with several rounds of consideration along with continuous feedback. After the final round, consensus has formed. This is considered to be a relevant and valid measure because it is the accumulated opinions of experts,” and “the more the experts agree, the stronger the validity of the results. (p. 66)

The Quality Scorecard instrument was first pilot tested to discern its understanding and readability. Once understanding and readability were established, six Delphi rounds were conducted and experts identified the quality indicators for the scorecard (Shelton).

At the outset of this research, the Quality Scorecard was under consideration by the Sloan-C to provide the scorecard to institutions as an interactive tool on the Sloan-C’s website. The intent was to create a catalog of quality programs based upon a quality seal given by the Sloan-C (K. Shelton, personal communication, November 18, 2010). To date, the Quality Scorecard has been implemented on the Sloan-C’s website for use by institutional members only. Upon completion of the Quality Scorecard, the online tool
reports the final results by the nine categories as well as in accordance to the Sloan-C’s Quality Framework’s five pillars, which was provided for the purpose of this research by the Sloan-C (see Appendix K). “Plans for the catalog are in development; if there is a seal of approval given, it will require 3rd party review, so the next phase is developing consensus for inter-rater reliability” (J. Moore, personal communication, April 28, 2011).

Results from the quality score were analyzed and used in part in the final comparison of the overall quality of the organization’s online track. Data from the scorecard were analyzed and reported according to the scorecards’ nine categories in accordance to the Sloan-C’s five pillars. Though implementation of this tool was limited, the information provided by the administrators of the institution under study has proved useful when evaluating the program holistically.

The fourth instrument used for data collection purposes was post 2005 Self Study data not yet submitted to the JRCERT. Data were categorized in the same manner as the first instrument—according to the Sloan-C Quality Framework pillars that best described them. As a result of this categorization process, it became possible to evaluate the program according to the quality elements represented by the five pillars of the Sloan-C Quality Framework.

Data Analysis

Yin’s (2003) case study approach for the collection and presentation of data about the program being studied were used to ensure the integrity, reliability, and validity of this study. A content analysis was conducted to summarize the data. Fitzpatrick, Sanders, and Worthen (2004) define content analysis as “a special type of analysis of qualitative information collected in textual form” (p. 362), that:
focuses on organizing and reducing information and making statistical inferences; interpretation, on the other hand, attaches meaning to organized information and draws conclusions. Analysis may be thought of as organizing and verifying facts; interpretation as applying values, perspective, and conceptual ability to formulate supportable conclusions. (p. 364)

The Quality Framework (see Appendix E) identifies the goals for each of the five pillars and is used as a guide for the evaluation process. The college’s Self-Study (JRCERT, 2005) identifies the specific quality indicators used throughout the study, which are in accordance with the Quality Framework. Part of the process of data analysis was to first identify each of the indicators and determine if they appropriately address the goals of the particular pillar intended, which ultimately relate back to the research question. Once the validity of each indicator was confirmed, conclusions were drawn based on the weight of the evidence. The data was separated by mode of delivery and then analyzed on an individual basis for each of the three modes. Data obtained in the interviews with program administrators was also compiled and organized by mode of delivery as well as by topic/question. A final analysis compared the results of the data obtained for the purpose of the Self-Study (JRCERT) and the structured interviews with the scores from the Quality Scorecard. Conclusions were drawn from the data collected from all sources—the Self-Study (JRCERT), semi-structured interviews, the Quality Scorecard, as well as post 2005 Self Study data not yet submitted to the JRCERT—and comparisons were made.

A qualitative descriptive case study method was used for drawing conclusions from the data collected within the Sloan-C’s Quality Framework. The case study looked
intensely at each individual pillar as defined by the Sloan-C Quality Framework in drawing conclusions regarding the specific content within each pillar. In accordance to the case study protocol, the case study investigator must keep in mind the specific research question(s) while collecting data and drawing conclusions. For this reason, the Quality Framework was used as a guide for the case study report, outlining each area being investigated, and for use in the final presentation of the information. Since a holistic approach was used for data analysis—drawing conclusions based on the data as a whole—conclusions drawn from the research are consequently highly contextual. Findings were further evaluated for any weaknesses, and recommendations are presented in the conclusion of the study.

The steps to the data analysis process were duplicated for each of the program’s three modes of delivery. The data collected was first analyzed on an individual basis for each of the three modes of delivery—distance (online), traditional, and hybrid—for each component of the Quality Framework. The data collected from all three tracks was then compared across modes in order to answer the research question: Are the quality outcomes of a two-year distance (online) education program in Radiologic Technology the same as or different from its traditional and hybrid counterparts?

This case study proposal was submitted to the Investigative Review Board (IRB) at the researcher’s institute, St. John Fisher College, for approval to conduct the research described herein. Once approval was granted by St. John Fisher College’s IRB, the case study proposal was submitted, along with documentation from St. John Fisher College’s IRB approval, to the institute in which the research was conducted for their approval.
Approval was granted and the research was, therefore, conducted in accordance with the IRB approved research protocol.

Summary

The growing popularity of distance education and online programs has charged educators and institutions of higher education with the task of assessing and identifying factors that define quality in online education (Wang, 2006). At the same time, competition among institutions for student enrollment is also intensifying. Defining quality metrics and best practices ensures the integrity, validity, and success of online programs. Given the incredibly dynamic nature of online education, driven by changes in technology and customer demand, The Sloan-C’s Quality Framework—learning effectiveness, scale, access, faculty satisfaction, and student satisfaction—can serve as a baseline for institutions seeking an infrastructure supporting continuous quality improvement (CQI). The uniqueness of the program being studied (the same curriculum being taught in three different modes of delivery—traditional, hybrid, and online at the same institution) affords a perfect opportunity to compare the quality of the three delivery modes.

This chapter presented the general perspective, the research context, and the instruments used for the study. The selection of the instruments used, the methodology of the study, and the research questions addressed in the study were also presented. Finally, this chapter detailed the steps followed for the data collection and analysis processes followed in accordance to the case study method.

It is important to keep in mind that the Quality Framework is a continual work in progress (Moore, 2005), which requires continual monitoring. Researchers continue to
explore the endless possibilities that can potentially influence these factors. On that note, this study will serve merely as a starting point in the process of identifying quality in the realm of online education.
Chapter 4: Results

Introduction

The purpose of this study is to examine the state of online education, specifically in regard to the quality of a two-year Radiologic Technology distance education (online) program, compared to its traditional and hybrid counterparts in a single institution. This study used four instruments for data collection purposes. Each instrument offered a unique yet overlapping perspective. The first instrument used was the school of Radiologic Technology’s Self-Study (Joint Review Committee on Education in Radiologic Technology [JRCERT], 2005) for accreditation with the JRCERT. The second instrument used for data collection was structured interviews. The third instrument used was A Quality Scorecard for the Administrators of Online Education Programs (see Appendix G), and the fourth instrument used was post 2005 Self Study data not yet submitted to the JRCERT. Data were analyzed from all four instruments and compared holistically to evaluate the program as a whole.

The following research question is the focus of this study:

In a single institution, are the quality outcomes of a two-year distance (online) education program in Radiologic Technology the same as or different from its traditional and hybrid counterparts, when assessed in terms of:

1. Learning Effectiveness?
2. Scale (cost effectiveness and commitment)?
3. Access?
4. Faculty Satisfaction?

5. Student Satisfaction?

Data Analysis and Findings

Self-study and post 2005 data. The Radiologic Technology program produced a Self-Study (JRCERT, 2005) guided by a document called, The Guide for Program Analysis (GPA), by the Joint Review Committee on Education in Radiologic Technology (JRCERT). The Self-Study (JRCERT) lays the groundwork identifying the indicators the college uses in meeting the JRCERT’s standards for accreditation. Data already collected and compiled by the institution for accreditation with the JRCERT were used as an indicator of how well the program is meeting the Sloan-C’s Quality Framework standards (see Appendix E). The Self-Study (JRCERT) for the Radiography program is dated May 2005; therefore, much of the data available for the purpose of this research is dated during this time period. There was a limited amount of data available after 2005. Accreditation with the JRCERT is for the duration of eight years. According to the administrator of the program, the Radiography program’s Self-Study (JRCERT) was completed in 2005, but the JRCERT did not complete the program’s site visit for accreditation until 2007 due to a backlog of site visits at the time. Therefore, the program’s re-accreditation will be in 2015. Administrators of the Radiography program were in the midst of completing their Interim Report at the time of this study. Due to the differences in dates and the availability of data, the evaluation process for the purpose of this study was primarily based on data from the 2005 Self-Study (JRCERT) and data gathered prior to that time.
Data collected were categorized according to the Sloan-C Quality Framework pillars, which best described them. As a result of this categorization process, it became possible to evaluate the program according to the individual pillars: Learning Effectiveness, Scale, Access, Faculty Satisfaction, and Student Satisfaction. Therefore, the Quality Scorecard by Sloan Consortium Pillars (see Appendix K) was used in addition to the program’s Self-Study (JRCERT, 2005) as a tool to help guide this research.

*Learning effectiveness*. The goal of *learning effectiveness* is that the providers demonstrate that online learning outcomes meet or exceed institutional, industry, and/or community standards. The program has developed and implemented an assessment plan that identifies benchmarks for the measurement of outcomes in relation to its mission statement and goals and documents such outcomes consistent with JRCERT policies.

Learning effectiveness was measured by examining outcomes of the American Registry of Radiologic Technologists (ARRT) national board exam, job placement rates, program completion rates, employer feedback, and retention rates. The ARRT National Board Exam is taken by each student upon completion of the Radiography program, and statistics are reported back to the institution by the ARRT. Among the statistics is the percentage of students who pass the exam on their first attempt. For institutions to be accredited with the JRCERT, they must meet the minimum standards set forth for accreditation. The JRCERT criterion for pass rate is a 5-year average of not less than 75%.

The Radiography program under study has set its benchmark for the national board exam pass rate average over the past five years equal to or greater than 85% on
first attempt. The program reported an average pass rate of 97% for 2009 and an average pass rate of 95% for 2010, compared to a 99% pass rate reported at the time of the Self-Study (JRCERT) in 2005 (see Table 4.1). Previous years reported equally impressive pass rates. Data provided were not separated by mode of delivery, but instead were presented as a single figure combining all three modes. The American Registry of Radiologic Technologists (2011) reported the average national pass rate for 2010 as 92.4%. The Self-Study (JRCERT) noted that the Radiography program has been in existence for over 29 years and during that time has graduated 416 students who have taken the ARRT national board exam. Of these 416 students, 411 passed the exam on first attempt, resulting in a 29-year cumulative average of 99%, exceeding the program’s benchmark as well as the national average.

Table 4.1

*ARRT National Board Exam Pass Rate (5-year average) for the Radiography Program*

<table>
<thead>
<tr>
<th>Year</th>
<th>Traditional</th>
<th>Distance (online)</th>
<th>Hybrid</th>
<th>Combined pass rate</th>
<th>5-Year average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>2001</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>2002</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>97%</td>
<td>99%</td>
</tr>
<tr>
<td>2003</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>2004</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>97%</td>
<td>99%</td>
</tr>
<tr>
<td>2009</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>97%</td>
</tr>
<tr>
<td>2010</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>95%</td>
</tr>
</tbody>
</table>

*Note:* Dashes indicate data were not provided.
The Radiography program tracks graduating students' job placement as an ongoing process used to monitor the quality of the program. The institution’s Placement Office collects such data. The Radiography program has set its benchmark for the job placement rate average over the past five years equal to or greater than 85% within six months of graduation. The program reported a 5-year average job placement rate of 97% for the 2008-2009 school year and 96% for the 2009-2010 school year (see Table 4.2). Earlier data reflected the previous average job placement rate for 2002-2005 as 100% for traditional students and 100% for distance (online) students. Data provided were not separated by mode of delivery, but instead were presented as a single figure combining all three modes.

Table 4.2

*Job Placement Rate (5-year average) for the Radiography Program*

<table>
<thead>
<tr>
<th>School year</th>
<th>Traditional</th>
<th>Distance (online)</th>
<th>Hybrid</th>
<th>Combined job placement rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2005</td>
<td>100%</td>
<td>100%</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>97%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>96%</td>
</tr>
</tbody>
</table>

*Note:* Dashes indicate data were not provided.

The Radiography program tracks program completion rates, which is equal to the number of students who complete the program as a percentage of the number of students initially enrolled. According to the JRCERT, the accrediting agency of the Radiography program, the average program completion rate over the past five years should not be less than 75%. Therefore, the program’s benchmark for program completion rate is a 5-year
average of not less than 75%. The program reported a 5-year average completion rate of 82% for the 2008-2009 school year, and a rate of 79% for the 2009-2010 school year (see Table 4.3). Earlier data reflected the previous 5-year average program completion rate for 2000-2005 as 90% for traditional students and 83% for distance (online) students. Recent data provided were not separated by mode of delivery, but instead were presented as a single figure combining all three modes. Earlier data provided were separated for the traditional and distance (online) modes, but not for hybrid.

Table 4.3

<table>
<thead>
<tr>
<th>Years</th>
<th>Traditional</th>
<th>Distance (online)</th>
<th>Hybrid</th>
<th>Combined program completion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2005</td>
<td>83%</td>
<td>90%</td>
<td>-</td>
<td>87%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>82%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>79%</td>
</tr>
</tbody>
</table>

Note: Dashes indicate data were not provided.

The Radiography program tracks employer satisfaction rates regularly by using an employer survey in order to monitor the quality of the program from the employer’s perspective. Each year, the program solicits feedback from employers, requesting an evaluation of newly hired Radiologic Technologists who attended the program. An introductory letter/email, including an Internet link to the online survey, is sent to each employer requesting the employer’s participation. Prior to contacting the employer, however, the program must obtain permission from each graduate to do so. Employers are asked to complete the survey for each graduate in their employ, even if the graduate has since left their employ as of the date of the survey. The survey collects data specific
to the skills and abilities of each new hire to perform daily tasks as a Radiologic
Technologist. The Radiography program benchmark for employer satisfaction is a 5-year
average of equal to or greater than 85%. In other words, 85% or more of the employers
should be pleased with the overall performance of new hires from the institution’s
Radiography program. The program reported a score of 92% for the 2008-2009 school
year and 94% for the 2009-2010 school year (see Table 4.4). Previous employer survey
data supplied by the program reported employer satisfaction rates for the 2002-2003,
2003-2004, and 2004-2005 school years as 100%, 96%, and 100% respectively. A three-
year average of 98% was reported in 2005.

Table 4.4

Employer Survey (5-year average) for the Radiography Program

| School year | Traditional | Distance (online) | Hybrid | Combined 
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>2003-2004</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>96%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>92%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>94%</td>
</tr>
</tbody>
</table>

Note: Dashes indicate data were not provided.

The Radiography program also tracks student retention rates on a regular basis as
a means of measuring learning effectiveness. Retention is the number of students
remaining in the program as a percentage of the number originally enrolled. Retention
rates are tracked yearly for traditional students (see Table 4.5) and every six months for
distance (online) and hybrid students (see Table 4.6). Retention rates are also broken down according to the reasons students either were dropped from the program or left the program of their own accord. Drop categories include failing clinical grades, failing didactic grades, failing laboratory grades, unethical conduct, transfer to another program, and personal reasons. The overall retention rate for traditional students from 2005-2010 is 71.4% and for distance (online) and hybrid students 76.3% (see Tables 4.5 and 4.6). Retention rates for the two tracks are comparable.

Table 4.5

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed Clinical</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Failed Didactic</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Failed Laboratory</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Unethical Conduct</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Transferred Out</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Personal Reasons</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Drop Totals</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Students Enrolled</td>
<td>18</td>
<td>15</td>
<td>18</td>
<td>15</td>
<td>19</td>
<td>20</td>
<td>105</td>
</tr>
<tr>
<td>Graduate Totals</td>
<td>14</td>
<td>9</td>
<td>13</td>
<td>11</td>
<td>14</td>
<td>14</td>
<td>75</td>
</tr>
<tr>
<td>Retention Rate</td>
<td>77.8%</td>
<td>60.0%</td>
<td>72.2%</td>
<td>73.3%</td>
<td>73.7%</td>
<td>70.0%</td>
<td>71.4%</td>
</tr>
</tbody>
</table>

*Note: Numbers indicate number of students.*
Table 4.6

*Distance and Hybrid Student Retention Rates for the Radiography Program 2005-2010*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reason</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed Clinical</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed Didactic</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed Laboratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Unethical Conduct</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transferred Out</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Personal Reasons</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Drop Totals</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students Enrolled</td>
<td>16</td>
<td>16</td>
<td>22</td>
<td>18</td>
<td>24</td>
<td>18</td>
<td>18</td>
<td>13</td>
<td>18</td>
<td>20</td>
<td>19</td>
<td>22</td>
<td></td>
<td>224</td>
<td></td>
</tr>
<tr>
<td>Graduate Totals</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>18</td>
<td>16</td>
<td>14</td>
<td>15</td>
<td>10</td>
<td>13</td>
<td>13</td>
<td>15</td>
<td>19</td>
<td></td>
<td>171</td>
<td></td>
</tr>
<tr>
<td>Retention Rate</td>
<td>75.0%</td>
<td>75.0%</td>
<td>63.6%</td>
<td>100.0%</td>
<td>66.7%</td>
<td>77.8%</td>
<td>83.3%</td>
<td>76.9%</td>
<td>72.2%</td>
<td>65.0%</td>
<td>78.9%</td>
<td>86.4%</td>
<td>76.3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note:* Numbers indicate number of students.
Scale (cost effectiveness and commitment). The goal of scale is that providers continuously improve services while reducing costs (http://sloanconsortium.org/5pillars). Scale is the measure of the institution’s budgetary and financial commitment to continuing to operate and grow the program while providing the best value to learners. Scale was measured through evaluating the financial and technical commitment provided by the institution and the impact these commitments have on the Radiography program. These commitments include financial resources, budgeting processes, program director participation, governance, organizational mission and goals, and tuition rates.

Ongoing financial resources are an institution-wide responsibility. The Self-Study (JRCERT, 2005) noted that the institution is committed to technology and academic transfer programs and demonstrates consistent, ongoing allegiance to its programs and students. The major sources of revenue include state aid, local property tax, tuition, and some miscellaneous and unbudgeted income. It is the Board of Governors’ responsibility to develop and oversee the budget of revenues and expenses in the best interests of the institution, public, and students, allocating resources among the various organizational units to ensure the most effective and efficient delivery of services. Each program develops its own individual budget after being given directives from the Division Dean and/or the Dean of Instruction. Program Directors are actively involved in the budgeting process.

The Radiography program uses one collective budget; the budget is not broken down by mode of delivery. The college uses what is referred to as a zero-balance budget, a method of budgeting in which expenses are justified for each new period. Each year, the Radiography program identifies expenses for the upcoming school year and budgets
are built around needs for the upcoming period. The budgeting process is based solely on operating expenses and some travel expenses. Co-Chairs consult with program faculty to determine whether faculties have any specific budget requests for the upcoming fiscal year. After the budget is completed at the program level, it is presented to and reviewed by the Dean of Health Occupations and the Vice President of Instruction before being passed on to the college President for presentation to the Board of Governors for final approval. Once the process is complete, and prior to the new fiscal year, program chairs are informed of any changes to the initial proposed budget. As noted by one administrator, the Radiography program has been very fortunate. Program administrators noted that the institution is good about ensuring that the Radiography program, especially the distance (online) track, has the technology needed to support the program. According to administrators of the Radiography program, at the time of this study, the program was awarded 70% of what was requested in the budget process.

The institution has demonstrated its commitment to institutional governance by putting a governance structure in place to enable effective and comprehensive decision-making practices. The governance structure is evidenced in the organizational charts (see Figures 4.1 and 4.2). Figure 4.1 is the Radiography Program Organizational Chart. Figure 4.2 is the Institution Organizational Chart. Both charts demonstrate a hierarchy of governance structure.
Figure 4.1. Radiography Program Organizational Chart. Adapted From the institution under study. Adapted with permission.

*The two Co-Chair Directors are jointly responsible for the hybrid program.
Figure 4.2. Institution Organizational Chart. Adapted From the institution under study. Adapted with permission.
The Radiography program has identified a mission and goals. The program mission and goals are assessed at least every five years and revisions are made as necessary to achieve continuous quality improvement (CQI). The Radiography program’s mission is to prepare competent Radiologic Technologists. The program’s mission is in line with the institution’s mission, which is to provide quality career/technical and academic educational opportunities for students, businesses, and communities within the institution’s district. The Radiography program has identified several distinct goals:

1. Provide an environment that encourages individual responsibility, professional growth and lifelong learning.

2. Provide clinical experiences that correlate with didactic instruction, allowing the student to develop clinical competencies for the practice of radiography.

3. Provide instruction for the student to produce routine, diagnostic radiographs with attention to quality, safety, and effective radiation protection in the interest of the student, patient, and all associated personnel.

4. Provide instruction in the correction and safe use of equipment and supplies, with attention to economy and efficiency.

5. Facilitate the development of applied skills in interpersonal relations, effective communication, critical thinking, and problem solving processes in the practice of radiography.

6. Provide the student with an environment to assist technologists and/or physicians in the performance of specialized radiographs or related procedures, an understanding of general office duties, and operation of the radiographic darkroom.
7. Provide an environment that promotes diversity training and values compassion, respect, empathy, and dignity in providing care to patients during the practice of radiography.

8. Assist the student in gaining the knowledge and competencies necessary to successfully pass the national examination given by the American Registry of Radiologic Technologist (ARRT).

9. Meet the minimum Joint Review Committee on Education in Radiologic Technology (JRCERT) Policies on:
   a. 75% Program Completion Rate
   b. 75% Credentialing exam pass rate on the first attempt
   c. 75% Job Placement rate within six months of graduation (Anonymous, 2011)

Tuition institution wide is $51 per credit hour per term (quarter) for state residents. Out-of-state residents pay slightly more, at $63 per credit hour per term (quarter). On-campus housing ranges from $782 to $1,404 per term (quarter)—including Internet access, cable television, and telephone service—depending upon the type of room accommodations desired.

Access. The goal of access is that all learners who wish to learn online can access learning in a wide array of programs and courses (http://sloanconsortium.org/5pillars). Access was measured by examining college offerings, recruitment and admissions processes, program policies and procedures, equitable learning opportunities, learning resources, student services, and student support services.
The Radiography program provides several college offerings. All current offerings are made available to the general public. All coursework required to complete the Radiography program can be completed in its entirety in all three modes—traditional, hybrid, or distance (online). Prior to starting the program, potential distance (online) students are advised about technology to ensure they have access to the minimum technology needed to be successful in the program (e.g., computer and Internet access). Students are also advised regarding the self-motivation and commitment needed to learn using the distance (online) format.

All program recruiting and admissions information/materials (e.g., handbook; admissions application; program details/requirements, including prerequisites; tuition; books; and fees) are accessible on the institution’s website as well as in paper form by contacting the Admissions Office. Electronic documents are easily accessible in commonly used formats (e.g., Adobe PDF and Microsoft Word). The recruitment process is accomplished through various methods. Advertising is accomplished through radio, television, and newspaper, as well as the institution's website. The institution has an open-door policy—first come, first served—that guarantees all students are treated equally and fairly. Student entry is based solely on students completing program requirements. The institution also provides opportunities for high school counselors to tour the campuses and meet with individual program instructors and faculty members. In addition, the institution maintains affiliations with other institutions, and faculty are encouraged to promote the institution to the outside community and other organizations as a public relations service. The institution as a whole, as well as the Radiography program, does not discriminate on any basis (i.e., age, gender, marital status, race, color,
All current policies, procedures, and publications for the program (i.e., admissions policies, transfer credit, tuition and fees, refund policies, academic calendars, academic policies, graduations requirements, and student services) are available to all students, prospective and active, through the college website as well as in the college catalog. All materials are reviewed on a regular basis to ensure they remain up to date. The institution requires all program chairs to complete an annual review of the college catalog, program brochures, and program website. Rules and regulations and the clinical education structure are evaluated on a bi-annual basis. Any updates are announced and made available to all students on the website. Students are required to complete a student statement of understanding for all updates. All students entering the Radiography program are required to take an introductory orientation course entitled Radiologic Technology (RADT1100). RADT1100 is an introduction to the field of Radiologic Technology and the Radiography program at the institution. The course objectives are to acquaint the student with the policies of the institution, the policies of the Radiography program, the clinical education structure, and the responsibilities required of the student in the clinical setting.

The Radiography program does not discriminate on any basis; all students are provided equitable learning opportunities. All students are given every opportunity to succeed, and no student is excluded from an activity that another student is afforded. For example, both gender students are provided the opportunity to rotate through Mammography (breast imaging) if they choose to do so. In addition, students who are
primarily assigned to a rural clinic site are required to rotate to a larger affiliated clinical site, and students primarily assigned to a clinical education setting that utilizes digital imaging must rotate to an affiliated facility that uses film/screen imaging.

The Radiography program maintains a variety of learning resources to ensure student learning outcomes and student achievement of program goals. The institution maintains an onsite Learning Resource Center (LRC) with a collection of over 350 health-related reference books, 3,150 general books, and over 90 health-related periodicals. The LRC also provides electronic periodical databases that are accessible online to all students and staff. Students and faculty have access to additional library holdings through the reciprocal borrowing agreements held by the LRC and other institutions. In addition, the program website contains links to other resources and informational sites pertaining to the field of Radiologic Sciences.

The Radiography program provides several student services. The institution considers itself to be a full-service educational institution and maintains a dedicated Student Services Department. The institution provides a wide range of student services that are available to all students; for example, career counseling and placement; academic and vocational advising; help with adjusting to college life; services for students with disabilities; referrals to tutoring, clubs, and social activities, and retention services. The Student Services Department utilizes the Student Senate and periodic focus groups to obtain feedback on the quality of the services offered and make changes as needed. Students are also provided access to support services prior to admission. Not only can students complete the admissions process online, but students are also afforded the opportunity to register online for courses online, purchase textbooks online by accessing
the college bookstore, and access financial and other personal information online through WebAdvisor.

The Radiography program provides support services to faculty and students to meet all the educational, program, and administrative requirements of the program. The institution provides a Helpdesk for basic computer questions and problems. The Helpdesk is not available 24/7. The Helpdesk is available to both students and faculty Monday through Thursday from 7:00 a.m. – 8:00 p.m.; Friday 7:00 a.m. – 5:00 p.m.; and Saturday 8:00 a.m. – 12:00 p.m. The Helpdesk is not available on Sunday. Additional support staff provide assistance with issues, such as computer support services, anti-virus solutions, email correspondence, software, and technical problem resolution. The Testing Center provides testing facilities that are available for all students.

_Faculty satisfaction._ The goal of _faculty satisfaction_ is that faculty be pleased with teaching online (http://sloanconsortium.org/5pillars). Faculty satisfaction was measured by evaluating faculty participation in matters particular to all modes of education, adequate support services, opportunities for continued professional development, and overall satisfaction. Faculty participation is encouraged in matters pertaining to the Radiography program. Program co-chairs, while developing the program budget, directly involve faculty in the budgeting process. During the budget process, co-chairs consult faculty members for their input regarding any specific budget requests for the upcoming fiscal year. Faculty members also have control over course design in all modes of delivery, as long as they follow predetermined course syllabi.

Several support services are provided to faculty and staff. The Distance Learning division staff provides direction, instructional design, and technical support to online
instructors. The Media Center provides technical equipment (e.g., projectors, cameras, DVD players, VCR), along with a variety of educational tapes and DVDs. The Print Shop provides essential printed materials, such as handouts, instructional guides, tests, and forms, and the LRC provides books, periodicals, and newspapers in hard copy or via Internet access. In addition, the Health Occupations division is staffed with two secretaries who provide clerical support for the program.

The institution is committed to professional development through its Office of Faculty and Staff Development. Several opportunities are available to faculty and staff: certificate programs in teaching and learning skills; motivational speakers; new technology courses; and interpersonal team building. A calendar of activities is posted six months out. All courses are offered on each of the three campuses as well as online. The Staff Development program is organized into four areas:

1. Center for Personal and Professional Growth and Development
2. Center for Excellence in Learning and Teaching
3. Center for Quality Leadership
4. Center for Today’s Technology

In addition, for all newly hired instructors, an Individual Development Plan (IDP) is established for the employee by the program co-chair and Professional and Staff Development personnel. The IDP developed is employee specific and dependent upon the employee’s education and experience at the time of hire. To satisfy probationary requirements, an employee may be required to participate in teaching modules such as Creating a Community of Learners, Planning for Outcomes, Teaching and Learning, Moving Beyond the Classroom, Teaching with Technology, and Assessing Teaching and
Learning. Diversity education is mandatory for all employees, which consists of at least nine hours of training the first three years of employment and four hours of training each year thereafter. Yearly safety training is also required of all staff.

On a program level, the Radiography program is a strong advocate for professional development in order for faculties to keep abreast of advancements in education, including advancing technology in the health and academic fields. As part of the program’s long-range goals, faculty members are encouraged to pursue advanced degrees. The institution reimburses up to 12 semester credits per year to any faculty member pursuing and advanced degree. Each credit hour is reimbursed at a rate not to exceed local state college tuition rates.

Faculty are also encouraged to attend state and national meetings, for which the program provides some funding. In addition, faculty members have the opportunity to be released from work duties to return to their occupational fields to update their technical skills. This provides faculty with the opportunity to spend time in the working environment to maintain current practical knowledge in the profession. Clinical staff and instructors have the option of enrolling in a series of online, credit courses for Clinical Preceptors that are offered by the college. Such courses include Introduction to Healthcare Education, Application to Healthcare Education, and Preceptor Practicum.

The Self-Study (JRCERT, 2005) states that the program regularly solicits feedback from faculty, using a variety of tools to obtain information regarding activities and accomplishments. Soliciting feedback allows the program to determine whether it is meeting faculty expectations. Soliciting faculty feedback also provides the program with the opportunity to assess whether it is achieving desired goals and affords the opportunity
for CQI. According to the Self-Study (JRCERT), the Radiography program collects faculty feedback using various methods: staff meetings, emails, telephone calls, and a clinical instructor survey. Data provided by the institution for the purpose of this study did not reflect evidence of any such behavior. Upon further investigation, however, it was determined that the Radiography program solicits feedback from faculty and staff regularly using an informal process. The process uses informal, open dialog via a variety of communicative methods: staff meetings, emails, and telephone calls. The clinical instructor’s website (CIA) has not been in operation since 2005. The institution presently has no formal process to collect feedback from faculty regarding faculty satisfaction.

*Student satisfaction.* The Radiography program also regularly solicits feedback from students, using a variety of tools to obtain information regarding activities and accomplishments. The goal of student satisfaction is that students be pleased with their experiences in learning online, including interaction with instructors (http://sloanconsortium.org/5pillars). Student satisfaction was measured by evaluating students’ learning experiences. The Radiography program collects student feedback using the following tools: course evaluations, clinical instructor evaluations, clinical site evaluations, program evaluations/exit interviews, and graduate surveys.

At the end of each quarter, students complete course evaluations assessing didactic instruction. The Radiography program’s benchmark for course evaluations is that 85% or more of the students should be pleased with the course. The program reported course satisfaction rates of traditional students for the 2002-2003, 2003-2004, and 2004-2005 school years as 87%, 84%, and 90%, respectively (see Table 4.7). For distance (online) students, the satisfaction rate was reported as 95% for the 2003-2004 school year.
and 97% for the 2004-2005 school year, or an overall combined average for both traditional and distance (online) of 92%. More recent data for traditional students for the 2008-2009 and 2009-2010 school years reported 97% and 96%, respectively. Data were not provided for distance (online) or hybrid students.

Table 4.7

Course Evaluations for the Radiography Program

<table>
<thead>
<tr>
<th>School year</th>
<th>Traditional</th>
<th>Distance (online)</th>
<th>Hybrid</th>
<th>Combined course evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>87%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2003-2004</td>
<td>84%</td>
<td>95%</td>
<td>-</td>
<td>90%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>90%</td>
<td>97%</td>
<td>-</td>
<td>94%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>97%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2009-2010</td>
<td>96%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(overall average)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>92%</td>
</tr>
</tbody>
</table>

Note: Dashes indicate data were not reported.

Clinical education is evaluated by students through two different methods: clinical instructor evaluations and clinical site evaluations. The Radiography program’s benchmark for clinical instructor evaluations is that 85% or more of the students should be pleased with the clinical instructor. The program reported a clinical instructor satisfaction rate for distance students for the 2002-2003, 2003-2004, and 2004-2005 school years as 97%, 89% and 94% respectively, resulting in a three-year average of 93% (see Table 4.8). Data were not available for traditional students during the reporting time.
of this study, nor was it provided separately for hybrid students; therefore, the overall combined average for both traditional and distance (online) is not provided.

Table 4.8

*Clinical Instructor Evaluations for the Radiography Program*

<table>
<thead>
<tr>
<th>School year</th>
<th>Traditional</th>
<th>Distance (online)</th>
<th>Hybrid</th>
<th>Combined clinical instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>-</td>
<td>97%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2003-2004</td>
<td>-</td>
<td>89%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2004-2005</td>
<td>-</td>
<td>94%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(3-year average)</td>
<td>-</td>
<td>93%</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note:* Dashes indicate data were not reported.

The clinical site evaluation’s benchmark is that 85% or more of the students should be pleased with their clinical sites. The program reported the clinical site satisfaction rate for traditional students for the 2002-2003, 2003-2004, and 2004-2005 school years as 50%, 64%, and 67%, respectively (see Table 4.9). For distance (online) students, the program reported satisfaction rates for the 2002-2003, 2003-2004, and 2004-2005 school years as 97%, 93%, and 96% respectively. Data were not provided separately for hybrid students. The overall, combined 3-year average for both traditional and distance (online) students was 78%. Compared to the traditional student clinical site satisfaction rate reported—50%, 64%, and 67%—the distance (online) student satisfaction rate is remarkably higher than the combined traditional and distance (online) rate of 78%.
Table 4.9

Clinical Site Evaluations for the Radiography Program

<table>
<thead>
<tr>
<th>School year</th>
<th>Distance (online)</th>
<th>Hybrid</th>
<th>Combined clinical site</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>50%</td>
<td>97%</td>
<td>74%</td>
</tr>
<tr>
<td>2003-2004</td>
<td>64%</td>
<td>93%</td>
<td>79%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>67%</td>
<td>96%</td>
<td>82%</td>
</tr>
<tr>
<td>(3-year average)</td>
<td>60%</td>
<td>95%</td>
<td>78%</td>
</tr>
</tbody>
</table>

Note: Dashes indicate data were not reported.

Upon completion of the program, students assess the program in its entirety by completing a final program evaluation while meeting one on one with a program co-chair in an exit interview. Program evaluations and exit interviews collect qualitative data and are performed at the ends of the fourth and eighth quarters of the program. Students’ comments are reviewed by faculty to determine whether any major themes appear. The institution, therefore, has no set benchmark for program evaluations other than addressing any concerns or major themes that arise. The institution reported for the 2008-2009 and the 2009-2010 school years that no major themes were identified.

The college’s placement office collects feedback yearly from alumni using graduate surveys. Survey results are collected and compiled each spring by the college’s Testing Center, which are then reported to the head of the Radiography program. Graduate surveys are conducted one year post graduation. The institutional graduate satisfaction benchmark is that 85% or more of the graduates (alumni) are pleased with the program. The institution reported 100% graduate satisfaction for both the 2008-2009 and
2009-2010 school years (see Table 4.10). The institution noted that the response rate was 7/31 (22.5%) for the 2008-2009 school year and 12/28 (42.9%) for the 2009-2010 school year. Previous graduate survey data supplied for the program reported graduate satisfaction rates for the 2002-2003, 2003-2004, and 2004-2005 school years of 96%, 98% and 100% respectively (see Table 4.10). A three-year average of 98% was reported in 2005.

Table 4.10

*Graduate Survey for the Radiography Program*

<table>
<thead>
<tr>
<th>School year</th>
<th>Traditional (online)</th>
<th>Hybrid</th>
<th>Combined graduate satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>-</td>
<td>-</td>
<td>96%</td>
</tr>
<tr>
<td>2003-2004</td>
<td>-</td>
<td>-</td>
<td>98%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>-</td>
<td>-</td>
<td>100%</td>
</tr>
</tbody>
</table>

(3-year average reported 2005)

*Note:* Dashes indicate data were not reported.

*Structured interviews.* The second instrument used for data collection was a series of on-site, one-on-one, structured interviews. Four administrators participated in the structured interviews: the Dean of the Health Sciences Division; the Program Co-Chair, Distance Director; the Program Co-Chair, Traditional Director; and the Dean of Continuing Education. The Program (Co-Chair) Distance Director and the Program (Co-
Chair) Traditional Director co-chair the Hybrid Radiography Program. The college’s present Dean of Continuing Education was asked to participate in the structured interviews due to his/her role as the founding administrator of the Distance (Online) Radiography program.

One week prior to the site visit, a reminder/confirmation email was sent to each administrator along with the Administrator Questionnaire (see Appendix I) to be filled out in advance of the interview. The questionnaire consisted of several closed-ended questions for the purpose of collecting additional information about the program under study and for seeking information about the Radiography program as a whole. Data collected consisted of information such as faculty members’ number of years’ experience teaching traditional, hybrid, and distance (online) courses; teaching loads; student teacher ratios; and student demographics.

The four administrators who participated in the structured interviews had a total of 62 years of work experience in higher education: 27 years, 11.5 years, 14.5 years, and 9 years, respectively—, specifically in the field of Radiologic Technology, and all of which has been within the Radiography program under study. Broken out by type of teaching, the total number of years of teaching experience was reported as 33.5 years in distance (online), 10 years in hybrid, and 48.5 years in traditional. The total number of courses the respondents have taught is approximately 140 distance (online), 85 hybrid, and 49 traditional. All four respondents reported receiving some form of professional development or mentorship in order to teach distance (online) or hybrid courses.

There are a total of eight instructors in the Radiography program. Five instructors teach courses to distance (online) and hybrid students. The remaining three instructors are
dedicated to teaching traditional courses. The school also has four adjunct instructors who teach in the local clinical site. The current teaching load for all three modes is 22 contact hours per quarter (there are four quarters in a year). The number of actual courses taught by each instructor varies per quarter. The student/teacher ratio is approximately 25:1.

The Radiography program accepts approximately 30-35 students each year: 13 traditional, 7 hybrid, and 10-15 distance (online) students. Presently, the total number of students in the Radiography program is 61; 28 of these are first-year students and 33 are second-year students. Of the 28 first-year students, 10 are distance (online) students, 7 are hybrid students, and 11 are traditional students. Of the 33 second-year students, 14 are distance (online) students, 7 are hybrid students, and 12 are traditional students. The percentages of students residing within a particular distance of the college for each of the three modes of delivery are listed in Table 4.11.

Table 4.11

<table>
<thead>
<tr>
<th>Mode of delivery</th>
<th>0-20 Miles</th>
<th>21-50 Miles</th>
<th>51-100 Miles</th>
<th>&gt;100 Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (Online)</td>
<td>4%</td>
<td>8%</td>
<td>54%</td>
<td>34%</td>
</tr>
<tr>
<td>Hybrid</td>
<td>100%</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Traditional</td>
<td>87%</td>
<td>13%</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note: Dashes indicate data were not reported.*

Structured interviews were conducted with all program administrators—distance (online), hybrid, and traditional—of the Radiography program. The purpose of
conducting structured interviews was to gain administrators’ insights regarding the quality of each of the three tracks and the student body which they serve, and to seek information not already identified in the school’s Self-Study (JRCERT, 2005). Therefore, the interview questions were strategically chosen to fill any gaps identified between the school’s Self-Study (JRCERT) and the five pillars of the Sloan-C’s Quality Framework (see Appendix J).

Three questions were asked regarding the Learning Effectiveness pillar. The first question asked was, “How does the college ensure that academic integrity and control reside with the faculty of the online program in the same way as in its traditional or hybrid program?” One administrator responded saying, “the college made sure online courses never became ‘canned’ courses; therefore, total control and accountability would all entirely reside with that instructor.” The same administrator also added that “the syllabus is the same for all three modes” and that the instructors “are given the freedom to design their own classes as long as they follow the syllabi. So they have the freedom to bring in new things—technology.” A second administrator also noted that instructors are given the freedom to design their own courses as long as they follow course syllabi. In addition, two of the respondents noted regarding online integrity that “the college uses a learning management system to watch online students” to ensure online integrity is as stringent as traditional. Through the use of a learning management system, instructors can view students’ activities “behind the scenes.” Respondents noted that they are “able to run reports” to track students’ online activity. They noted “we can [see] when they [students] are taking a test and see if they are opening their PowerPoint for the lecture, or if they have opened the test and closed it real quickly,” and “we can compare one student
to another student if they are on at the same time and if they click off at the same time and if they come back at the same time.” In addition, one responded stated, “So essentially we can see behind the scenes, every click, every mouse click that they do; we then can pull reports, that will hold them accountable to their actions,” and this has been “probably one of the college’s biggest problems right now—online cheating. The respondent also noted that the college as a whole has been addressing this issue by reviewing policies and procedures for upholding those policies in order to maintain consistency and ensure integrity.

The second question for Learning Effectiveness was “What standards and measures do you believe are needed for ensuring quality in distance (online) education, and do you believe any of these should be weighted more than others?” Two of the four administrators responded citing learning outcomes of the ARRT national board exam (measured by the number of students passing the exam on first attempt) as a primary measure. One of the two respondents also noted “course completion grades” as another measure. Another respondent also noted course completions grades. One administrator responded stating that standards and measures “reside in multiple areas” and that “no one metric is good enough. Rather a holistic approach is needed including behaviors, attitudes, skills, and knowledge-base.” Additional responses included “course evaluations across all three modes of delivery,” “clinical competencies (no less than 75%),” and “overall GPA.”

The third question for Learning Effectiveness was “How does the college measure/compare learning effectiveness across delivery modes?” Two of the administrators responded saying measures are accomplished through “assessment.” The
college has an assessment team that sets guidelines and minimum thresholds. All instructors must have assessments built into their curriculum. At the end of the course, each instructor evaluates the effectiveness of that course and must provide such assessments to the program chair. The program chair compiles results into a master course assessment for the program. At the end of every year, the program chair and instructors meet and review the outcomes. If the threshold was not met, then the program chair (and instructor) reassesses the course and the instructor, which is done through student evaluations, peer evaluations, and program chair evaluations. One respondent noted, “Our philosophy is that outcomes should not be any different whether it is face-to-face [traditional] or [distance] online, if we are giving the students what they need. Sometimes they are [different] and then we have to go back and take a look.” Instructor’s evaluations of students, clinical evaluations, course grades, and overall grades on the national registry are examples of measures used for outcomes assessment. The remaining two respondents noted that learning effectiveness had been measured through the use of student evaluations (of instructors, clinical sites, and courses), comparing perceptions of distance students to that of traditional students.

Three questions were asked regarding the Scale (cost effectiveness and commitment) pillar. The first question asked was, “How does the college demonstrate financial commitment to its distance (online) programs?” All four respondents noted that the college has financially supported the Radiography program from the beginning, even when it was in the development stages. One respondent noted “the program was supported monetarily when program developers needed additional staffing,” and that “the number of staff has doubled [since inception].” Respondents also noted the college’s
online program has had many different online management systems—four computer systems in the past six years and that “every time the college has changed from one system to another the college has financially supported faculty training and paid stipends to faculty involved in course development.” Two of the respondents noted that the college also has a professional development group that “continuously provides in-service training sessions.” Another respondent commented:

One of our biggest assets from our CEO is that he did not want a tuition difference between face-to-face [traditional] and online [distance]; in-state tuition is the same for either mode of delivery. [Regarding] cost effectiveness we feel the student is getting a good education for the amount of money they are paying.

The second question for Scale was, “How does the college demonstrate technical commitment to its distance (online) programs?” Respondents noted that the college was supportive providing technology if needed. One respondent stated, “When it comes down to instructors themselves for example, if you need a certain type of technology like a new computer or some kind of software, they [the college] are going to make sure it is available.” Another respondent commented that:

they [the college] have provided us with the technology we need. Whether it was software to improve the quality of the delivery mechanism that we had, whether it was the ability to go to conferences and be able to learn more about it…they have given us a lot of support. That was the key. We couldn’t have done it without that support.

The third question for Scale was, “What are some of the budgetary challenges to delivering distance (online) and hybrid educational programs compared to traditional
programs?” Respondents noted that there was one collective budget for the Radiography program as a whole; the budget is not broken down by mode of delivery. One respondent explained that “the college uses what is referred to as a zero-balance budget,” a method of budgeting in which expenses are justified for each new period; therefore, total income minus total expenses equals zero. Each year the program identifies what the costs are going to be for the upcoming school year and budgets are built around needs for the upcoming period. The budgeting process is based solely on operating expenses and some travel expenses. One respondent commented:

We are very fortunate budgetary-wise. We have a good computer budget. We just finished our budget and with everybody that put in for things we got 70% of what we asked for, which I think is wonderful. Times are tough. Like I said, we can always have more. But we do well.

In regard to budgetary challenges, one respondent noted that, “Probably the biggest budgetary challenge was figuring out how many new [clinical] sites would come on board, because then the process of getting them approved by the JRCERT was really long and difficult.” Another respondent commented, “More than anything else I think it’s the travel [expense], because our instructors here travel to different clinical sites to make sure that the students there are getting the quality education they need,” and “So when it comes to budgeting I always have to think about their traveling [expenses: mileage, room and lodging, airfares]. That part of the budget is with the distance part, where we don’t use near as much of it in the traditional part.”

Three questions were asked regarding the Access pillar. The first question asked was, “What information about your program do you emphasize in marketing, recruitment,
and admission processes for your distance (online) program?” One respondent noted, “The biggest thing that we market for is flexibility of the online format…with the understanding and expectation that there are deadlines to meet, but the flexibility of learning from a computer.” Respondents noted that they try to make sure potential students understand the expectations, that it is not just the didactic delivery of the online coursework required, but that students must also undertake a clinical education component for the duration of the two-year program and face-to-face clinical demonstrations, which cannot be done online. Another respondent noted that one of the main things the institution markets is how personable the instructors are, saying “We’re very much in touch with our students and we make it very easy for them to contact us [through various modes such as email, telephone, Yahoo Instant Messenger], and they can also see when we’re online and when we’re not online.” The college also stresses to potential students that online courses are the same as traditional courses. For example, online students hear exactly the same lecture traditional students hear because lectures given to traditional students are recorded and posted for online students, as are any associated PowerPoint presentations. In addition, one respondent noted that a large part of the marketing scheme for the online program was “it’s [education] delivered to you. You can stay in your hometown area.” The idea was based on the premise of keeping students in their hometowns, in local rural area small towns. Typically, after finishing high school, students would leave their small home town to go to college “in the big city” and not return. The concept behind this part of the college’s distance (online) offering was that if students can be taught in the small town, there is a better chance that they would stay, at least for some period of time. In this way, the college was able to recruit
distance (online) students as well as form partnerships with additional clinical sites. The respondent stated that “A lot of times we’d go to the facility, and say, you’re short [of] students; have you thought about growing your own?” Initially, this type of recruiting was done through “cold calls to hospitals in areas that lacked access geographically to a Radiologic Technology program.” Eventually, word-of-mouth advertising prevailed and the college no longer needs to go out and solicit in this manner, unless a potential student calls who is from an under-served area. Then, the college will contact the local hospital in that area to solicit a partnership.

The second question for Access was, “What sources does the institution provide to prospective students actively seeking out information about the distance (online) program?” Respondents noted several places where students can access information about the online Radiography program. The primary source noted by all four administrators was the college’s website in which all of the college’s programs are listed. Other sources of information noted by respondents included career cluster brochures printed and distributed all over the state, the college catalog, recruiting fairs at local high schools, health fairs at various local organizations, and an annual on-campus open house. Students can also contact the admissions office directly, and the office can then send the potential student a packet of information, including, but not limited to, a college catalog, college application, and a list of prerequisites about the Radiography program.

The third question for Access was, “Does the college have integrated support services (i.e., IT training and support, tutoring, library holdings, registration, books, and program/course listings) available online to learners? Respondents noted a variety of services the college offers. Online students can register and pay for courses; complete the
college orientation; access the college bookstore for ordering books and have them shipped to their homes; access library holdings, including several databases such as ERIC and ProQuest; and access a portal that allows students to view their grades, financial aid status, payment and billing status, and other personal information. The college also provides students 24/7 access to the college’s help desk.

Three questions were asked regarding the Student Satisfaction pillar. The first question asked was, “What processes are in place to ensure distance (online) students receive a quality education?” Respondents noted that the college has various processes in place to ensure quality, such as various forms of student feedback (student course evaluations, student instructor evaluations, and exit interviews), instructor performance evaluations, benchmarking (ARRT first-attempt pass rates), employer surveys (six months and a year out), and an emphasis on directing student focus onto learning objectives. Regarding student focus on learning objectives, one respondent noted that “We tell the students in an online forum that if they would like a roadmap to successful course completion [they should] utilize the course learning objectives for studying. The learning objectives will be a tool that will help guide you.” Another respondent noted that, “I think the [student] feedback from the evaluations are [sic] probably the number one thing that we really, really look at.”

The second question for Student Satisfaction was, “What processes are in place to ensure that faculty/learner interaction is timely and substantive for distance (online) learners?” Respondents noted that the college does not have a formal, written policy stating any set criteria as to faculty/learner timely feedback. The unwritten policy is that instructors are to respond to students in a timely manner, typically meaning within a
24-hour period. The college posts a notice in all online courses that there is a 24-hour response time to any emails, not including weekends or holidays. One respondent noted that, “I would say that is probably one of our biggest complaints; the students expect immediate feedback, even on the weekends. . . . So we do tell the students that office hours are during the week.” Even though there is no formal policy, some instructors do have weekend office hours. If student complaints are received, they are investigated immediately. The online course management system offers tracking capabilities for situations such as this.

The third question for Student Satisfaction was, “What processes are in place to confirm that course learning objectives are being met, to what extent they are being met, and for using the results to improve learning?” Two respondents in particular explained that every quarter, instructors do reliability and validity studies on their tests. The online testing system provides instructors the ability to do an item analysis on tests, by section or question, to see where students encountered difficulties. By doing so, instructors can determine if any of the questions need to be reworded or removed, and if any additional instruction time needs to be devoted to a particular learning objective. One of the respondents stated that “the course objectives…as an instructor, are used to design our testing and they’re used as a roadmap to be sure we are meeting learning objectives in the lecture component,” and that, every quarter, course syllabi are reviewed by the dean. Another respondent noted that twice throughout the two-year program, students come onsite for a three-day workshop. The workshop focuses on commonly misunderstood topics, ethics, and program expectations. In addition, students are observed in a lab setting, where they are expected to perform a simulation, acting out different exams and
procedures, in order to demonstrate what they have learned didactically and clinically, as well as their ability to demonstrate critical thinking. One respondent stated:

I think one of the main things is that we get feedback from students.… And we get great feedback from students saying, this one’s not very clear, can you expand upon this one? … I think the feedback from the students is priceless.

Three questions were asked regarding the Faculty Satisfaction pillar, including one general and final closing question. The first question asked was, “How does the college ensure faculty participation in matters particular to distance (online) education (e.g., governance, intellectual property, and royalty sharing)? One respondent noted that faculty members are given the freedom to design their own classes as long as they follow the syllabi. So, faculty has the freedom to bring in new ideas and new technologies. Two of the respondents noted that college policy regarding intellectual property states anything developed utilizing college property or a college resource becomes the property of the college. One of the respondents clarified that intellectual property is jointly held. In other words, if employees leave, they can take a copy, but the college also gets to retain a copy. The respondent also noted that the policy is not highly regarded by all faculty members and that the issue remains a subject of ongoing debate. In addition, two respondents shared that the college does not do any surveying of faculty to collect faculty feedback or satisfaction rates. Lastly, one respondent freely added “I can honestly say this school does not do any surveying of faculty—surveying of faculty on their satisfaction.”

The second question asked was, “How does the college ensure adequate support (e.g., professional development, mentorship, and IT Support) for faculty in distance
(online) course preparation and course delivery?” Two of the respondents noted that the college has a professional development division within Human Resources, which offers a variety of educational, in-service training sessions and workshops. The college has a dedicated professional development website, where faculty can go to learn about a variety of topics. The respondents recognized that the in-service training sessions and workshops are not geared to online delivery, but are based on teaching strategies that can be learned and applied to the online learning environment. All respondents noted that the college has a great IT support team and instructional design team, but admitted that there is not enough support. Each college has one IT support person. The main campus alone has 500 full-time faculty members, followed by two other campuses with 167 and 132 full-time faculty members. Also noted was that the college has 4300 computers, supported by five IT staff.

The third question asked was, “What do you believe are the primary benefits and barriers to distance (online) learning?” All four respondents noted a primary benefit to online learning is flexibility. Students otherwise unable to attend college are able to get an education and at the same time maintain control of their schedules. One respondent noted that the college is providing a benefit to communities, in that it is providing needed healthcare workers throughout the state. Three of the four respondents commented that the primary barrier to online learning is the lack of face-to-face interaction—student-student and student-instructor interaction—and that this lack of interaction may not be conducive to students’ learning styles. Two of the respondents noted technology as a barrier. One of the two respondents noted that the instructor is at the mercy of the software platform the college uses—restricted as to what they can and cannot do—and
the other respondent noted that students’ lack of ability with technology can be a barrier. Another respondent identified technology as a benefit to online learning; various technologies are available for online learning and can be implemented to assist in the presentation of materials. Lastly, one respondent noted two additional barriers to online learning: first, the public doesn’t understand online education as well as they should and, therefore, they have a negative perception of online, and second, there is a belief that online learning is easier than traditional.

The final, closing question presented to administrators was, “If you were to rate the quality of your present distance (online) program, how would you rank it on a scale of 1-10, with 1 being very poor, 5 being average, and 10 being exceptional?” Administrators responded with, “I’ll say a 9, exceptional,” “I would say that our program is at about an 8, and I say 8 because I know there is room for improvement,” “I’d give it a 9. Is there always room for improvement? Always. I don’t think anything is really a 10, to be quite honest. Once you think that you’re at a 10, you might as well just stop,” and “there’s always room for improvement, I don’t care what you’re doing—so I’d rate it, probably 8½, a 9.”

*Quality scorecard for administrators of online education programs.* The Quality Scorecard (see Appendix G), developed by Kaye Shelton, is an instrument for assessing quality within online education programs (Shelton, 2010). The Quality Scorecard is intended to be used by institutions that are seeking methods for CQI to demonstrate the overall quality within their educational programs. At completion of the structured interview process, each administrator was asked to complete the Quality Scorecard and return it via mail to the researcher within one to two weeks.
The study resulted in 100% participation by the four administrators of the program under study. The maximum possible score, in other words a perfect score, is 210 points. A score of 189-209 is deemed Exemplary, meaning little improvement is needed. A score of 168-188 is Acceptable, meaning some improvement is recommended. A score of 147-167 is Marginal, meaning significant improvement is needed in multiple areas, and a score of 126-146 is Inadequate, meaning many areas of improvement are needed throughout the program. A score of 125 points or lower is considered Unacceptable. Two of the respondents rated the online program as Exemplary giving it an overall score of 193 and 201 respectively. One respondent rated the program as Acceptable, scoring 174 points, and the fourth respondent rated the program as Marginal, at 167 points. It is worth noting that the fourth respondent’s rating of 167 is just one point short of Acceptable.

Whereas the Quality Scorecard for Administrators of Online Education Programs itself is divided into nine categories, the Sloan-C also formally associates each question on the Quality Scorecard with a particular pillar of their Quality Framework (see Appendix K). This results in a partitioning of the Scorecard’s 210 total points into subtotals by pillar. Under this partitioning, the highest possible score for the Learning Effectiveness pillar is 57 points, for the Scale pillar 39 points, for the Access pillar 42 points, for the Faculty Satisfaction pillar 27 points, and for the Student Satisfaction pillar 45 points.

Analyzing the scores of the four respondents along lines of Quality Framework pillars yields the results in Table 4.12. This table presents a breakdown of the responses given on the Quality Scorecard by the four administrators. The responses are presented according to the Sloan-C's formal association of questions with Quality Framework
pillars, as previously outlined (see Appendix K). For each pillar, the table gives the sum of each respondent’s answers to the complete set of Quality Scorecard questions for that pillar as well as the sum of that respondent’s answers to the entire Quality Scorecard. The maximum possible points for each pillar are also shown.

Table 4.12

**Respondents’ Quality Scorecard Point Results by Sloan-C’s Quality Framework’s Five Pillars**

<table>
<thead>
<tr>
<th>Response</th>
<th>Learning effectiveness</th>
<th>Scale</th>
<th>Access</th>
<th>Faculty satisfaction</th>
<th>Student satisfaction</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Possible Points</td>
<td>57.0</td>
<td>39.00</td>
<td>42.00</td>
<td>27.00</td>
<td>45</td>
<td>210</td>
</tr>
<tr>
<td>Respondent 1</td>
<td>51.0</td>
<td>33.00</td>
<td>34.00</td>
<td>25.00</td>
<td>31</td>
<td>174</td>
</tr>
<tr>
<td>Respondent 2</td>
<td>56.0</td>
<td>36.00</td>
<td>41.00</td>
<td>25.00</td>
<td>43</td>
<td>201</td>
</tr>
<tr>
<td>Respondent 3</td>
<td>44.0</td>
<td>33.00</td>
<td>38.00</td>
<td>21.00</td>
<td>31</td>
<td>167</td>
</tr>
<tr>
<td>Respondent 4</td>
<td>55.0</td>
<td>37.00</td>
<td>36.00</td>
<td>22.00</td>
<td>43</td>
<td>193</td>
</tr>
<tr>
<td>Average Points</td>
<td>51.5</td>
<td>34.75</td>
<td>37.25</td>
<td>23.25</td>
<td>37</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 4.13 presents the same data as Table 4.12, but shows them as percentages of total possible points. For example, in Table 4.12, Respondent 1 gave 51 points to the Learning Effectiveness pillar, out of a total of 57 possible points, thereby ranking it at the 89.5th percentile in Table 4.13, and so on. The **Total Points** column in Table 4.13 presents Table 4.12’s **Total Score** figures as a percentage of the total number of possible points: 210 on the entire Quality Scorecard. The overall average percentage for each of the four respondents is presented in the last column and reflects an overall ranking of 87.5%.
Table 4.13

Respondents’ Quality Scorecard Percentages by Sloan-C’s Quality Framework’s Five Pillars

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Learning effectiveness</th>
<th>Scale</th>
<th>Access</th>
<th>Faculty satisfaction</th>
<th>Student satisfaction</th>
<th>Average percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent 1</td>
<td>89.5%</td>
<td>84.6%</td>
<td>81.0%</td>
<td>92.6%</td>
<td>68.9%</td>
<td>82.9%</td>
</tr>
<tr>
<td>Respondent 2</td>
<td>98.2%</td>
<td>92.3%</td>
<td>97.6%</td>
<td>92.6%</td>
<td>95.6%</td>
<td>95.7%</td>
</tr>
<tr>
<td>Respondent 3</td>
<td>77.2%</td>
<td>84.6%</td>
<td>90.5%</td>
<td>77.8%</td>
<td>68.9%</td>
<td>79.5%</td>
</tr>
<tr>
<td>Respondent 4</td>
<td>96.5%</td>
<td>94.9%</td>
<td>85.7%</td>
<td>81.5%</td>
<td>95.6%</td>
<td>91.9%</td>
</tr>
<tr>
<td>Average</td>
<td>90.4%</td>
<td>89.1%</td>
<td>88.7%</td>
<td>86.1%</td>
<td>82.3%</td>
<td>87.5%</td>
</tr>
</tbody>
</table>

The Quality Scorecard provides the only measurement of overall faculty satisfaction at the institution under study. The Quality Scorecard by Sloan Consortium Pillars (Appendix K) identified nine questions from the Quality Scorecard for the Administration of Online Education Programs (Appendix G) that specifically address the Sloan-C Quality Framework pillar Faculty Satisfaction. Table 4.14 is a breakdown of the nine questions and the administrators' responses to each. Each question is worth up to three points (0, 1, 2, or 3 points) representing the degree to which the program meets the criteria of that question. The maximum number of points possible for all nine questions was 27. The average number of points for each question is listed in the last column. The total number of points possible was calculated for each of the four respondents as well as the final overall average for the Faculty Satisfaction pillar. The administrators of the Radiography program scored Faculty Satisfaction as 92.6%, 92.6%, 77.8%, and 81.5%.
respectively (see Table 4.14), which translates to an overall ranking in the 86th percentile and places it within the Acceptable range according to the Quality Scorecard.

Table 4.14

*Quality Scorecard Rating of Faculty Satisfaction by Sloan-C Pillar*

<table>
<thead>
<tr>
<th>Question</th>
<th>Points per respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Clear standards are established for faculty engagement and expectations</td>
<td>#1 2 #2 3 #3 2 #4 2</td>
</tr>
<tr>
<td>2. Curriculum development is a core responsibility for faculty.</td>
<td>#2 3 #3 3 #3 3</td>
</tr>
<tr>
<td>3. Faculty are provided on-going professional development related to</td>
<td>#3 2 #3 3 #4 1</td>
</tr>
<tr>
<td>4. Faculty performance is regularly assessed.</td>
<td>#4 3 #3 3 #3 3</td>
</tr>
<tr>
<td>5. Faculty receive training and materials related to Fair Use, plagiarism, and other relevant legal and ethical</td>
<td>#5 3 #3 2 #3 3</td>
</tr>
<tr>
<td>6. Faculty workshops are provided to make them aware of emerging technologies and the selection and use</td>
<td>#6 3 #2 #3 #1</td>
</tr>
<tr>
<td>7. Instructors are prepared to teach distance education courses and the institution ensures faculty receive training, assistance, and support at all</td>
<td>#7 3 #3 2 #3 3</td>
</tr>
<tr>
<td>8. Policy for copyright ownerships of course materials exists.</td>
<td>#8 2 #3 2 #3 3</td>
</tr>
<tr>
<td>9. Technical assistance in course development and assistance with the transition to teaching online is provided</td>
<td>#9 3 #3 2 #3 3</td>
</tr>
<tr>
<td><strong>Total Points:</strong></td>
<td>25 25 21 22</td>
</tr>
<tr>
<td><strong>Total Average:</strong></td>
<td>92.6% 92.6% 77.8% 81.5% 86.1%</td>
</tr>
</tbody>
</table>

*Note. Maximum points possible was 27*
As previously mentioned, the Quality Scorecard is still a work in progress (Moore, 2005); interpretations of scores based on a 0-100% scale have yet to be officially sanctioned by the Sloan-C. At the time of this writing, there is no published article explaining what these percentiles are and how they can be translated. Overall, the ratings for each of the five pillars appear to be high, supporting the statement that on average, the administrators of the Radiography program at the institution under study consider their online program to be of high quality. Respondents 1's overall average rating of the program of 82.9% placed it within the Quality Scorecard’s Acceptable category. Respondents 3’s overall average rating of the program of 79.5% placed it within the Quality Scorecard’s Marginal category. Respondents 2 and 4’s overall average rating of the program, of 95.7% and 91.9% respectively, placed it within the Quality Scorecard’s Exemplary category. The overall average rating of the program of all four respondents is 87.5%, placing the program in the Acceptable ranking of the Quality Scorecard. It is worth noting that the overall average rating is at the high end of the Acceptable scale, placing it less than two percentage points below the Exemplary ranking.

Summary

This study used four instruments for data collection purposes: Self-Study (JRCERT, 2005), structured interviews, a Quality Scorecard for the Administration of Online Education Programs, and post 2005 Self Study data not yet submitted to the JRCERT. The Sloan Consortium’s Quality Framework was used to guide, merge, and unify the data collected from the four instruments. Each of the instruments offered a unique perspective, but the four also overlapped. The Self-Study (JRCERT) is a large mass of data reported by the institution to the JRCERT for accreditation. The data is
representative of the institution’s overall program quality using metrics, which can be mapped onto the five pillars of the Sloan Consortium’s Quality Framework. The structured interviews were designed to gather demographic information about the institution and to identify and fill any gaps in the Self-Study (JRCERT). The Quality Scorecard afforded the opportunity for administrators of the Radiography program at the institution under study to measure the quality of their program’s distance (online) track. Results of the Quality Scorecard were then identified with the five pillars of the Sloan Consortium’s Quality Framework. Post 2005 Self Study data not yet submitted to the JRCERT is representative of the institution’s overall program quality, which can be mapped onto the five pillars of the Sloan Consortium’s Quality Framework.

The final chapter of this study, Chapter 5, provides a detailed summary of the findings, a discussion of the limitations of this study, and any recommendations for practice and for future research or actions based on the findings. Chapter 5 will conclude with a final summary of this case study.
Chapter 5: Discussion

Introduction

Wang (2006) noted that with the growing popularity of distance education and online programs, educators and institutions of higher education have been charged with the task of assessing and identifying factors that define quality online education. The literature review, which is in Chapter 2 of this study, has made it evident that two problems exist. First, is the lack of consensus as to what quality is, and second, is the lack of a standardized process and set of measures for determining the quality of online programs.

As noted by Meyer (2002), defining and measuring quality has proven to be a difficult task due to the lack of consistency in terminology in the literature. McGorry (2003) noted that “The goal of measuring quality has been quite elusive in past research, as there are many other intangible dimensions of ‘quality’ that make the measurement of the concept quite challenging” (p.160). In addition, past research (Arbaugh, 2000; Braun, 2008; Dobbs, Waid, & del Carmen, 2009; Eom, Wen, & Ashill, 2006; Hale, Mirakian, & Day, 2009; Ortiz-Rodriguez, Telg, Irani, Roberts & Rhoades, 2005; Pullen, 2006; Reisetter & Boris, 2004; Reynolds, Rice, & Uddin, 2007; Seiler & Billings, 2004; Stodel, Thompson & MacDonald, 2006; Swan, 2001; Tanner, Noser & Totaro, 2009; Totaro, Tanner, Noser, Fitzgerald & Birch, 2005) has placed emphasis on individual courses, rather than on entire academic programs. As the Institution of Higher Education Policy (1999) pointed out, this “raises important questions about whether a total academic
program delivered by technology compares favorably with a program provided on campus” (p. 5). This emphasis on individual courses, rather than on entire academic programs, has left a significant gap in the research, which lacks focus on entire degree programs taught via distance learning (Buck, 2001; The Institute for Higher Education Policy, 1999).

Although many institutions have expanded online course offerings, many have not considered the issue of evaluating an entire program (Fresen, 2002; McGorry, 2003; Sonwalkar, 2002). In 2006, Mariasingam and Hanna indicated that the rapid growth of online education “has superceded [sic] our understanding” (p. 1) of how to evaluate programs effectively and that the issue of program evaluation has become of vital importance. Mariasingam and Hanna also noted that the development and implementation of a framework in which the quality of online degree programs can be assessed is “critical to future program growth and expansion” (p. 1). This is especially true if institutions of higher education are to demonstrate that they are delivering programs of quality (Johnstone & Krauth, 1996; Lockhart & Lacy, 2002). The proliferation of online programs, questions of instructional quality, and the need for the implementation of a quality framework make it imperative that institutions of higher education focus on how to measure the quality of online programs. The ability to measure quality of online programs would provide prospective students (consumers), as well as other stakeholders, with a means of comparing programs.

A qualitative approach to case study research method, in accordance with Yin’s (2003) case study design, was chosen as the most appropriate way to address the research question: In a single institution, are the quality outcomes of a two-year distance (online)
education program in Radiologic Technology the same as or different from its traditional and hybrid counterparts, when assessed in terms of:

1. Learning effectiveness?
2. Scale (cost effectiveness and commitment)?
3. Access?
4. Faculty satisfaction?
5. Student satisfaction?

Yin (2003) defines the case study research method as an empirical method of investigation that contributes to one’s knowledge base, and as being the “... method of choice when the phenomenon under study is not readily distinguishable from its context” (p.4). In the case of online learning, the phenomenon is Russell’s (1999) no significant difference phenomenon. Although the phenomenon was unable to be either confirmed or unconfirmed in this study, primarily due to the lack of differentiation of all data points collected by mode of delivery, it is nonetheless worthy of consideration. Therefore, a case study method is well suited to this study.

The Sloan-Consortium’s (Sloan-C) Quality Framework’s five pillars—Learning Effectiveness, Scale (Cost Effectiveness and Commitment), Access, Faculty Satisfaction, and Student Satisfaction—were used as a basis for evaluation in order to compare a distance (online) program to its traditional and hybrid counterparts. To add strength and validity to the study, multiple sources were used for the purpose of data collection: the Radiography program’s Self-Study (Joint Review Committee on Education in Radiologic Technology [JRCERT], 2005), one-on-one structured interviews, a Quality Scorecard for
the Administration of Online Education Programs, and post 2005 Self Study data not yet submitted to the JRCERT.

Implications of Findings

Theoretical underpinnings. Piaget’s and Vygotsky’s theories of Constructivism can be applied to any learning environment, whether traditional or online. In the case of this study, the focus is on evaluating the quality of a two-year Radiologic Technology distance education (online) program compared to its traditional and hybrid counterparts. The Radiography program’s Self-Study (JRCERT, 2005) noted that the purpose of their assessment plan was not only to analyze ongoing programmatic accomplishments and student learning success, but also to assess the quality of the program’s offerings across the traditional, hybrid, and distance (online) tracks. The strength in this study lies in the fact that the Radiography program is offered via three different modes—traditional, distance (online), and hybrid—at the same institution; the only difference is the mode of delivery. In addition, the institution under study is the only institution in the nation offering such a program via all three modes. This affords a unique opportunity for comparing program quality across the three modes of delivery. Comparing program quality across the modes of delivery is the basis of the theoretical underpinning of this study—The Equivalency Theory.

The Equivalency Theory has five key elements: equivalency, learning experiences, appropriate application, students, and outcomes (Simonson, 1999; Simonson, Schlosser & Hanson, 1999), in which equivalency is the central component. The notion of equivalency advocates that the structure and design of distance (online) and traditional programs/tracks are fundamentally different, yet ultimately provide equivalent
learning experiences (Simonson). This is further substantiated by the standards set forth in The Sloan-C’s Quality Framework that states that “The goal is that online learning is at least equivalent to learning through the institution’s other delivery modes, in particular through its traditional face-to-face, classroom-based instruction” (Moore, 2002, p. 54). This also mirrors standards set forth in the University of London Act of 1994, Statute 66(2). The Act states that academic standards are irrespective of mode of delivery, place of study, or examination (Kenyon Jones, 2008).

**Learning effectiveness**

*Learning effectiveness* was measured by examining outcomes of the ARRT national board exam, job placement rates, program completion rates, employer feedback, and retention rates. The Radiography program has consistently reported a pass rate exceeding the program’s benchmark of not less than 85%, which well exceeds the Joint Review Committee on Education in Radiologic Technology’s (JRCERT) criterion for a pass rate of not less than 75%. Although the program boasts a 29-year cumulative average pass rate of 99%, the 2009 and 2010 pass rates were slightly lower at 97% and 95% respectively. This is compared to the American Registry of Radiologic Technologists’ (ARRT) reported average national pass rate of 92.4% for 2010. The slight decrease in the program’s pass rate is worth noting and worth monitoring to ensure a trend is not developing; a downward trend might be an indicator of a potential problem.

The Radiography program’s benchmark for the job placement rate is a 5-year average of equal to or greater than 85% within 6 months of graduation. The program consistently reports figures exceeding these expectations. The most recent figures, for the 2008-2009 school year, reflected a 5-year average job placement rate of 97% and for the
2009-2010 school year only a 1% decrease to 96%. Though these figures have decreased slightly since the 2002-2005 figures reported at 100%, they still remain impressive considering the current job market in the U.S.

The program reported a 5-year average program completion rate of 82% and 79% respectively for the 2008-2009 and 2009-2010 school years. For 2000-2005, data reflected a rate of 90% for traditional students and 83% for distance (online) students—an average combined rate for traditional and distance (online) students of 87%. Even though these figures exceed the JRCERT’s standards for program completion rates over the past five years of not less than 75%, it is worth noting that the 5-year average reported for 2000-2005 for traditional students is much higher than that of the distance (online) students. It is also worth noting that program completion rates for the 2008-2009 and 2009-2010 school years were a compilation of traditional and distance (online) students; whereas, for 2000-2005 figures reported traditional and distance (online) students separately.

The Radiography program benchmark for employer satisfaction is a 5-year average of not less than 85%. The program reported employer satisfaction rates for the 2002-2003, 2003-2004, 2004-2005, 2008-2009, and 2009-2010 school years as 100%, 96%, 100%, 92%, and 94% respectively. A three-year average of 98% was reported in 2005. The slight decrease in the program’s employer satisfaction rate for the 2008-2009 and 2009-2010 school years is worth noting and worth monitoring to ensure a trend is not developing; a downward trend may be an indicator of a potential problem.

The Radiography program also tracks retention rates on a regular basis as a means of measuring learning effectiveness. The overall retention rate reported for traditional students from 2005-2010 was 71.4% and for distance (online) and hybrid students 76.3%.
Retention rates for the two tracks are in support of the Equivalency Theory, which advocates that the structure and design of distance (online) and traditional tracks are fundamentally different, yet ultimately provide equivalent learning experiences (Simonson, 1999). The combined retention rate for the traditional, distance (online), and hybrid tracks is 73.9%. The U.S. Department of Education (2009) reported a retention rate of 55% for community college students, stating that “Forty-nine percent of all first time community college students had been retained in their first institution, meaning they were still enrolled or had completed a credential at their first institution or had transferred to a 4-year institution” (p. 21). The Radiography program well exceeds this rate, reporting a combined retention rate of almost 79% and program completion rate of 87%. This is excellent for an open enrollment institution. The program’s above-average retention rates may be reflective of the institution’s commitment to providing a variety of student services, such as tutoring and student retention services, with the goal of ensuring students’ success. Student Retention Specialists are available to assist students who are experiencing academic difficulty. Specialists work with students, assisting them in developing a plan for success and provide students with a variety of resources related to student success (e.g., improving study and time management skills).

Scale

Scale was measured through evaluating the financial and technical commitment provided by the institution and the impact of these commitments on the Radiography program. These commitments include financial resources, budgeting processes, program director participation, governance, organizational mission and goals, and tuition rates. The Self-Study (JRCERT, 2005) noted that the institution is committed to technology and
academic transfer programs and demonstrates consistent, ongoing allegiance to its
programs and students. The major sources of revenue include state aid, local property tax,
tuition, and some miscellaneous and unbudgeted income. It is the Board of Governors' 
responsibility to develop and oversee the budget of revenues and expenses in the best 
interests of the institution, public, and students, allocating resources among the various 
organizational units to ensure the most effective and efficient delivery of services. Each
program develops its own individual budget and Program Directors are actively involved
in the budgeting process. The Radiography program uses one collective budget, which is
not divided by mode of delivery. As noted previously, administrators of the Radiography
program believe they have been very fortunate. The institution has provided the
Radiography program, especially the distance (online) track, with the technology it needs.
According to administrators of the Radiography program, at the time of this study, the
program was awarded 70% of what had been requested in the most recent budget process.
This amount is comparable to previous years’ budgets, and program administrators
believe it to be fair and equitable. According to one administrator of the Radiography
program, the percentage awarded for that budget year was typical across the institution.
The administrator also noted that each year the program submits a budget request for an
amount based on the ideal budget. The ideal budget amount includes both essential and
non-essential items as identified by program administrators.

The institution has demonstrated its commitment to institutional governance by
putting in place a governance structure to enable effective and comprehensive decision-
making practices. This governance structure is evidenced in the institutional and program
organizational charts provided in this study (see Figures 4.1 and 4.2); both charts
demonstrate a hierarchical governance structure. In addition, the Radiography program has identified a mission and several goals, which are assessed at least every five years; revisions are made as necessary to achieve continuous quality improvement. The Radiography program’s mission is to prepare competent Radiologic Technologists and is in line with the institutional mission, which is to provide quality career/technical and academic educational opportunities for students, businesses, and communities within the institution’s district.

The Radiography program has established for itself several distinct goals to ensure students are provided with the necessary environment, instruction, and training to develop personal, individual, and professional goals, behaviors, and skills. A properly trained student makes for a well-prepared Radiologic Technologist in matters ranging from sensitive and empathic patient care, to safe, efficient, and economical care and operation of radiologic equipment and supplies, to typical office procedures. The program is careful to combine thorough didactic and clinical training so that graduates may perform well both independently on routine tasks and when assisting physicians on more complex procedures. These traits in the program's graduates make them attractive and valuable to their employers improving employer satisfaction rates, which, in turn, stands to improve graduates' satisfaction with the program and their own self-esteem and quality of life. The program also works to instill a drive for lifelong learning so that graduates may maintain a high level of competence throughout their careers as technology and society continue to evolve.

Cost effectiveness for students is more than reasonable. Tuition institution wide is $51 per credit hour per term (quarter) for state residents. Out-of-state residents pay
slightly more, at $63 per credit hour per term (quarter). On-campus housing ranges from $782 to $1,404 per term (quarter), including Internet access, cable television, and telephone service, depending upon the type of room accommodations desired.

Access

Access was measured by examining college offerings, recruitment and admissions processes, program policies and procedures, equitable learning opportunities, learning resources, student services, and student support services. The Radiography program provides several college offerings that are made available to the general public on an open-enrollment basis. All coursework required to complete the Radiography program can be completed in its entirety in all three modes: traditional, hybrid, or distance (online). Prior to starting the program, potential distance (online) students are advised about technology to ensure students have access to the minimum technology needed to be successful in the program (e.g., computer and Internet connection). Students are advised regarding the self-motivation and commitment needed to learn at a distance (online), ensuring students are prepared for and understand the commitment needed to pursue distance (online) learning. Such practices will help the program maintain excellent retention and graduation rates.

In addition, all program recruiting, admissions information/materials, publications, and policies and procedures are easily accessible in commonly used formats (e.g., Adobe PDF and Microsoft Word) via the institution’s website as well as in paper form. The recruitment process is accomplished through various methods: advertising on radio, television, and newspaper; on-site open-houses for high school counselors; the institution website; and through affiliations with other institutions and organizations. The
open enrollment/open-door policy reinforces and guarantees that all students are treated equally and fairly, free from discrimination on any basis (i.e., age, gender, marital status, race, color, creed, religion, handicap, national origin, or political affiliation). All materials are reviewed and updated on a regular basis. Such behaviors ensure accuracy, timeliness, and accessibility.

All students entering the Radiography program are required to take an introductory orientation course entitled Radiologic Technology (RADT1100), an introduction to the field of Radiologic Technology and the Radiography program at the institution, to acquaint each student with the policies of the institution, policies of the Radiography program, the clinical education structure, and the responsibilities required of the student in the clinical setting. This practice helps students gain a better overall understanding of the field of Radiologic Technology and what is required of them to be successful in the program as well as on the job once they graduate; it offers students the opportunity to fully consider and evaluate the consequences of going forward with the program and a career as a Radiologic Technologist.

The Radiography program does not discriminate on any basis; all students are provided equitable learning opportunities. All students are given every opportunity to succeed and no student is excluded from an activity that another student is afforded. For example, students of both genders are provided the opportunity to rotate through Mammography (breast imaging) if they choose to do so, students who are primarily assigned to a rural clinic site are required to rotate to a larger affiliated clinical site, and students primarily assigned to a clinical education setting that utilizes digital imaging
must rotate to an affiliated facility that uses film/screen imaging; this ensures all students have a variety of experiences and equitable learning opportunities.

The Radiography program maintains a variety of learning resources to ensure student learning outcomes and student achievement of program goals. The on-site Learning Resource Center (LRC) offers a wide selection of health-related reference books, general books, health-related periodicals, and additional library holdings through the reciprocal borrowing agreements held by the LRC and other institutions. Electronic databases are easily accessible to all students and staff online whether onsite or offsite. In addition, the program website contains links to other resources and informational sites pertaining to Radiologic Sciences. Such resources provide accessibility in a variety of ways, with limited restrictions, and ensuring everyone, students and faculty, has easy access.

The institution also provides several student services through its dedicated Student Services department in which a wide range of services are available to all students (e.g., career counseling and placement; academic and vocational advising; help with adjusting to college life; services for students with disabilities; referrals to tutoring, clubs, and social activities). Students are also provided access to online support services prior to admission (e.g., students can complete the admissions process online, register for courses, purchase textbooks online by accessing the college bookstore, and access financial and other personal information online through WebAdvisor). Though the institution provides a wealth of support services to all students, students lack access to tutoring at a distance (online).
The institution and Radiography program provide support services to faculty and students to meet all the educational, program, and administrative requirements. Support staff provide services such as computer support, anti-virus solutions, and assistance with email correspondence, software, and technical problem resolution, and the Testing Center provides testing facilities that are available for all students. In addition, the institution provides a Helpdesk for basic computer questions and problems that is available to both students and faculty Monday through Thursday from 7:00 a.m. – 8:00 p.m., Friday 7:00 a.m. – 5:00 p.m., and Saturday 8:00 a.m. – 12:00 p.m. The Helpdesk is not available on Sunday. The Testing Center provides testing facilities that are available for all students. The lack of 24/7 availability of the Helpdesk can restrict access for distance (online) learners. Limited access could potentially have a negative impact on student satisfaction. This was established in the literature where students identified timely feedback as one of the most critical factors related to satisfaction and quality online education.

One administrator noted during the interview process that the program uses the same survey tool for traditional, distance (online), and hybrid students and those questions did not necessarily pertain to all three modes of delivery. Therefore, the tool presently being used may not be appropriate for the purpose intended: to measure all students’ satisfaction whether traditional, distance (online), and hybrid. The same administrator also noted that one of their biggest student complaints, voiced informally, is that students expected immediate feedback, even on the weekends. The program has no real set standard regarding feedback to students other than responding to students within in a timely manner. Timely equates to within 24-48 hours. The program clearly states to all students, traditional, distance (online) and hybrid, that instructors may not respond on
weekends. Weekend availability is not required of faculty, even distance (online) faculty. The same administrator also noted that some faculty members teaching distance (online) set up office hours on Sunday evening from 7:00 p.m. to 9:00 p.m.

Support services provided can have a huge impact on student and faculty satisfaction rates. In this case, the lack of 24/7 Helpdesk services for faculty will most likely have a negative impact on faculty satisfaction scores. The literature strongly correlates faculty satisfaction, when teaching at a distance (online), with flexibility and the need for strong technical support. Faculty satisfaction is dependent upon institutional support, professional recognition, and personal rewards (Bourne & Moore, 2003), which is accomplished through faculty participation regarding matters involving online education, high student achievement, teaching flexibility and convenience (i.e., work hours, and location), opportunities for research and professional recognition, and adequate support for faculty in course preparation and course delivery (Bourne & Moore).

Faculty Satisfaction

Faculty satisfaction was measured by evaluating faculty participation in matters particular to all modes of education, adequate support services, opportunities for continued professional development, and overall satisfaction. It was established in Chapter 4 of this study that faculty participation is encouraged in matters pertaining to the Radiography program. Program co-chairs, while developing the program budget, directly involve faculty in the budgeting process, and faculty have control over course design in all modes of delivery as long as they follow predetermined course syllabi.
Additional support services are provided to faculty and staff. The Distance Learning Division staff provide adequate direction, instructional design, and technical support to online instructors, aside from the previously mentioned time constraints on the availability of Helpdesk support. The Media Center provides technical equipment (e.g., projectors, cameras, DVD players, and VCRs), along with a variety of educational tapes and DVDs. The Print Shop provides essential printed materials, such as handouts, instructional guides, tests, and forms, and the LRC provides items such as books, periodicals, and newspapers in hardcopy or via Internet. In addition, the Health Occupations division is staffed with two secretaries who provide clerical support for the program.

Also established in Chapter 4 of this study was that the institution is committed to professional development through its Office of Faculty and Staff Development in which faculty and staff have many opportunities available to them. A calendar of activities is posted six months in advance, and all courses are offered on each of the three campuses as well as online. In addition, an Individual Development Plan (IDP) is established for all newly hired instructors by the program co-chair and professional and staff development personnel. The IDP developed is employee specific and dependent upon the employee’s education and experience at the time of hire. To satisfy probationary requirements, an employee may be required to take teaching modules such as *Creating a Community of Learners, Planning for Outcomes, Teaching and Learning, Moving Beyond the Classroom, Teaching with Technology,* and *Assessing Teaching and Learning.* The IDP also includes diversity education, which is mandatory for all employees. Yearly safety training is another requirement of all staff.
At the program level, the Radiography program is a strong advocate for professional development in order for faculty to keep abreast of advancements in education including advancing technology in the healthcare and academic fields. As one of the program’s long-range goals, faculty members are encouraged to pursue advanced degrees. The institution reimburses faculty members up to 12 semester credits per year, at the state college tuition rate. Faculty members are also encouraged to attend state and national meetings, for which the program provides some funding. The program also supports professional development by allowing faculty the opportunity to be released from work duties to return to their occupational fields and update their technical skills. This provides faculty with the opportunity to spend time in the working environment in order to maintain current practical knowledge in the profession. In addition, clinical staff (i.e., Radiologic Technologists) working at affiliated clinical sites have the option of enrolling in a series of online, credit courses for Clinical Preceptors that are offered by the college.

Regarding faculty satisfaction, the Self-Study (JRCERT, 2005) noted the Radiography program regularly solicits feedback from faculty using a variety of tools: staff meetings, emails, telephone calls, and a clinical instructor survey. Data provided by the institution for the purpose of this study did not reflect evidence of such behavior. This was further substantiated by two of the administrators who during the interview process freely offered the fact that the institution does not formally collect any feedback from faculty to determine faculty satisfaction. Upon further investigation, however, it was determined that the Radiography program solicits feedback from faculty and staff on an ongoing basis. The process uses informal, open dialog providing a variety of methods as
a means for communication: staff meetings, emails, and telephone calls. Another administrator also noted that the clinical instructor’s website (CIA) has not been in operation since 2005. The institution presently has no formal process to collect feedback from faculty regarding faculty satisfaction. Chapter 2 of this study established that faculty voice is important to course and program success and the Quality Scorecard provided the only measurement of overall faculty satisfaction at the institution under study, which was limited to the four participating administrators. Upon analysis of the nine questions from the Quality Scorecard that specifically address the Sloan-C Quality Framework pillar Faculty Satisfaction, it was determined that administrators’ overall rating was in the 86th percentile. This ranking places Faculty Satisfaction within the Acceptable range according to the Quality Scorecard.

Student Satisfaction

The Radiography program also regularly solicits feedback from students. Student satisfaction was measured by evaluating students’ learning experiences, using a variety of tools: course evaluations, clinical instructor evaluations, clinical site evaluations, program evaluations/exit interviews, and graduate surveys. Course evaluations are completed by students at the end of each quarter to collect student feedback regarding didactic instruction. Course satisfaction rates for traditional and distance (online) students met or exceeded the program benchmark of 85%. Data were not provided for hybrid students, which made comparisons difficult, but it is worth noting that course satisfaction rates for distance (online) students were higher than traditional students, by 11 percentage points in the 2003-2004 school year and by 7 percentage points in the 2004-2005 school year. More recent data for the 2008-2009 and 2009-2010 school years did reflect an increase in
traditional student satisfaction. Overall, course satisfaction rates are high for both
distance (online) and traditional students and well within the acceptable range.

Clinical education is evaluated by students through two different methods: clinical
instructor evaluations and clinical site evaluations. Data reported for clinical instructor
evaluations exceeded the program’s benchmark of 85%. Clinical instructor satisfaction
were reported as 97%, 89% and 94% respectively, resulting in a three-year average of
93%. Data were not provided for traditional students, nor were data provided separately
for hybrid students. Therefore, the overall combined average for both traditional and
distance (online) students is not provided.

Data reported for distance (online) students’ clinical site evaluations well
exceeded the program’s benchmark of 85%. Interestingly, clinical site evaluations for
traditional students did not meet the program benchmark. In fact, the reported rates were
school years. The overall, combined three-year average for both traditional and distance
(online) students was 78%. These findings conflict with a majority of the existing body of
literature comparing traditional and online learning. Numerous studies have been
conducted comparing traditional, face-to-face course instruction to online course
instruction (Bernard, Abrami, Lou, Borokhovski, Wade, Wozney, et al., 2004; Jahng,
Krug & Zhang, 2007; Shachar& Neumann, 2003; Sitzmann, Kraiger, Stewart, & Wisher,
2006; Zhao, Lei, Yan, & Tan, 2005), and research has established that, in general, online
learning is at least as effective as traditional, face-to-face instruction (Russell, 1999).
Student satisfaction is considered to be an important element in determining quality of
distance education (Moore, 2002); therefore, evaluators should monitor quality to include technology and support services and to ascertain student satisfaction in order to evaluate course design and instruction (Rovai, 2003).

Upon completion of the program, students assess the program in its entirety by completing a final program evaluation, and then meeting with a program co-chair in a one-on-one exit interview (either face to face or via telephone). Program evaluations/exit interviews collect qualitative data from students. Students’ comments are reviewed by faculty to determine whether any major themes appear. The institution, therefore, has no set benchmark for program evaluations other than addressing any concerns or major themes that arise. The institution reported for the 2008-2009 and the 2009-2010 school years that no major concerns or themes were identified which required intervention. The method of collecting data (i.e., in person) may have an impact on students’ responses. Students could potentially give responses they feel the program administrator wants to hear, in fear of any repercussions. Students may also feel intimidated meeting face to face or via telephone with an administrator, a person they consider having power or clout, to tell them what they thought of their program. Circumstances could certainly skew student responses.

The college’s placement office collects feedback yearly from alumni through the use of graduate surveys. The results are reported to the head of the Radiography program, which is then shared with program faculty. The institution has continuously reported high graduate satisfaction rates well exceeding the institutional benchmark of 85%. The three-year average reported in 2005 was 98%. 
Limitations

This study has several limitations. Babbie (1995) noted potential problems with validity and reliability of data whenever research is based on already existing data, such as the archival records used for the purpose of this study. The data used for this study was developed under guidelines of national criteria as set forth by the JRCERT. Babbie further noted that the researcher is limited to whatever data exists and the accuracy of that data. In some cases, data may not cover exactly the topic of interest and the quality of the data at times may even be questionable. While case studies are often described as qualitative research, this case study used both qualitative and quantitative data for comparison in order to strengthen the study.

The Quality Scorecard for Administrators of Online Education Programs is still a work in progress (Moore, 2005); interpretation of scores based on a 0-100% scale has yet to be officially sanctioned by the Sloan-C. At the time of this writing, there is no published article explaining what these percentiles are or how they can be translated. Considering that quality remains a highly subjective term, which has been difficult to define, the Sloan-C's efforts to integrate the Quality Scorecard with the Quality Framework seem to be a step in the right direction.

Data provided by the institution for the purpose of this study were primarily dated 2005 and earlier; only a small portion of the data provided could be called recent. Although the data collected were well within the time frame of the Self-Study (JRCERT, 2005), the data were collected and validated several years prior to this case study being conducted. There were two distinct timeframes of data collection: (a) for the Self-Study (JRCERT) and (b) ongoing selected data collection.
The culture of higher education has a long-standing reputation for being slow-paced when it comes to implementing change. It is not uncommon for information typically to be outdated by the time work is completed and change is implemented or adopted. In considering the role of information technology in higher education, Beverage (2003) noted, “Formal changes in higher education are often the product of long discussions and negotiations, often through institutionalized governance structures. Cultural change also tends to occur slowly in higher education…” (p. 10).

Lastly, but the most significant limitation of this study, is that the majority of the data provided for this study were reported collectively for all three modes of delivery; data were not reported separately for each of the three modes. During the structured interviews, one administrator commented that the Radiography program used to separate data by mode of delivery when submitting it to the JRCERT. It was agreed upon between the JRCERT and the Radiography program administrators that it was no longer necessary to separate data by mode. Due to data being combined, this case study was not able to make comparisons between the three modes of delivery, thereby, limiting the outcomes of this study and significantly decreasing the potential impact of this study on the body of research on distance (online) education. Therefore, this study was unable to support, or not support, the phenomenon under study: Russell’s (1999) no significant difference phenomenon.

Recommendations

Student services/access. The institution as well as the Radiography program provides several student services through its dedicated Student Services department both on campus and online. Although tutoring is provided through the institution’s tutoring
center, students lack access to tutoring at a distance (online) and in a distance framework. It is, therefore, recommended that the program consider the issue of accessibility of tutoring for all distance (online) students.

Support services/access. The institution as well as the Radiography program also provides several support services for students and faculty, which include Help Desk services. The service provided by the Help Desk is limited. It is, therefore, recommended that the program consider extending the hours of the Help Desk to 24/7 in order to accommodate faculty and distance (online) learners.

Program evaluations/implications. The Radiography program at the institution under study is unique in that it is the only school in the nation offering the same Radiography program in all three delivery modes: traditional, distance (online), and hybrid. Considering the discourse in higher education related to distance (online) learning, the program is not taking advantage of the opportunity of comparing and contrasting data across delivery modes. It is, therefore, recommended that the Radiography program collect and report data separate for each mode of delivery, as it did in the onset of the distance (online) track. This would afford the program the opportunity to position itself as a model for other programs of the like to follow.

Regarding Clinical Site Evaluations, the Radiography program should identify what areas or questions on the evaluation scored lower for the traditional students compared to that of the online students. Once that is established, a corrective action plan should be developed for the corresponding clinical site(s).

It is also recommended that the program implement tools, using a formal process to collect individuals’ perceptions (student and faculty). Each tool should include
measures for all three modes of delivery for both populations as well as maintain anonymity of the participants. The purpose of collecting individuals’ perceptions is to help educators develop a deeper understanding of how these populations play a role in perceived quality and efficacy of online instruction. It also gives both students and faculty a voice in the design and development of courses and programs. This insight can be significant. Increased student satisfaction potentially may translate to an increase in student enrollments, an increase in retention rates, and an increase in the number of courses and programs offered by institutions. Increased faculty satisfaction potentially may translate to recruitment of highly skilled staff and faculty members, reduced employee turnover rates, and ultimately highly productive employees. Perceptions of these subject populations can also assist in the future design of various models and frameworks for online learning, serve as a benchmark to formulate program goals, and assist in the development of online policies, ultimately having a positive impact on learning outcomes and improving the overall experience and quality of distance education programs.

*Future studies/implications.* It is recommended that future studies continue to focus on the evaluation of programs, rather than on individual courses using a framework such as the Sloan-C’s Quality Framework to assess the quality of online programs. As noted in the literature, researchers continue to focus on comparison studies of distance and traditional education still placing emphasis on individual courses rather than on entire programs. This emphasis has left a significant gap in the research, lacking focus on entire degree programs taught via distance learning (Buck, 2001; The Institute for Higher Education Policy, 1999). This gap in the research “raises important questions about
whether a total academic program delivered by technology compares favorably with a program provided on campus” (The Institute for Higher Education Policy, 1999, p. 5).

Given the insight gained from this evaluation process, administrators of online programs are encouraged to replicate this study within their institutions. Online educational programs can be proactive by using the Quality Framework to design and measure quality. Findings as identified by the Quality Framework can then be used for accreditation procedures, strategic planning, and continuous quality improvement (CQI). Having quantifiable quality metrics will allow institutions a way to demonstrate their program is meeting or exceeding accreditation standards. Strategic planners and program administrators can also use the results to help them identify and set goals and action plans, as well as for the purpose of CQI.

**Overall impressions.** Overall, as a researcher becoming intimately knowledgeable about the Radiography program and its practices, this researcher was struck by their sincerity and their dedication to the students and the program as a whole. The administrators and staff are constantly alert for new opportunities to improve the program, their relationships with the students, and the delivery of course content to students. The administrators have done an excellent job of accounting for the diversity of students’ learning abilities. Administrators’ attention to detail and actually going onsite, to all clinical settings no matter what the distance, to follow-up is commendable. This demonstrates a true dedication to the student population as well as to the program’s clinical affiliates (see Appendix L).
Conclusion

This study implemented the use of The Sloan C’s Quality Framework for the purpose of identifying and measuring quality of a distance (online) educational program compared to its traditional and hybrid counterparts. The Quality Framework was used to guide, merge, and unify the data collected from four instruments, which offered unique yet overlapping perspectives. The program’s Self-Study (JRCERT, 2005) is a large mass of data reported by the institution to the JRCERT for accreditation. These data are representative of the institution’s overall program quality using metrics that can be mapped onto the five pillars of the Sloan C’s Quality Framework. Structured interviews were designed to gather demographic information about the institutions and to identify and fill any gaps in the Self-Study (JRCERT). The Quality Scorecard afforded the opportunity for Administrators of the Radiography program at the institution under study to measure the quality of their program’s distance (online) track. Results of the Scorecard were then identified with the five pillars of the Sloan C’s Quality Framework. Post 2005 Self Study data not yet submitted to the JRCERT is representative of the institution’s overall program quality, which can be mapped onto the five pillars of the Sloan Consortium’s Quality Framework.

Data were analyzed from all four instruments and compared holistically in order to evaluate the program as a whole. This study has concluded that the overall quality of the Radiography program is high. This was clearly demonstrated by all four instruments. Although this study did not fully afford the opportunity to compare quality across the three modes of educational delivery, it is nonetheless valuable. The application of the quality framework lays the groundwork for future studies.
In this era of accountability, institutions need to rethink and reframe their approach to offering distance (online) educational programs to include quality metrics that define their individual institutions and programs. As Meyer (2002) noted, “quality is a complex and difficult concept, one that depends on a range of factors arising from the student, the curriculum, the instructional design, technology used, faculty characteristics, and so on” (p. 101). The future of distance education programs depends on educators having an understanding of what is involved in identifying quality programs. As demonstrated in this study, this can be accomplished through the use of a framework, such as the Sloan-C’s Quality Framework. Knowledge of the strengths and weaknesses as identified by the Quality Framework is useful in the areas of accreditation procedures, strategic planning, and CQI. Having quantifiable quality metrics allows the institution to demonstrate it is meeting or exceeding accreditation standards. Strategic planners and program administrators can use the results to help them identify and set strategic goals and action plans and for the purpose of CQI. In the case of this study, the institution has clearly stated its mission and goals for the Radiography program and has identified several distinct goals as laid out in Chapter 3. The institution’s degree of success at meeting these goals has been demonstrated by the quality metrics set forth in the Self-Study (JRCERT, 2005) for accreditation with the JRCERT as well as the Quality Scorecard for the Administration of Online Education Programs.

As previously mentioned, it is important to keep in mind that the Quality Framework is a work in progress (Moore, 2005), which requires continual monitoring, flexibility, and remaining open to newly emerging ideas and best practices. Researchers continue to explore the endless possibilities that can potentially influence these factors.
On that note, this study serves merely as a starting point in the process of identifying best practices in the realm of online education and in the evaluation process of online programs.

Ideally, this study will contribute to the body of existing research and literature in the realm of online instruction, adding value to the ongoing investigation assisting educators and institutions of higher education in the quest to measure quality of online programs. “If the quality of online coursework can be assured, this technology [Internet and online education] has the potential to rapidly revolutionize higher education” (Dykman & Davis, 2008, p. 12). “Evaluation activities that assess alignment of pedagogy, educational activities, and desired learning outcomes, plus address specific issues of usability and benchmark achievement, provide valuable information for continual improvement” (Balanko, 2002, p. 8). Defining quality metrics and best practices can serve as a baseline for ensuring the integrity, validity, and success of online programs. Given the incredibly dynamic nature of online education, driven by changes in technology and customer demand, this study even with its limitations can serve as a baseline for institutions seeking program quality and equality with an infrastructure supporting CQI among all modes of educational delivery.
References


Appendix A

Total number and percentage distribution of students formally enrolled in the institution’s distance education courses in academic year 1994-95, by institutional characteristics

<table>
<thead>
<tr>
<th>Institutional characteristic</th>
<th>Number</th>
<th>Percentage distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>All institutions</td>
<td>753,640</td>
<td>100</td>
</tr>
<tr>
<td>Institutional type*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public 2-year</td>
<td>414,160</td>
<td>55</td>
</tr>
<tr>
<td>Public 4-year</td>
<td>234,020</td>
<td>31</td>
</tr>
<tr>
<td>Private 4-year</td>
<td>104,960</td>
<td>14</td>
</tr>
<tr>
<td>Geographic region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>72,960</td>
<td>10</td>
</tr>
<tr>
<td>Southeast</td>
<td>200,230</td>
<td>27</td>
</tr>
<tr>
<td>Central</td>
<td>205,030</td>
<td>27</td>
</tr>
<tr>
<td>West</td>
<td>275,420</td>
<td>37</td>
</tr>
<tr>
<td>Size of institution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 3,000</td>
<td>116,320</td>
<td>15</td>
</tr>
<tr>
<td>3,000 to 9,999</td>
<td>232,750</td>
<td>31</td>
</tr>
<tr>
<td>10,000 or more</td>
<td>404,570</td>
<td>54</td>
</tr>
</tbody>
</table>

*Data for private 2-year institutions are not reported as a separate type of institution because too few of them in the sample offered distance education courses in fall 1995 to make reliable estimates. Data for private 2-year institutions are included in the totals and in analyses by other institutional characteristics.

NOTE: Data are for higher education institutions in the 50 states, the District of Columbia, and Puerto Rico. The number of students have been rounded to the nearest 10. Numbers may not sum to totals and percents may not sum to 100 because of rounding. Percents are computed within each classification variable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Postsecondary Education Quick Information System, Survey on Distance Education Courses Offered by Higher Education Institutions, 1995.

Appendix B

Total number of enrollments in all distance education courses, and the number of enrollments in college-level, credit-granting distance education courses offered by 2-year and 4-year postsecondary education institutions in 1997-98, by institutional characteristics

<table>
<thead>
<tr>
<th>Institutional characteristic</th>
<th>Total number of institutions</th>
<th>Number of institutions that offered distance education courses</th>
<th>Total number of enrollments in all distance education courses (^1)</th>
<th>Number of enrollments in college-level, credit-granting distance education courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Enrollment in courses at both levels (^1)</td>
<td>Enrollments in undergraduate courses (^2)</td>
</tr>
<tr>
<td>All institutions</td>
<td>5,010</td>
<td>1,680</td>
<td>1,661,100</td>
<td>1,363,670</td>
</tr>
<tr>
<td>Institutional type (^4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public 2-year</td>
<td>1,230</td>
<td>760</td>
<td>714,160</td>
<td>690,700</td>
</tr>
<tr>
<td>Public 4-year</td>
<td>610</td>
<td>480</td>
<td>711,350</td>
<td>452,600</td>
</tr>
<tr>
<td>Private 4-year</td>
<td>2,050</td>
<td>390</td>
<td>222,350</td>
<td>208,590</td>
</tr>
<tr>
<td>Size of institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 3,000</td>
<td>3,800</td>
<td>730</td>
<td>382,060</td>
<td>270,400</td>
</tr>
<tr>
<td>3,000 to 9,999</td>
<td>820</td>
<td>610</td>
<td>477,470</td>
<td>461,880</td>
</tr>
<tr>
<td>10,000 or more</td>
<td>400</td>
<td>350</td>
<td>801,570</td>
<td>631,400</td>
</tr>
</tbody>
</table>

Too few cases for a reliable estimate. Two-year branches of public 4-year institutions occasionally offer graduate/first-professional level courses.

\(^1\)Includes information for the estimated 1,680 institutions that offered any distance education courses in 1997–98.

\(^2\)Includes information for the estimated 1,620 institutions that had undergraduate programs and that offered any distance education courses in 1997–98.

\(^3\)Includes information for the estimated 750 institutions that had graduate or first-professional programs and that offered any distance education courses in 1997–98.

\(^4\)Data for private 2-year institutions are not reported as a separate type of institution because too few of them in the sample offered distance education courses in 1997–98 to make reliable estimates. Data for private 2-year institutions are included in the totals and in analyses by other institutional characteristics.

NOTE: Numbers may not sum to totals because of rounding and not reporting where there are too few cases for a reliable estimate. Enrollments may include duplicated counts of students, since institutions were instructed to count a student enrolled in multiple courses for each course in which he or she was
enrolled.
Appendix C

Number of 2-year and 4-year Title IV degree-granting institutions that offered distance education courses, total enrollment in all distance education courses, and enrollment in college-level, credit-granting distance education courses, by institutional type and size: 2000-2001

<table>
<thead>
<tr>
<th>Institutional type and size</th>
<th>Total number of institutions</th>
<th>Number of institutions that offered distance education courses</th>
<th>Total number of enrollments in all distance education courses</th>
<th>Enrollment in college-level, credit-granting distance education courses</th>
<th>Enrollments in undergraduate courses</th>
<th>Enrollments in graduate/first-professional courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>All institutions</td>
<td>4,130</td>
<td>2,320</td>
<td>3,077,000</td>
<td>2,876,000</td>
<td>2,350,000</td>
<td>510,000</td>
</tr>
<tr>
<td>Institutional type¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public 2-year</td>
<td>1,070</td>
<td>960</td>
<td>1,472,000</td>
<td>1,436,000</td>
<td>1,435,000</td>
<td>‡²</td>
</tr>
<tr>
<td>Public 4-year</td>
<td>620</td>
<td>550</td>
<td>945,000</td>
<td>888,000</td>
<td>566,000</td>
<td>308,000</td>
</tr>
<tr>
<td>Private 4-year</td>
<td>1,800</td>
<td>710</td>
<td>589,000</td>
<td>480,000</td>
<td>278,000</td>
<td>202,000</td>
</tr>
<tr>
<td>Size of institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 3,000</td>
<td>2,840</td>
<td>1,160</td>
<td>486,000</td>
<td>460,000</td>
<td>368,000</td>
<td>91,000</td>
</tr>
<tr>
<td>3,000 to 9,999</td>
<td>870</td>
<td>770</td>
<td>1,171,000</td>
<td>1,132,000</td>
<td>932,000</td>
<td>197,000</td>
</tr>
<tr>
<td>10,000 or more</td>
<td>420</td>
<td>400</td>
<td>1,420,000</td>
<td>1,284,000</td>
<td>1,049,000</td>
<td>222,000</td>
</tr>
</tbody>
</table>

¹Reporting standards not met.
²Data for private 2-year institutions are not reported in a separate category because too few private 2-year institutions in the sample offered distance education courses in 2000–2001 to make reliable estimates. Data for private 2-year institutions are included in the totals and in analyses by other institutional characteristics.
²Two-year branches of public 4-year institutions occasionally offer graduate/first-professional level courses.
NOTE: Enrollments may include duplicated counts of students, since institutions were instructed to count a student enrolled in multiple courses for each course in which he or she was enrolled. Detail may not sum to totals because of rounding, missing data, or because too few cases were reported for a reliable estimate for private 2-year institutions. (See appendix A for details.)
Appendix D

Total number of enrollments in college-level credit-granting distance education courses at 2-year and 4-year Title IV degree-granting postsecondary institutions, by course type, institutional type, and institution size: 2006-07

<table>
<thead>
<tr>
<th>Institutional type and size</th>
<th>Total number of institutions that offered any college-level credit-granting online, hybrid/blended online, or other distance education courses</th>
<th>Total number of enrollments in college-level credit-granting online, hybrid/blended online, or other distance education courses</th>
<th>Enrollments in college-level credit-granting online, hybrid/blended online, or other distance education courses at the:</th>
<th>Undergraduate level</th>
<th>Graduate/first-professional level</th>
</tr>
</thead>
<tbody>
<tr>
<td>All institutions</td>
<td>2,720</td>
<td>12,153,000</td>
<td>9,803,000</td>
<td>2,349,900</td>
<td></td>
</tr>
<tr>
<td>Institutional type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public 2-year</td>
<td>1,020</td>
<td>4,844,000</td>
<td>4,840,000</td>
<td>3,700</td>
<td></td>
</tr>
<tr>
<td>Private not-for-profit 2-year</td>
<td>30</td>
<td>11,000</td>
<td>11,000</td>
<td>†</td>
<td></td>
</tr>
<tr>
<td>Private for-profit 2-year</td>
<td>80</td>
<td>72,000</td>
<td>72,000</td>
<td>†</td>
<td></td>
</tr>
<tr>
<td>Public 4-year</td>
<td>560</td>
<td>3,502,000</td>
<td>2,611,000</td>
<td>890,900</td>
<td></td>
</tr>
<tr>
<td>Private not-for-profit 4-year</td>
<td>790</td>
<td>1,854,000</td>
<td>1,124,000</td>
<td>730,400</td>
<td></td>
</tr>
<tr>
<td>Private for-profit 4-year</td>
<td>240</td>
<td>1,869,000</td>
<td>1,144,000</td>
<td>724,800</td>
<td></td>
</tr>
<tr>
<td>Size of institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 3,000</td>
<td>1,390</td>
<td>2,122,000</td>
<td>1,591,000</td>
<td>531,000</td>
<td></td>
</tr>
<tr>
<td>3,000 to 9,999</td>
<td>870</td>
<td>3,772,000</td>
<td>3,274,000</td>
<td>497,700</td>
<td></td>
</tr>
<tr>
<td>10,000 or more</td>
<td>470</td>
<td>6,259,000</td>
<td>4,938,000</td>
<td>1,321,000</td>
<td></td>
</tr>
</tbody>
</table>

† Not applicable. Two-year institutions do not offer graduate degrees, although they sometimes offer individual graduate courses.

1 Enrollments include duplicated counts because they refer to the number of registrations.

NOTE: Detail may not sum to totals because of rounding.


Appendix E

Sloan-C Quality Framework

<table>
<thead>
<tr>
<th>Goal</th>
<th>Process/practice</th>
<th>Sample metric (for example)</th>
<th>Progress indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Effectiveness</td>
<td>Academic integrity and control reside with faculty in the same way as in traditional programs at the provider institution</td>
<td>Faculty perception surveys or sampled interviews compare learning effectiveness in delivery modes</td>
<td>Faculty report online learning is equivalent or better</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learner/graduate/employer focus groups or interviews measure learning gains</td>
<td>Direct assessment of student learning is equivalent or better</td>
</tr>
<tr>
<td>Scale (Cost Effectiveness and Commitment)</td>
<td>The provider demonstrates financial and technical commitment to its online programs</td>
<td>Institutional and organizational stakeholders show support for participation in online education</td>
<td>The provider sustains the program, expands and scales upward as desired, strengthens and disseminates its mission and core values through online education</td>
</tr>
<tr>
<td></td>
<td>Tuition rates provide a fair return to the provider and best value to learners at the same time</td>
<td>Effective practices are identified and implemented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tuition rates are equivalent or less than on-campus tuition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td>Program entry processes inform learners of opportunities, and ensure that qualified, motivated learners have reliable access</td>
<td>Administrative and technical infrastructure provides access to all prospective and enrolled learners</td>
<td>Qualitative indicators show continuous improvement in growth and effectiveness rates</td>
</tr>
<tr>
<td></td>
<td>Integrated support services are available online to learners</td>
<td>Quality metrics for information dissemination; learning resources delivery; and tutoring services</td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>Process/practice</td>
<td>Sample metric (for example)</td>
<td>Progress indices</td>
</tr>
<tr>
<td>------</td>
<td>------------------</td>
<td>-----------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Faculty Satisfaction</td>
<td>Process to ensure faculty participation in matters particular to online education (e.g., governance, intellectual property, and royalty sharing)</td>
<td>Repeat teaching of online courses by individual faculty indicates approval</td>
<td>Data from post-course surveys show continuous improvement:</td>
</tr>
<tr>
<td></td>
<td>Process to ensure adequate support for faculty in course preparation and course delivery</td>
<td>Addition of new faculty shows growing endorsement</td>
<td>At least 90% of faculty believe the overall online teaching/learning experience is positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Willingness/desire to teach additional courses in the program: 80% positive</td>
</tr>
<tr>
<td>Student Satisfaction</td>
<td>Faculty/learner interaction is timely and substantive</td>
<td>Metrics show growing satisfaction:</td>
<td>Satisfaction measures show continuously increasing improvement</td>
</tr>
<tr>
<td></td>
<td>Adequate and fair systems assess course learning objectives; results are used for improving learning</td>
<td>Surveys and/or interviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alumni surveys, referrals, testimonials</td>
<td>Provider surveys, interviews, or other metrics show satisfaction levels are equivalent to or better than those of other delivery modes for the provider</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outcomes measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Focus groups</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Faculty/Mentor/Advisor perceptions</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Author/year</th>
<th>Focus (general, course, program)</th>
<th>Method</th>
<th>Population</th>
<th>Variable(s) and/or measure(s)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbaugh (2000)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>Usefulness and ease of use of course software; flexibility, interaction difficulty, and instructor emphasis on interaction; student characteristics; student satisfaction with taking the course via the Internet</td>
</tr>
<tr>
<td>Bolliger &amp; Wasilik (2009)</td>
<td>General</td>
<td>Quantitative</td>
<td>Faculty</td>
<td>Challenges and barriers to faculty teaching online and faculty satisfaction student-, instructor-, and institutional-related issues</td>
</tr>
<tr>
<td>Braun (2008)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>Reasons behind students enrolling in online courses; whether online instruction offers a challenging and valuable experience compared to traditional; whether course design increases the amount of interaction with instructor and students; whether students would take another course with the same method of instruction (hybrid or solely online); whether students still take another online course/recommend to a colleague to take an online course despite perceived lack of instruction and peer interaction</td>
</tr>
<tr>
<td>Dobbs, Waid, &amp; del Carmen (2009)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>Learning experience, quality of course content, preference, most important reason for taking online course, more online courses in future</td>
</tr>
<tr>
<td>Author/year</td>
<td>Focus (general, course, program)</td>
<td>Method</td>
<td>Population</td>
<td>Variable(s) and/or measure(s)*</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------</td>
<td>--------</td>
<td>------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Drennan, Kennedy, &amp; Pisarski (2005)</td>
<td>General</td>
<td>Quantitative</td>
<td>Students</td>
<td>Course satisfaction; perceived usefulness, ease of access, and ease of electronic recovery of flexible learning</td>
</tr>
<tr>
<td>Eom, Wen, &amp; Ashill (2006)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>course structure, instructor feedback, self-motivation, learning style, interaction, instructor facilitation</td>
</tr>
<tr>
<td>Hale, Mirakian &amp; Day (2009)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>Instructor’s ability to stimulate student interest, foster student collaboration, establish rapport, encourage student involvement, and structure classroom experiences, and student’s self-perceived progress on relevant course learning objectives, course difficulty, overall satisfaction with the instructor and course, preferred learning styles</td>
</tr>
<tr>
<td>Harroff &amp; Valentine (2006)</td>
<td>Program</td>
<td>Qualitative</td>
<td>Faculty Administrators</td>
<td>quality of instruction; quality of administrative recognition and support, quality of advisement; quality of technical support; quality of advance information to potential students, and the quality of course evaluation procedures</td>
</tr>
<tr>
<td>Johnson, Aragon, Shaik, &amp; Palma-Rivas (2000)</td>
<td>General</td>
<td>Quantitative</td>
<td>Students</td>
<td>instructor and course quality; assessment of course inaction, structure, and support; and learning outcomes</td>
</tr>
<tr>
<td>Lao &amp; Gonzales (2005)</td>
<td>General</td>
<td>Qualitative</td>
<td>Students Faculty</td>
<td>One initial open-ended question: Professors: Please discuss your personal story about teaching online and what you learned from the experience. Students: Please discuss your personal story about taking an online class through web-based course delivery and what you learned from the experience.</td>
</tr>
</tbody>
</table>

*Note: The table contains the following information: Author/year of the study, focus of the study (general, course, program), method of the study (quantitative, qualitative), population of the study (students, faculty), and the variable(s) and/or measure(s) studied.*
<table>
<thead>
<tr>
<th>Author/year</th>
<th>Focus (general, course, program)</th>
<th>Method</th>
<th>Population</th>
<th>Variable(s) and/or measure(s)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>LaPointi &amp; Reisetter (2008)</td>
<td>General</td>
<td>Mixed methods</td>
<td>Students</td>
<td>value and efficacy of learning communities (online and traditional): quality and importance of online exchanges, interactive dimensions, importance of interactions in traditional classroom settings</td>
</tr>
<tr>
<td>Menchaca &amp; Bekele (2008)</td>
<td>Program</td>
<td>Qualitative</td>
<td>Students Faculty</td>
<td>technologies, optimal learning environments, components for success, strategies, prerequisite knowledge, learning or teaching experiences</td>
</tr>
<tr>
<td>Ortiz-Rodriguez, Telg, Irani, Roberts, &amp; Rhoades (2005)</td>
<td>Course</td>
<td>Qualitative</td>
<td>Students</td>
<td>Single open-ended question: List as many factors as you can that you personally believe could potentially affect the quality of a distance education course in any way. Please be as specific as possible.</td>
</tr>
<tr>
<td>Perreault, Waldman, Alexander, &amp; Zhao (2008)</td>
<td>General Course Program</td>
<td>Quantitative</td>
<td>Students</td>
<td>online program availability, online learning time commitments, reasons for selecting online learning, the adequacy of the training received on distance learning technologies, overall quality of online courses, willingness of students to recommend online learning to friends</td>
</tr>
<tr>
<td>Pullen (2006)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>course content, navigation and organization, overall impressions, media utilization, and learning style</td>
</tr>
<tr>
<td>Reisetter &amp; Boris (2004)</td>
<td>Course</td>
<td>Mixed methods</td>
<td>Students</td>
<td>important components for online learning, course design, resources, teacher competence, assessment of learning and effort, self-assessment, enjoyment</td>
</tr>
<tr>
<td>Author/year</td>
<td>Focus (general, course, program)</td>
<td>Method</td>
<td>Population</td>
<td>Variable(s) and/or measure(s)*</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
<td>------------</td>
<td>------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Seaman (2009)</td>
<td>General</td>
<td>Quantitative</td>
<td>Faculty</td>
<td>information regarding who teaches and who develops online courses, any gender differences in faculty online participation, the relative effort to develop or to teach an online course as measured against a comparable face-to-face course, online course quality: learning outcomes and course recommendations, what motivates faculty to teach online, barriers of teaching online, quality of campus support structures</td>
</tr>
<tr>
<td>Seiler &amp; Billings (2004)</td>
<td>Course</td>
<td>Qualitative</td>
<td>Students</td>
<td>Two open-ended questions: 1. Identify the best thing about this course. 2. Comment on how the course could be improved.</td>
</tr>
<tr>
<td>Sit, Chung, Chow, &amp; Wong (2005)</td>
<td>General</td>
<td>Quantitative</td>
<td>Students</td>
<td>access of information and learning materials, flexibility and convenience, opportunity for interacting with peers, opportunity for interacting with teachers, the value of supplementary face-to-face resource sessions, overall satisfaction with online learning</td>
</tr>
<tr>
<td>Stodel, Thompson, &amp; MacDonald (2006)</td>
<td>Course</td>
<td>Qualitative</td>
<td>Students</td>
<td>what students perceived was missing from online learning and what they felt would make the online learning experience richer</td>
</tr>
<tr>
<td>Swan (2001)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>satisfaction with course, perceived learning, perceived interaction with instructor, perceived interaction with classmates, personal activity in course compared to classroom-based, course design</td>
</tr>
<tr>
<td>Author/year</td>
<td>Focus</td>
<td>Method</td>
<td>Population</td>
<td>Variable(s) and/or measure(s)*</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------</td>
<td>----------</td>
<td>------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tanner, Noser, &amp; Totaro (2009)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>whether one advantage of taking a course online is flexible class times, student-teacher interaction/lecture time is greater in a traditional class, math and other quantitative courses are among the most difficult, online courses allow students to study at their own pace, non-quantitative business courses should not be offered online, meeting with other students and/or professor outside the classroom was important to them, no structured class meetings times were appealing to them, they would teach/take as many online classes as possible in the future, they would miss the student-to-student or student-to-professor interactions, the textbook takes on a greater level of importance with online, tests were more difficult online, online classes basically require students to teach themselves the material, online classes require students to be more self-disciplined, technology required increases the value of the online experience.</td>
</tr>
<tr>
<td>Totaro, Tanner, Noser, Fitzgerald &amp; Birch (2005)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Faculty</td>
<td>flexible class times, student-teacher interactions, online course structure, student learning (including the importance of the textbook), the issue of offering quantitative courses online, online testing, other general topics</td>
</tr>
<tr>
<td>Walker &amp; Kelly (2007)</td>
<td>Course</td>
<td>Quantitative</td>
<td>Students</td>
<td>perceptions regarding assignments useful in enhancing learning; sharing work with and getting comments for other students; instructor feedback; grading; evaluations; length of course adequate to cover course material; amount of work; overall experience</td>
</tr>
<tr>
<td>Author/year</td>
<td>Focus (general, course, program)</td>
<td>Method</td>
<td>Population</td>
<td>Variable(s) and/or measure(s)*</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------</td>
<td>--------------</td>
<td>------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Wilkes, Simon &amp; Brooks</td>
<td>General</td>
<td>Quantitative</td>
<td>Students</td>
<td>perceptions of online courses, course delivery, and degree programs; current status regarding taking/teaching online courses; student ratings of issues’ of importance in deciding whether to take a course online or traditional; student ratings that a characteristic is more likely true for online versus traditional; faculty perceptions that an issue is more likely to be characteristic of an online or traditional course; differences between faculty and students’ perceptions</td>
</tr>
<tr>
<td>(2006)</td>
<td>Course</td>
<td></td>
<td>Faculty</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wong (2006)</td>
<td>General</td>
<td>Quantitative</td>
<td>Students</td>
<td>benefits of e-learning: efficiency, effectiveness, flexibility, and other benefits limitations of e-learning: technology, personal, comparison with traditional campus, design, and other limitations</td>
</tr>
</tbody>
</table>

* Measure(s) are characteristics that can be quantified for comparison purposes.
Appendix G

A Quality Scorecard for the Administration of Online Education Programs

This scorecard is for the purpose of measuring and quantifying elements of quality within online education programs in higher education. The scorecard is an easy-to-use tool for online administrators to use for program evaluation. By evaluating each of the respective quality indicators within the established categories, an online administrator can determine strengths and weaknesses of their program. The identification of the weaknesses can be used to support program improvement and strategic planning initiatives. The scorecard could also be used to demonstrate elements of quality within the program to accrediting bodies as well as an overall level of quality.

A scorecard is provided that contains 70 quality indicator; each indicator is worth up to three points. The administrator will determine at what level their program meets the intent of the quality indicator after examining all procedures and processes.

- 0 points = Not Observed. The administrator does not observe any indications of the quality standard in place.

- 1 point = Insufficiently Observed. The administrator has found a slight existence of the quality standard in place. Much improvement is still needed in this area.

- 2 points = Moderate Use. The administrator has found there to be moderate use of the quality standard. Some improvement is still needed in this area.

- 3 points = Meets Criteria Completely. The administrator has found that the quality standard is being fully implemented and there is no need for improvement in this area.

A perfect score = 210 points.
90-99% = 189-209-Exemplary (little improvement is needed)
80-89% = 168-188-Acceptable (some improvement is recommended)
70-79% = 147-167 -Marginal (significant improvement is needed in multiple areas)
60-69% = 126-146-Inadequate (many areas of improvement are needed throughout the program)
59% and below = 125 pts and below - Unacceptable.

Note. This quality scorecard contains adaptations of the 24 quality standards identified by the Institute for Higher Education Policy report, *Quality on the Line: Benchmarks for Success in Internet-based Distance Education* (2000).

If you have any questions, please email Kaye Shelton at kaye@dbu.edu.

© 2010 Kaye Shelton
### QUALITY SCORECARD FOR THE ADMINISTRATION OF ONLINE EDUCATION PROGRAMS

#### INSTITUTIONAL SUPPORT

1. The institution has put in place a governance structure to enable effective and comprehensive decision making related to distance learning.
2. Policies are in place to authenticate that students enrolled in online courses and receiving college credit are indeed those completing the course work.
3. Policy for copyright ownerships of course materials exists.
4. The institution has defined the strategic value of distance learning to its enterprise and to its relevant parts.

#### TECHNOLOGY SUPPORT

1. A documented technology plan that includes electronic security measures (e.g., password protection, encryption, secure online or proctored exams, etc.) is in place and operational to ensure quality standards, adherence to FERPA, and the integrity and validity of information.
2. The technology delivery systems are highly reliable and operable with measurable standards being utilized such as system downtime tracking or task benchmarking.
3. A centralized system provides support for building and maintaining the distance education infrastructure.
4. The course delivery technology is considered a mission critical enterprise system and supported as such.
5. The institution maintains system backup for data availability.
6. Faculty, staff, and students are supported in the development and use of new technologies and skills.

#### COURSE DEVELOPMENT AND INSTRUCTIONAL DESIGN

1. Guidelines regarding minimum standards are used for course development, design, and delivery of online instruction.
2. Technology is used as a tool to achieve learning outcomes in delivering course content.
3. Instructional materials, course syllabus, and learning outcomes are reviewed periodically to ensure they meet program standards.
4. Courses are designed so that students develop the necessary knowledge and skills to meet learning objectives at the course and program level. These may include engagement via analysis, synthesis and evaluation.
5. Learning objectives describe outcomes that are measurable.

*** Adapted from the Institute for Higher Education Policy's report "Quality on the Line: Benchmarks for Success in Internet-based Distance Education" (2000).

© 2010 Kaye Shelton
**QUALITY SCORING CARD FOR THE ADMINISTRATION OF ONLINE EDUCATION PROGRAMS**

<table>
<thead>
<tr>
<th>COURSE DEVELOPMENT AND INSTRUCTIONAL DESIGN (cont.)</th>
<th>Not Observed</th>
<th>Insufficient</th>
<th>Moderate Use</th>
<th>Meets Criteria</th>
<th>Completely</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Selected assessments measure the course learning objectives and are appropriate for an online learning environment.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Student-centered instruction is considered during the course-development process.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. There is consistency in course development for student retention and quality.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Course design promotes both faculty and student engagement.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Current and emerging technologies are evaluated and recommended for online teaching and learning.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Instructional design is provided for creation of effective pedagogy for both synchronous and asynchronous class sessions.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Curriculum development is a core responsibility for faculty.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COURSE STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The online course site includes a syllabus outlining course objectives, learning outcomes, evaluation methods, textbook information, and other related course information, making course requirements transparent at time of registration. ***</td>
</tr>
<tr>
<td>2. The institution ensures that all distance education students, regardless of where they are located, have access to library/learning resources adequate to support the courses they are taking (SACS statement). ***</td>
</tr>
<tr>
<td>3. Expectations for student assignment completion, grade policy, and faculty response are clearly provided in the course syllabus. ***</td>
</tr>
<tr>
<td>4. Links or explanations of technical support are available in the course.</td>
</tr>
<tr>
<td>5. Instructional materials are easily accessible and usable for the student.</td>
</tr>
<tr>
<td>6. The course adequately addresses the special needs of disabled students via alternative instructional strategies and/or referral to special institutional resources.</td>
</tr>
<tr>
<td>7. Opportunities/tools provided to encourage student-student collaboration (i.e., web conferencing, instant messaging, etc).</td>
</tr>
<tr>
<td>8. Documents attached to modules are in a format that is easily accessed with multiple operating systems and productivity software (PDF, for example).</td>
</tr>
</tbody>
</table>

*** Adapted from the Institute for Higher Education Policy's report *Quality on the Line: Benchmarks for Success in Internet-based Distance Education* (2000).

© 2010 Kaye Shelton
### Quality Scorecard for the Administration of Online Education Programs

#### Teaching and Learning

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Not Observed</th>
<th>Insufficient</th>
<th>Moderate Use</th>
<th>Meets Criteria</th>
<th>Completes</th>
<th>Points Possible Per Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student-to-Student interaction and Faculty-to-Student interaction are essential characteristics and are facilitated through a variety of ways. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Feedback on student assignments and questions is constructive and provided in a timely manner. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Students learn appropriate methods for effective research, including assessment of the validity of resources and the ability to master resources in an online environment. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Students are provided access to library professionals and resources that help them to deal with the overwhelming amount of online resources.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Instructors use specific strategies to create a presence in the course.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Social and Student Engagement

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students should be provided a way to interact with other students in an online community.</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Faculty Support

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technical assistance in course development and assistance with the transition to teaching online is provided (for faculty). ***</td>
<td>3</td>
</tr>
<tr>
<td>2. Instructors are prepared to teach distance education courses and the institution ensures faculty receive training, assistance, and support at all times during the development and delivery of courses. ***</td>
<td>3</td>
</tr>
<tr>
<td>3. Faculty receive training and materials related to Fair Use, plagiarism, and other relevant legal and ethical concepts. ***</td>
<td>3</td>
</tr>
<tr>
<td>4. Faculty are provided ongoing professional development related to online teaching and learning.</td>
<td>3</td>
</tr>
<tr>
<td>5. Clear standards are established for faculty engagement and expectations around online teaching.</td>
<td>3</td>
</tr>
<tr>
<td>6. Faculty workshops are provided to make them aware of emerging technologies and the selection and use of these tools.</td>
<td>3</td>
</tr>
</tbody>
</table>

*** Adapted from the Institute for Higher Education Policy's report *Quality on the Line: Benchmarks for Success in Internet-based Distance Education* (2000). 
© 2010 Kaye Shelton
<table>
<thead>
<tr>
<th>STUDENT SUPPORT</th>
<th>Not Observed</th>
<th>Insufficient Use</th>
<th>Moderate Use</th>
<th>Meets Criteria Completely</th>
<th>Score</th>
<th>Points Possible Per Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Before starting an online program, students are advised about the program to determine if they possess the self-motivation and commitment to learn at a distance. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Before starting an online program, students are advised about the program to determine if they have access to the minimal technology required by the course design. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Students receive (or have access to) information about programs, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services prior to admission and course registration. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Students are provided with access to training and information they will need to secure required materials through electronic databases, interlibrary loans, government archives, new services and other sources. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Throughout the duration of the course/program, students have access to appropriate technical assistance and technical support staff. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Student support personnel are available to address student questions, problems, bug reporting, and complaints. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Students have access to effective academic, personal, and career counseling.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Minimum technology standards are established and made available to students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Student support services are provided for outside the classroom such as academic advising, financial assistance, peer support, etc.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Policy and process is in place to support ADA requirements.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Students are provided relevant information: ISBN numbers, suppliers, etc. and delivery modes for all required; instructional materials: digital format, e-packs, print format, etc. to ensure easy access.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Program demonstrates a student-centered focus rather than trying to fit service to the distance education student in on-campus student services.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Efforts are made to engage students with the program and institution.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Students are instructed in the appropriate ways of communicating with faculty and students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. The institution provides guidance to both students and faculty in the use of all forms of technologies used for course delivery.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Tutoring is available as a learning resource.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Students are instructed in the appropriate ways of enlisting help from the program.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Adapted from the Institute for Higher Education Policy’s report *Quality on the Line: Benchmarks for Success in Internet-based Distance Education* (2000). © 2010 Kaye Shelton
### QUALITY SCORECARD FOR THE ADMINISTRATION OF ONLINE EDUCATION PROGRAMS

<table>
<thead>
<tr>
<th>EVALUATION AND ASSESSMENT</th>
<th>Not Observed</th>
<th>Insufficient</th>
<th>Moderate Use</th>
<th>Meets Criteria</th>
<th>Complety</th>
<th>Score</th>
<th>Points Possible Per Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The program is assessed through an evaluation process that applies specific established standards. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. A variety of data (academic and administrative information) are used to regularly and frequently evaluate program effectiveness and to guide changes toward continual improvement. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Intended learning outcomes at the course and program level are reviewed regularly to ensure clarity, utility, and appropriateness. ***</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. A process is in place for the assessment of faculty and student support services.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Course and program retention is assessed. Results of course evaluations are used as part of faculty/instructor performance evaluations.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Recruitment and retention are examined and reviewed.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Program demonstrates compliance and review of accessibility standards (Section 508, etc.)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Course evaluations are examined in relation to faculty performance evaluations.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Faculty performance is regularly assessed.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Alignment of learning outcomes from course to course exists.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Course evaluations collect student feedback on quality of content and effectiveness of instruction.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Perfect Score = 210

---

*** Adapted from the Institute for Higher Education Policy's report *Quality on the Line: Benchmarks for Success in Internet-based Distance Education* (2000).

© 2010 Kaye Shelton

Note: From *Quality Scorecard for the Administration of Online Education Programs: A Delphi Study* (p. 536), by K. Shelton (2010), Dissertation. Reprinted and used with permission.
### Appendix H

**Evaluation Guidelines/Best Practices for Online Education**

<table>
<thead>
<tr>
<th>Study</th>
<th>Benchmark</th>
<th>Principle action</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCET (2001)</td>
<td>1. Curriculum &amp; Instruction</td>
<td>• Each program of study results in learning outcomes appropriate to the rigor and breadth of the degree or certificate awarded.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• An electronically offered degree or certificate program is coherent and complete.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The program provides for appropriate real-time interaction between faculty and students and among students.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Qualified faculty provide appropriate oversight of the program electronically offered.</td>
</tr>
<tr>
<td></td>
<td>2. Role &amp; Mission</td>
<td>• The program is consistent with the institution's role and mission.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Review and approval processes ensure the appropriateness of the technology being used to meet the program's objectives.</td>
</tr>
<tr>
<td></td>
<td>3. Faculty Support</td>
<td>• The program provides faculty support services specifically related to teaching via an electronic system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The program provides training for faculty who teach via the use of technology.</td>
</tr>
<tr>
<td></td>
<td>4. Resources for Learning</td>
<td>• The program ensures that appropriate learning resources are available to students.</td>
</tr>
<tr>
<td></td>
<td>5. Students &amp; Student</td>
<td>• The program provides students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technological competence and skills, technical equipment requirements, availability of academic support services and financial aid resources, and costs and payment policies.</td>
</tr>
<tr>
<td></td>
<td>Services</td>
<td>• Enrolled students have reasonable and adequate access to the range of student services appropriate to support their learning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Accepted students have the background, knowledge, and technical skills needed to undertake the program.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Advertising, recruiting, and admissions materials clearly and accurately represent the program and the services available.</td>
</tr>
<tr>
<td></td>
<td>6. Commitment to Support</td>
<td>• Policies for faculty evaluation include appropriate consideration of teaching and scholarly activities related to electronically offered programs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The institution demonstrates a commitment to ongoing support, both financial and technical, and to continuation of the program for a period sufficient to enable students to complete a degree/certificate.</td>
</tr>
<tr>
<td></td>
<td>7. Evaluation &amp;</td>
<td>• The institution evaluates the program's educational</td>
</tr>
<tr>
<td>Study</td>
<td>Benchmark</td>
<td>Principle action</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Assessment</td>
<td>effectiveness, including assessments of student learning outcomes, student retention, and student and faculty satisfaction. Students have access to such program evaluation data.</td>
<td>• The institution provides for assessment and documentation of student achievement in each course and at completion of the program.</td>
</tr>
</tbody>
</table>
| IHEP (2000) | 1. Institutional Support | • A documented technology plan that includes electronic security measures (i.e., password protection, encryption, back-up systems) is in place and operational to ensure both quality standards and the integrity and validity of information.  
• The reliability of the technology delivery system is as failsafe as possible.  
• A centralized system provides support for building and maintaining the distance education infrastructure. |
| | 2. Course Development | • Guidelines regarding minimum standards are used for course development, design, and delivery, while learning outcomes—not the availability of existing technology—determine the technology being used to deliver course content.  
• Instructional materials are reviewed periodically to ensure they meet program standards.  
• Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements. |
| | 3. Teaching/Learning | • Student interaction with faculty and other students is an essential characteristic and is facilitated through a variety of ways, including voice-mail and/or e-mail.  
• Feedback to student assignments and questions is constructive and provided in a timely manner.  
• Students are instructed in the proper methods of effective research, including assessment of the validity of resources. |
| | 4. Course Structure | • Before starting an online program, students are advised about the program to determine (a) if they possess the self-motivation and commitment to learn at a distance and (b) if they have access to the minimal technology required by the course design.  
• Students are provided with supplemental course information that outlines course objectives, concepts, and ideas; learning outcomes for each course are summarized in a clearly written, straightforward statement.  
• Students have access to sufficient library resources that may include a virtual library accessible through the World Wide Web. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Benchmark</th>
<th>Principle action</th>
</tr>
</thead>
</table>
| 5.    | Student Support | • Faculty and students agree upon expectations regarding times for student assignment completion and faculty response.  
• Students receive information about programs, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services.  
• Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources.  
• Throughout the duration of the course/program, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course, and convenient access to technical support staff.  
• Questions directed to student service personnel are answered accurately and quickly, with a structured system in place to address student complaints. |
| 6.    | Faculty Support | • Technical assistance in course development is available to faculty, who are encouraged to use it.  
• Faculty members are assisted in the transition from classroom teaching to online instruction and are assessed during the process.  
• Instructor training and assistance, including peer mentoring, continues through the progression of the online course.  
• Faculty members are provided with written resources to deal with issues arising from student use of electronically accessed data. |
| 7.    | Evaluation & Assessment | • The program’s educational effectiveness and teaching/learning process is assessed through an evaluation process that uses several methods and applies specific standards.  
• Data on enrollment, costs, and successful/innovative uses of technology are used to evaluate program effectiveness.  
• Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness. |

CHEA (2002)  
1. Institutional Mission  
• Does offering distance learning make sense in this institution?  
2. Institutional Organizational Structure  
• Is the institution suitably structured to offer quality distance learning?  
3. Institutional Resources  
• Does the institution sustain adequate financing to offer quality distance learning?  
4. Curriculum &
<table>
<thead>
<tr>
<th>Study</th>
<th>Benchmark</th>
<th>Principle action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Faculty Support</td>
<td>Instruction</td>
<td>Are faculty competently engaged in offering distance learning and do they have adequate resources, facilities, and equipment?</td>
</tr>
<tr>
<td>6. Student Support</td>
<td>Instruction</td>
<td>Do students have needed counseling, advising, equipment, facilities, and instructional materials to pursue distance learning?</td>
</tr>
<tr>
<td>7. Student Learning Outcomes</td>
<td>Instruction</td>
<td>Does the institution routinely evaluate the quality of distance learning based on evidence of student achievement?</td>
</tr>
<tr>
<td>USDE (2006) 1. Institutional Mission</td>
<td>Instruction</td>
<td>The importance of ensuring that distance education is appropriate to the mission of the institution under review.</td>
</tr>
<tr>
<td>2. Curriculum &amp; Instruction</td>
<td>Instruction</td>
<td>Evidence that faculty who are involved in governance have oversight of the curriculum.</td>
</tr>
<tr>
<td>3. Faculty Support</td>
<td>Instruction</td>
<td>The development of a coherent curriculum, using a systematic and coordinated approach to planning.</td>
</tr>
<tr>
<td>4. Student &amp; Academic Services</td>
<td>Instruction</td>
<td>The institution approaches distance education in a systemic manner, which includes providing a range of faculty support services and access to resources (i.e., providing for faculty development, faculty access to specialized resources and technical support for course development and delivery, integration of adjunct faculty into the culture of the institution; and training and support for adjunct faculty comparable to that provided the regular faculty.)</td>
</tr>
<tr>
<td>5. Planning for Sustainability and Growth</td>
<td>Instruction</td>
<td>The institution provides a full range of services (i.e., admissions and registration, enrollment and academic advising, financial aid, career counseling, library resources, textbook ordering, technical assistance, and veterans and disability assistance) and resources (i.e., self-assessment of their skills and aptitude for distance learning and orientation to distance education) convenient and accessible for students.</td>
</tr>
<tr>
<td>6. Evaluation &amp; Assessment</td>
<td>Instruction</td>
<td>Evidence that the institution is using – or moving toward – a systemic approach whereby student, academic and faculty services related to distance education are integrated into the various components of the institution.</td>
</tr>
<tr>
<td>&amp;</td>
<td>Instruction</td>
<td>The institution ensures the availability of adequate resources (i.e., qualified and trained faculty to staff additional sections of courses; sufficient capacity in student and academic services and personnel; a robust scalable technical infrastructure; and funds for course development and marketing of new programs) in order to sustain growth.</td>
</tr>
<tr>
<td>&amp;</td>
<td>Instruction</td>
<td>Evidence of how the institution measures student learning, how it assesses the experiences that lead to those outcomes, and what changes it makes based on the assessments.</td>
</tr>
<tr>
<td>Study</td>
<td>Benchmark</td>
<td>Principle action</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sloan-C (2005)</td>
<td>1. Learning Effectiveness</td>
<td>• The provider demonstrates that online learning outcomes meet or exceed institutional, industry, and/or community standards</td>
</tr>
<tr>
<td></td>
<td>2. Scale (Cost Effectiveness &amp; Commitment)</td>
<td>• The provider continuously improves services while reducing costs</td>
</tr>
<tr>
<td></td>
<td>3. Access</td>
<td>• All learners who wish to learn online can access learning in a wide array of programs and courses</td>
</tr>
<tr>
<td></td>
<td>4. Faculty Satisfaction</td>
<td>• Faculty are pleased with teaching online, citing appreciation and happiness</td>
</tr>
<tr>
<td></td>
<td>5. Student Satisfaction</td>
<td>• Students are pleased with their experiences in learning online, including interaction with instructors and peers, learning outcomes that match expectations, services, and orientation</td>
</tr>
</tbody>
</table>

CHEA – Council for Higher Education Accreditation  
IHEP – Institute for Higher Education Policy  
Sloan-C – Sloan Consortium  
USDE – United States Department of Education  
WCET – Western Cooperative for Educational Telecommunications
Appendix I
Administrator Questionnaire

1. I *presently* work/teach in the following Radiologic Technology (RT) Program(s).
   - [ ] Distance (Online)
   - [ ] Hybrid
   - [ ] Traditional
   - [ ] N/A

2. How long have you taught/worked in the field of RT education? ______________

3. How long have you taught/worked at this institution in their RT Program? ________

4. How long have you taught in each of the following modes?
   - Distance (online) __________, Hybrid __________, and/or Traditional __________

5. How many courses have you taught in each of the following modes?
   - Distance (online) __________, Hybrid __________, and/or Traditional __________

6. Did you receive any professional development or mentorship to teach distance
   (online) or hybrid courses?  
   - [ ] Yes
   - [ ] No
   - [ ] N/A

7. How many faculty members (full-time, part-time, and adjunct) presently teach in
   your program?
   - Distance (online) __________, Hybrid __________, and/or Traditional __________

8. What is the current teaching load for faculty teaching courses?
   - Distance (online) __________, Hybrid __________, and/or Traditional __________

9. How many students are in the *first* year of the following program(s) you teach/work?
   - Distance (online) __________, Hybrid __________, and/or Traditional __________

10. How many students are in the *second* year of the following program(s) teach/work?
    - Distance (online) __________, Hybrid __________, and/or Traditional __________
11. What is the percentage of students residing within the following distances of your institution?

Distance: 0-20 miles___%, 21-50 miles___%, 51-100 miles___%, >100 miles___%

Hybrid: 0-20 miles___%, 21-50 miles___%, 51-100 miles___%, >100 miles___%

Traditional: 0-20 miles___%, 21-50 miles___%, 51-100 miles___%, >100 miles___%

12. What is the present student/teacher ratio in the following program(s)?

Distance (online) __________, Hybrid __________, and/or Traditional __________
Appendix J

Interview Questions for Program Administrators based on the Sloan Consortium Pillars

**Learning Effectiveness:**

1. How does the college ensure that academic integrity and control reside with the faculty of the online program in the same way as in its traditional or hybrid program?
2. What standards and measures do you believe are needed for ensuring quality in distance (online) education, and do you believe any of these should be weighted more than others?
3. How does the college measure/compare learning effectiveness across delivery modes?

**Scale (Cost Effectiveness and Commitment):**

4. How does the college demonstrate financial commitment to its distance (online) programs?
5. How does the college demonstrate technical commitment to its distance (online) programs?
6. What are some of the budgetary challenges to delivering distance (online) and hybrid educational programs compared to traditional programs?

**Access:**

7. What information about your program do you emphasize in marketing, recruitment, and admission processes for your distance (online) program? (inform learners of opportunities)
8. What sources does the institution provide to prospective students actively seeking out information about the distance (online) program?
9. Does the college have integrated support services (i.e., IT training and support, tutoring, library holdings, registration, books, program/course listings, etc.) available online to learners?

**Student Satisfaction:**

10. What processes are in place to ensure distance (online) students receive a quality education?
11. What processes are in place to ensure that faculty/learner interaction is timely and substantive for distance (online) learners?

12. What processes are in place to confirm that course learning objectives are being met and to what extent, and that results are used to improve learning?

**Faculty Satisfaction:**

13. How does the college ensure faculty participation in matters particular to distance (online) education (e.g., governance, intellectual property, and royalty sharing)?

14. How does the college ensure adequate support (e.g., professional development, mentorship, IT Support) for faculty in distance (online) course preparation and course delivery?

15. What do you believe are the primary *benefits* and *barriers* to distance (online) learning?

16. If you were to rate the quality of your present program distance (online), how would you rank it on a scale of 1-10, with 1 being very poor, 5 being average, and 10 being exceptional?
## Appendix K

### Quality Scorecard by Sloan Consortium Pillars

<table>
<thead>
<tr>
<th>Access Indicator</th>
<th>Points*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> A documented technology plan that includes electronic security measures (e.g., password protection, encryption, secure online or proctored exams, etc.) is in place and operational to ensure quality standards, adherence to FERPA, and the integrity and validity of information.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>2.</strong> Before starting an online program, students are advised about the program to determine if they possess the self-motivation and commitment to learn at a distance.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>3.</strong> Before starting an online program, students are advised about the program to determine if they have access to the minimal technology required by the course design.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>4.</strong> Documents attached to modules are in a format that is easily accessed with multiple operating systems and productivity software (PDF, for example).</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>5.</strong> Instructional materials are easily accessible and usable for the student.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>6.</strong> Links or explanations of technical support are available in the course.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>7.</strong> Policy and process are in place to support ADA requirements.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>8.</strong> Student support personnel are available to address student questions, problems, bug reporting, and complaints.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>9.</strong> Students are provided relevant information: ISBN numbers, suppliers, etc. and delivery modes for all required; instructional materials: digital format, e-packs, print format, etc. to ensure easy access.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>10.</strong> Students receive (or have access to) information about programs, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services prior to admission and course registration.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>11.</strong> Technology is used as a tool to achieve learning outcomes in delivering course content.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>12.</strong> The course adequately addresses the special needs of disabled students via alternative instructional strategies and/or referral to special institutional resources.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>13.</strong> The institution ensures that all distance education students, regardless of where they are located, have access to library/learning resources adequate to support the courses they are taking.</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>
14. The technology delivery systems are highly reliable and operable with measurable standards being utilized such as system downtime tracking or task benchmarking.

<table>
<thead>
<tr>
<th>Scale Indicator</th>
<th>Points*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A centralized system provides support for building and maintaining the distance education infrastructure.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>2. A process is in place for the assessment of faculty and student support services.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>3. A variety of data (academic and administrative information) are used to regularly and frequently evaluate program effectiveness and to guide changes toward continual improvement.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>4. Course and program retention is assessed.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>5. Course evaluations are examined in relation to faculty performance evaluations.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>6. Faculty, staff, and students are supported in the development and use of new technologies and skills.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>7. Program demonstrates compliance and review of accessibility standards (Section 508, etc.)</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>8. Recruitment and retention are examined and reviewed.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>9. The course delivery technology is considered a mission-critical enterprise system and supported as such.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>10. The institution has defined the strategic value of distance learning to its enterprise and to its relevant parts.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>11. The institution has put in place a governance structure to enable effective and comprehensive decision making related to distance learning.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>12. The institution maintains system backup for data availability.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>13. The program is assessed through an evaluation process that applies specific established standards.</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>

Total (Maximum possible points 42**)

<table>
<thead>
<tr>
<th>Learning Effectiveness Indicator</th>
<th>Points*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alignment of learning outcomes from course to course</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>Number</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2.</td>
<td>Course design promotes both faculty and student engagement.</td>
</tr>
<tr>
<td>3.</td>
<td>Course evaluations collect student feedback on quality of content and effectiveness of instruction.</td>
</tr>
<tr>
<td>4.</td>
<td>Current and emerging technologies are evaluated and recommended for online teaching and learning.</td>
</tr>
<tr>
<td>5.</td>
<td>Expectations for student assignment completion, grade policy, and faculty response are clearly provided in the course syllabus.</td>
</tr>
<tr>
<td>6.</td>
<td>Feedback on student assignments and questions is constructive and provided in a timely manner.</td>
</tr>
<tr>
<td>7.</td>
<td>Guidelines regarding minimum standards are used for course development, design, and delivery of online instruction.</td>
</tr>
<tr>
<td>8.</td>
<td>Instructional design is provided for creation of effective pedagogy for both synchronous and asynchronous class sessions.</td>
</tr>
<tr>
<td>9.</td>
<td>Instructional materials, course syllabus, and learning outcomes are reviewed periodically to ensure they meet program standards.</td>
</tr>
<tr>
<td>10.</td>
<td>Instructors use specific strategies to create a presence in the course.</td>
</tr>
<tr>
<td>11.</td>
<td>Intended learning outcomes at the course and program level are reviewed regularly to ensure clarity, utility, and appropriateness.</td>
</tr>
<tr>
<td>12.</td>
<td>Learning objectives describe outcomes that are measurable.</td>
</tr>
<tr>
<td>13.</td>
<td>Opportunities/tools provided to encourage student-student collaboration (i.e. web conferencing, instant messaging, etc).</td>
</tr>
<tr>
<td>14.</td>
<td>Selected assessments measure the course learning objectives and are appropriate for an online learning environment.</td>
</tr>
<tr>
<td>15.</td>
<td>Student-centered instruction is considered during the course-development process.</td>
</tr>
<tr>
<td>16.</td>
<td>Students learn appropriate methods for effective research, including assessment of the validity of resources and the ability to master resources in an online environment.</td>
</tr>
<tr>
<td>17.</td>
<td>Student-to-Student interaction and Faculty-to-Student interaction are essential characteristics and are facilitated through a variety of ways.</td>
</tr>
<tr>
<td>18.</td>
<td>The online course site includes a syllabus outlining course objectives, learning outcomes, evaluation methods, textbook information, and other related course information, making course requirements transparent at time of</td>
</tr>
</tbody>
</table>
There is consistency in course development for student retention and quality.

<table>
<thead>
<tr>
<th>Faculty Satisfaction Indicator</th>
<th>Points*</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Clear standards are established for faculty engagement and expectations around online teaching.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>11. Curriculum development is a core responsibility for faculty.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>12. Faculty are provided on-going professional development related to online teaching and learning.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>13. Faculty performance is regularly assessed.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>14. Faculty receive training and materials related to Fair Use, plagiarism and other relevant legal and ethical concepts.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>15. Faculty workshops are provided to make them aware of emerging technologies and the selection and use of these tools.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>16. Instructors are prepared to teach distance education courses and the institution ensures faculty receive training, assistance, and support at all times during the development and delivery of courses.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>17. Policy for copyright ownerships of course materials exists.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>18. Technical assistance in course development and assistance with the transition to teaching online is provided for faculty.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>(Maximum possible points 57</strong>)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student Satisfaction Indicator</th>
<th>Points*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Courses are designed so that students develop the necessary knowledge and skills to meet learning objectives at the course and program level. These may include engagement via analysis, synthesis and evaluation.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>2. Efforts are made to engage students with the program and institution.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>3. Minimum technology standards are established and made available to students.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>(Maximum possible points 27</strong>)</td>
</tr>
</tbody>
</table>
4. Policies are in place to authenticate that students enrolled in online courses and receiving college credit are indeed those completing the course work. | 0 | 1 | 2 | 3 |
5. Program demonstrates a student-centered focus rather than trying to fit service to the distance education student in on-campus student services. | 0 | 1 | 2 | 3 |
6. Student support services are provided for outside the classroom such as academic advising, financial assistance, peer support, etc. | 0 | 1 | 2 | 3 |
7. Students are instructed in the appropriate ways of communicating with faculty and students. | 0 | 1 | 2 | 3 |
8. Students are instructed in the appropriate ways of enlisting help from the program. | 0 | 1 | 2 | 3 |
9. Students are provided access to library professionals and resources that help them to deal with the overwhelming amount of online resources. | 0 | 1 | 2 | 3 |
10. Students are provided with access to training and information they will need to secure required materials through electronic databases, interlibrary loans, government archives, new services and other sources. | 0 | 1 | 2 | 3 |
11. Students have access to effective academic, personal, and career counseling. | 0 | 1 | 2 | 3 |
12. Students should be provided a way to interact with other students in an online community. | 0 | 1 | 2 | 3 |
13. The institution provides guidance to both students and faculty in the use of all forms of technologies used for course delivery. | 0 | 1 | 2 | 3 |
14. Throughout the duration of the course/program, students have access to appropriate technical assistance and technical support staff. | 0 | 1 | 2 | 3 |
15. Tutoring is available as a learning resource. | 0 | 1 | 2 | 3 |

| Total | 0 | 1 | 2 | 3 |

*Points Possible Per Category*
0 = not observed
1 = insufficient
2 = moderate use
3 = meets criteria completely

**Maximum possible points for each section is the number of indicators x 3**

Appendix L

Researcher’s Overall Impression of the Radiography Program

Overall, as a researcher becoming intimately knowledgeable about the Radiography program and its practices, this researcher was struck by their sincerity and their dedication to the students and the program as a whole. The administrators and staff are constantly alert for new opportunities to improve the program, their relationships with the students, and the delivery of course content to students. The administrators have done an excellent job of accounting for the diversity of students’ learning abilities. Administrators’ attention to detail and actually going onsite, to all clinical settings no matter what the distance, to follow-up is commendable. This demonstrates a true dedication to the student population as well as to the program’s clinical affiliates.