DISSERTATION

EXAMINING THE IMPACT OF CHICKERING'S SEVEN PRINCIPLES OF

GOOD PRACTICE ON STUDENT ATTRITION IN ONLINE COURSES IN THE

COMMUNITY COLLEGE

Submitted by

Timothy Tirrell

School of Education

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2009

UMI Number: 3374629

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.   Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.
In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted.   Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI®

COLORADO STATE UNIVERSITY

December 17, 2008

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY TIMOTHY TIRRELL ENTITLED EXAMINING THE IMPACT OF CHICKERING'S SEVEN PRINCIPLES OF GOOD PRACTICE ON STUDENT ATTRITION IN ONLINE COURSES IN THE COMMUNITY COLLEGE BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

_____
Susan Athey
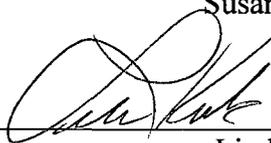
_____
Linda Kuk

_____
David Most

_____
Don Quick, Advisor

_____
Timothy Gray Davies, Director

ii

ABSTRACT OF DISSERTATION

EXAMINING THE IMPACT OF CHICKERING'S SEVEN PRINCIPLES OF

GOOD PRACTICE ON STUDENT ATTRITION IN ONLINE COURSES IN THE

COMMUNITY COLLEGE

As online enrollments escalate in colleges and universities across the country, so does concern about student attrition rates in these courses, or students who drop, fail or are administratively withdrawn from the course. There is an abundance of literature addressing student success in online courses and much of this focuses on using constructivist learning theories to create learning experiences that engage the student. Also emerging from the literature is the *Seven Principles of Good Instructional Practice* by Checkering and Gamson as an accepted rubric for evaluating effective online instruction. This study focuses on whether the use of instructional strategies as measured by the *Seven Principles of Good Practice* has an effect on student attrition rates in online courses.

Full and part time faculty at three community colleges in Virginia who taught at least one online course in the last three semesters completed an online survey to determine the extent they use instructional strategies reflecting the constructivist-based Seven Principles of Good Practice in their online courses. Scores from the survey were then compared to the attrition rates in their courses.

Results indicated both groups strongly used instructional strategies reflecting the seven principles of good practice in their online courses and there was observed in the

reported use between full and part time faculty, although full time faculty scores ranged a bit higher while part-time faculty scores tended to cluster towards the middle. When the results for the principles are examined individually rather than as a set, both groups scored weaker on principles reflecting innovative instructional strategies. However, no relation between the extent to which faculty reported using those instructional strategies and student success as measured by attrition rates could be found. Also the study results support the need for further research controlling for certain variables which are discussed in the conclusion of the study.

Timothy Tirrell
School of Education
Colorado State University
Fort Collins, CO 80523
Spring 2009

CONTENTS

CHAPTER I:

INTRODUCTION

When I began work as Coordinator for Distance Learning for the Virginia Community College System (VCCS) in July 1999, the explosion of online college courses was still over the horizon, but enrollment patterns in distance learning courses served as a harbinger of things to come. According to the VCCS website (Virginia Community College System, 2007) distance learning enrollments were 6,300 in 1996-97 or approximately 3% of a total enrollment of 206,000 students. The popularity of the Internet was in its infancy and online or web-based courses represented a small percentage of distance learning enrollments. The vast majority of distance learning enrollments were in courses delivered through videotape, interactive video, self-contained CD ROMS or even correspondence courses. In 1997-98 the number of distance learning enrollments jumped 158% to 16,289 and then by another 46% to 23,800 enrollments the following year. According to the VCCS system office, the only significant change in distance learning courses at the colleges was the increase in the number of online courses being offered. By this point all 23 colleges in the Virginia Community College System offered courses online.

As part of the effort to manage this growth and ensure quality, system office staff examined all aspects of the distance learning activity and found unimpressive student success numbers that belied the impressive growth in enrollments. Of the 23,800 students taking distance learning courses in 1998-99, slightly more than 19,000 were registered in

online courses. Of those, 47% did not successfully complete the course; that is to say the student failed, withdrew or was administratively dropped by the instructor. This compared to an average non-success rate of 15% for similar courses taught in a traditional format in a classroom on campus. In response to this statistic, the chief academic officers for each college, with support from system office personnel, developed an assessment process and criteria to ensure that the quality of online courses was at least equivalent to those same courses being offered on campus (Virginia Community College System, 2000).

This assessment process was based on the *Principles of Good Practice for Online Programs* developed by the Southern Regional Education Board (SREB) to ensure the quality of online courses offered through its Electronic Campus (Southern Regional Education Board, 2004). The assessment process provided a framework for evaluating and structuring courses and programs offered online, and addressed the following areas:

1. Curriculum and Instruction

2. Institutional Context and Commitment

3. Faculty Support

4. Resources for Learning

5. Students and Student Services

6. Commitment to Support

7. Evaluation and Assessment

This framework provides a comprehensive approach to addressing quality in online courses and programs rather than addressing specific issues such as student retention rates. The Academic Officers Council decided a comprehensive, inclusive

approach was essential as these courses were in their infancy and the entire operation required evaluation. The implementation level of this assessment process varied among the college as did the success rate. The plan was fully implemented for the 2001 – 2002 academic year and non-completion rates in online courses across the individual colleges ranged from a low of 10% to a high of nearly 50%.

Despite these difficulties, online course enrollment growth averaged 15% in the VCCS over the next several years including over 70,000 online students in 2006-07 or 29% of total enrollment. The growth rate reflected national trends with nearly 3.5 million students taking at least one online course during the fall 2006 semester compared to 1.6 million students in fall of 2002 (Allen & Seaman, 2007). However, high non-completion, or attrition, rates continued to plague online courses and programs both nationally (Carr, 2000; Diaz, 2002; Summers, Waigandt, & Whittaker, 2005) and within the VCCS. The VCCS faculty and administrators found some success in reducing attrition rates by addressing structural issues such as alignment with institutional mission and providing more academic resources and student support services. However education is about teaching, learning, faculty and students, and efficacious change strategies should focus on the teaching-learning experience. Designing and delivering instuctionally sound courses using valid learning theory can engage students and reduce attrition rates and as well as have significant positive impact on student success (Rovai, 2004).

Research Context

The student attrition problem is not a function of online courses but rather the education paradigm. The first thread in this research approach is online courses require a different approach to learning and an instructional design that actively engages the

student and calls for greater communication and collaboration than on-campus courses do (Prince, 2004; Ravenscroft, 2001). O'Banion (1999) criticized the traditional education system as time, place and efficiency bound. Faculty offer courses at their convenience, students must come to campus to learn. Scheduling and cost concerns, rather than creating the best environment for effective learning, drive class size. Anchored by traditions and habit, educators are striving to build the world's best buggy whip in an era of the super jumbo jets and the space station. O'Banion argued the new, reformed education environment features multiple learning options for students, engages students in their own learning, emphasizes collaboration, shifts faculty to a facilitator role and documents improved and expanded student learning. The interactive, communicative, and participative capabilities of computer and internet technology fit very well within this new educational framework (Brown & King, 2000; Ravenscroft, 2001). Thus the literature implies that in order to be successful, online courses must fit within the interactive and participative framework and adhere to the new educational model advocated by O'Banion. Furthermore, online courses should move quickly away from the traditional, time and place-bound, master-student education model.

The second thread is the usefulness and appropriateness of constructivism as a learning theory for application in online courses. Briefly, constructivism is an active approach to learning where in the student constructs his or her own knowledge or reality and interprets it based on prior knowledge and experience (Herring, 2004). However, if online courses are built upon a constructivist foundation the question still remains of how to measure the application of constructivist principles to assess any impact on student attrition. That leads to the third thread which is the emergence of the seven Principles of

Good Practice in Undergraduate Education (Chickering & Gamson, 1987) as a means to measure quality in online courses. Since being published in 1987, these principles have become an accepted rubric for measuring quality in course content and have been modified for use in the online teaching environment and have been used in numerous studies (Chickering & Gamson, 1999). This study is built on the premise of constructivism as a foundation for effectively designed online courses and the seven principles as a rubric to measure quality.

Statement of Problem

Online learning is part of a new educational movement and those enrollments continue to expand while showing no signs of reaching a plateau (Allen & Seaman, 2007). However, colleges will continue to have problems with student success similar to those experienced in the Virginia Community College System described above as programs struggle under the weight of using traditional approaches to instruction in this evolving environment (Brown & King, 2000; Jonassen, Davidson, & Collins, 1995). Teaching faculty cannot simply shift their content, style and instructional strategies from the traditional classroom to the online environment and expect to be successful (Rovai, 2004). To promote student success in the new environment, faculty and course designers must develop a new approach to teaching and learning that takes advantage of information technology capabilities and accommodates the characteristics of the online learning environment. But if one accepts that premise, supported by the student completion problems experienced by the VCCS and others, then what are the characteristics and foundations of this new approach? How do educators define and

measure online learning in terms of content and instructional methodology in order to improve student success as defined by higher completion rates?

Research Questions

This research will focus on how educators define and evaluate quality in online course content and delivery, and how the information from those assessments is used to continually improve the online course instruction process. Online courses must be based on sound educational theory (Aragon, Johnson, & Shaik, 2002; Ravenscroft, 2001). Constructivist learning theory has been mentioned as an appropriate foundation for online course design because its active and student-centered approaches to learning are compatible with both the online environment (Brown & King, 2000; Huang, 2002; Meyer, 2002) and the new learning paradigm described by O'Banion (1999).

Once a learning theory is accepted as a framework for course development, one still must measure for quality. The *Seven Principles of Good Practice for Undergraduate Education* (hereafter referred to as *the seven principles*) presented by Chickering and Gamson (1987) has been used as a rubric to evaluate the quality of instruction in online courses in multiple research applications including Alvarez (2005), Batts (2005), Bangert (2004), Meade (2003), Ray (2005) and others. In addition, Chickering and Gamson (1999) reported the principles have been adapted as an assessment tool and research instrument in multiple studies and have become the basis for larger lists of good practice since being published in 1987. Therefore, if this research can successfully weave the notions of constructivism as a learning theory framework promoting student success in online courses and *the seven principles* as a rubric to evaluate online courses within that framework, then I should have a set of criterion that,

if applied appropriately, should result in higher rates of student success in online courses. Said another way, applying these criteria should lead to lower attrition rates in online courses. Accordingly, the three research questions I will pursue are:

1. To what extent are faculty using Chickering's Seven Principles of Good Practice in their online courses?

2. What is the difference between the full-time and part-time faculty using Chickering's Seven Principles of Good Practice in their online courses?

3. What is the association between implementing the seven principles and student attrition rates in online courses?

Methodology

I will use a quantitative approach for this research. I selected this because I am interested in measuring performance outcomes, in this case attrition rates of students in online courses, and now they may be affected by other factors.

I will survey a sample of full-time and part-time faculty at a mid-size community college in Virginia who taught at least one online course since the fall 2006 semester. The faculty will be from all disciplines across the college. To determine the extent to which the responding faculty are using the seven principles, I will administer a survey asking them to rate the extent they use certain instructional strategies or techniques in their online course and then calculate a score for each faculty participant. I will then compare the individual scores with the attrition rates in the courses each faculty taught to evaluate the impact on attrition.

Definition of Terms

There are numerous terms particular to online and technology-enhanced learning that even people within the education environment may find unfamiliar. While many of these terms will be explained in detail in the course of this research, a general understanding of the terms in the list below will help readers draw greater value from this research.

Attrition. Students who did not successfully complete a course and received a failing grade, withdrew or were administratively dropped from the course (Virginia Community College System, 2000).

Constructivism. A learning theory where knowledge is actively built by the learner and integrated with previous knowledge (Strommen & Lincoln, 1992).

E-Learning. The delivery of education including all activities relevant to instructing, teaching, and learning through various electronic media. This definition has been expanded by some to include the psychological dimensions and demands of the learner, content to be learned, and learning theories. Online courses are one point on the E-learning continuum.

Full Time Faculty. According to the VCCS Policy Manual (Virginia Community College System, n.d.) full time faculty teach a minimum of 12-15 credit hours per semester for two semesters each academic year.

Part-Time Faculty. According to the VCCS Policy Manual (Virginia Community College System, n.d.) Regular part-time faculty are employed on a continuing basis to teach less than a full load. Adjunct faculty also teach less than a full load but are distinguished from part-time faculty in that they are hired on a semester by semester

basis. For the purpose of this study, all faculty teaching less than a full load will be identified as part time faculty.

Online course. Courses where 80% or more of the content is delivered via the internet and required few if any meetings between students and faculty (Allen & Seaman, 2003).

Limitations

As with any research project there are limitations that I must acknowledge and readers should consider. The accuracy of the data is limited by the honesty of the respondents' answers to the survey instrument and also the respondents' interpretation of the questions. Participation in the study is voluntary so the data doesn't necessarily reflect the experience of the entire faculty but rather only those who choose to respond. Also, the design of the study measures an instructor's perception of activity in his or her course which may or may not accurately reflect what is actually happening. Next, the validity of the data can be limited by the reliability of the survey instrument. The study design only measures the perception of the use of identified instructional strategies and not their actual use. In addition, demographics of either faculty or students were not considered in the design. Finally, the generalizeability of the results may be affected by several factors including a non-randomly selected participant pool, variables other than those identified in the literature impacting the results in unexpected ways, and the absence of student input resulting solely in a faculty perspective.

Delimitations

Several restrictions in the study design may narrow its scope including the sample group which consisted of faculty at only one medium-sized community college in rural

Virginia. In addition, only online courses and not all E-learning activities were part of the study.

Researcher Perspective

I must fully disclose my involvement and familiarity with the research site prior to the undertaking of this study. During my seven years of service in the Virginia Community College System, I worked with various members of the leadership, faculty and staff at this college as part of my efforts to advance the E-learning initiatives and activities of the VCCS. In addition, I spent approximately eight months working in an office on the campus in a telecommuting arrangement. Finally, I am married to a full-time faculty member of the college and I reside in the college's service region. I have not had any interactions with the college in a professional capacity since I left the VCCS 18 months ago.

I do not consider these factors to be an impediment to obtaining meaningful data and results for my study and in fact they may be an asset. I enjoyed positive interactions with college personnel at all levels largely because my role was to help them succeed at some project or activity. I never had any supervisory or evaluation role with any personnel at the college. These positive perceptions may actually enhance the quantity and quality of participation because faculty may be more willing to participate due to some level of familiarity. I also do not believe my experience with the college will cause the data to be skewed consciously or unconsciously by faculty trying to respond to the survey instrument in a certain way. The survey instrument simply asks faculty about their use of various instructional strategies with no positive or negative implications associated with whether they used that particular strategy or not. In addition, appropriate

measures will be taken to ensure that the results of the survey in no way can be traced back to individual faculty. Faculty will be assured of this confidentiality prior to participating in the project.

I must also acknowledge my participation in the development and implementation the quality assurance plan for online courses in the VCCS. Through this activity I became keenly aware of the issues of student attrition in online courses, and I also gained experience identifying strategies to address this problem at a system level. However while the system office provided an overarching framework, personnel at each college designed the strategy for developing and delivering online courses customized to their situation and circumstances. I was not part of any individual college plan for online courses and I am not aware of any plan that specifically used the *seven principles* as a rubric to assess and improve online courses.

CHAPTER II

LITERATURE REVIEW

The purpose of this research is to investigate the relationship between employing teaching strategies consistent with Chickering and Gamson's Seven Principles of Good Practice for Undergraduate Education (1987) and student attrition rates in online courses. This chapter establishes the key themes for investigating the problem and the theoretical foundation for the study.

The literature review is organized into four sections. The first section frames the problem statement by examining the growth of online education, the concomitant student attrition rates and the relationship with weak course design and ineffective teaching strategies. The next section examines constructivism as a theoretical framework for active learning and effective online pedagogy. The third section explores the literature relative to using a version of Chickering and Gamson's *Seven Principles of Good Practice for Undergraduate Education* (1987) modified for the online course environment (Chickering & Ehrman, 1996) to assess and evaluate online teaching and learning and serve as a guide for developing constructivist –driven pedagogy for online courses. This section will show how these principles of good practice have become accepted as the rubric for evaluating course quality. Furthermore I will show how these principles have been modified and widely used for evaluation of online instruction. These principles will be the rubric I will use to assess the quality of the courses in my sample.

Finally, the last section examines multiple studies that evaluated various aspects of online teaching and learning using the seven principles of good practice. The studies applied the seven principles in a variety of settings and provided the foundation upon which I will build my research. However a significant difference between these works and mine is that these authors cited perceptions of student and faculty satisfaction as the measure of success in online courses. I will use student attrition rates to measure success.

Online Learning

The impact of technology upon instruction is not new. Computer technology and information communication technologies have become the rule rather than the exception (Naquin, 2002). The greatest manifestation of this may be online courses. Online learning is now becoming ubiquitous at all levels of education and is not restricted to students studying at a distance as campus-based students are also mixing and matching their classroom and online learning (Davis, 2004).

Citing the lack of research surveys focusing on online learning, Allen and Seaman (2003) published their first annual report on online education in the United States with the goal of answering some of the fundamental questions that evolved since colleges and universities began experimenting with online courses about a decade earlier. Their study of active, degree-granting institutions in the United States included responses from almost 1000 institutions regarding the courses being offered online and who is enrolling in them. The authors extrapolated the results to draw conclusions for the United States and published their findings in September, 2003. I have found no similar surveys of online courses prior to the 2003 report published by Allen and Seaman. My survey of the literature prior to 2002 found statistics for distance learning courses and enrollments as a

whole but not categorized by delivery format, so comparative statistics for online courses were not available. Allen and Seaman (2003) also reported few, if any research reports of online students existed. Thus, their study marks the practical starting point for evaluating online courses as a separate entity on the distance learning continuum.

Allen and Seaman (2003) defined an online course as a course where most, if not all, of the content is delivered online and typically has no face to face meetings. In fall 2002 nearly 90% of all public institutions offered at least one online course while the average for private colleges was around 50%. Slightly less than 50% of public colleges offered at least one full online degree compared to only 20% of the colleges in the private sector. In response to the question of "would students be willing to sign up for online courses?" the answer was a resounding yes. Allen and Seaman reported over 1.6 million students took at least one online course and over one-third of these students took all of their courses online. According to the figures presented by Allen and Seaman, 11% of all enrolled students took at least one online course during the fall 2002 semester.

With the support of the Sloan Consortium (http://www.sloan-c.org/), Allen and Seaman continued to publish an annual study on online learning in the United States. The recently released report, *Online Nation: Five Years of Growth in Online Learning* (Allen & Seaman, 2007) reported data collected through the fall 2006 semester. The sample for analysis for this study was all active, degree-granting institutions in the United States. Of 4,491 eligible institutions, 2,504, or 55.8% responded to a sufficient number of survey questions to be included in the analysis. Data was compiled and linked to the College Board Annual College Survey and then the responders and non-responders were

compared to create weights, where necessary, to ensure survey results that reflected the entire population of schools in the United States.

In this report, Allen and Seaman reported that enrollments in online courses continued to grow with no plateau in sight. Chief Academic Officers reported record online enrollment growth during the 2005-2006 academic year. Nearly 3.5 million students enrolled in at least one online course during the fall 2005 term, a nearly 10% increase over the 3.1 million reported for the previous year and more than double the number reported in the first study four years earlier. Online students represented nearly 20% of all higher education students which is up from 10% in the first survey. More than half of all online students were studying at two year institutions. Furthermore, two-year institutions demonstrated the fastest growth rate and have more than half of all online enrollments for the past five years. Allen and Seaman cited several indicators that online education will continue to grow including the number of institutions planning to increase course offerings (83%), and institutions that expect an increase in student demand for online learning opportunities to grow (70%). Another indication that online learning has become ensconced in higher education was the decrease in the level of faculty rejection of the value and legitimacy of these courses, down from 28% in the first survey to 11% in the most recent one (Allen & Seaman, 2007).

Criticisms of Online Courses

However, the quality of the design and learning experience of online courses has not kept pace with the enrollment growth resulting in lower levels of student success (Sapp & Simon, 2005; Stumpf, McCrimon, & Davis, 2005; Summers, Waigandt, & Whittaker, 2005). Information technology has driven this growth and may even be the

defining characteristic of online courses. For instance, this generation of online courses is dramatically different than previous distance learning courses using other modalities as advances in technology make information a commodity in the new century thereby inextricably weaving technology and learning together (Stumpf et al 2005). Administrators also see information technology as an efficient and innovative solution to many problems in higher education (Surry & Land, 2000). However the emphasis on technology can be misplaced to the point where most E-learning initiatives are driven by technology rather than sound learning theory (Rovai, 2004). The integration of technology into the learning process should be less about the technology and more about teaching and learning, and using that technology to create environments to enhance learning (Mills & Tincher, 2003).

The proliferation of online courses has fueled a debate in academia about the quality of these courses compared to courses delivered on campus in a face to face environment (Quilter & Weber, 2004). Responding to this criticism, Russell (1999) conducted a literature review of over three hundred and fifty comparative studies and found no significant difference between online and face to face courses when student grades were compared. This lends support to the notion that technology can be used to deliver education without being a detriment to the quality of the content. However, while computer Internet technology can greatly enhance the learning experience, Ravenscroft (2001) questioned whether many courses take advantage of the interactive, communicative and participative capabilities of the technology and instead simply replicate or augment conventional approaches. Along those same lines, Twigg (2003) reported that most colleges initiating online courses did not redesign their courses to

utilize the strengths of the technology but rather just applied the technology to existing and fixed infrastructure, and faculty notions of instruction. Like the person who buys a computer to replace a typewriter without learning to use the creative writing and editing functions of a word processor, these courses failed to capitalize on and utilize the full potential of the technology. Innovative technology can not compensate for poor instructional design and the result often is courses with high student attrition and non-completion rates.

As enrollment in online courses increase, so does concern over student attrition in those courses. Carr (2000) reported those dropout rates are often 10-20% above rates in comparable courses taught in traditional classrooms. Investigating similar concerns over student attrition, Sapp and Simon (2005) conducted a controlled study of nine undergraduate writing sections (four online courses and five on-campus) at a comprehensive university in New England. They compared two online sections with three on-campus sections of a business writing course and also two sections of an online composition course with two on-campus sections of the same course. To control for teaching style one instructor taught all the business sections and one instructor taught all the composition courses. They reported a student attrition rate of 30% in the online courses compared to a zero attrition rate for the on-campus classes, and they also found online courses left students with a higher sense of unfinished goals and feeling of a lack of engagement in the education process. Their study indicated online students were consistently less likely to earn passing grades due to attrition as compared to on-campus students.

Sapp and Simon's findings typifies the apprehensions raised about online courses and appears to contradict Russell's (1999) conclusion that online courses are on par with on-campus courses based upon the studies he cited which reported no significant difference between the on-campus and distance student learning experience. Further strengthening the argument against online courses and undermining Russell's conclusions, Summers, et al (2005) found that a major weakness in many of the studies cited by Russell and others was a lack of a reliable or valid instrument to evaluate students' success as well as a failure to control extraneous variables. Summers et al. concluded that online students were less satisfied with the method of delivery as compared to traditional students.

However, high student attrition rates should not be seen as a failure of the online learning concept. Diaz (2002) notes that there are other reasons a student does not succeed. These reasons include student characteristics (i.e., demographics), the quality of the class or its instruction, the course's discipline, student socioeconomic factors, student disabilities, or even apathy. In defense of the multitude of "no significant difference" studies, Conger (2005) pointed out that the weaknesses of these studies cited by Summers et al. (2005) and the others above are not unique to the media comparison studies (MCS) in Russell's literature review and in fact those weaknesses can be applied to most educational research. Furthermore, while those studies may be flawed from a scientific method perspective, MCS do provide value when viewed in context. Conger concluded that regardless of what side of the argument you take - that technology does not harm the student so why not utilize it, or that technology does not help the student so why bother with the expense and effort - the bottom line is there are other student and instructional

factors that impact student success. Technology itself is not the active variable for whether or not a student is successful in an online course. In fact, given the learning potential of online computing, striving to be as good as face to face is setting the bar too low (McDonald, 2002) and technology-enhanced courses such as online courses should provide a greater learning experience. These technologies enable faculty to create learning opportunities not possible or practical in the traditional classroom. As Ravenscroft (2001) states: "Internet Technologies are providing an unparalleled technological foundation for designing innovative interactions that are highly engaging, communicative and participative" (p. 150).

Instructional Design for Online Courses

Student success and satisfaction in an online course rely on a course development process utilizing solid instructional design rooted in learning theory (Aragon, et al, 2002; Ravenscroft, 2001; Sapp & Simon, 2005; Summers et al, 2005; Twigg, 2003). Engaging the student in the learning process and providing opportunities for interaction and collaboration are two characteristics of a strong instructional design that emerged from a review of the literature. Swan (2002) reported that contact with and feedback from course instructors along with active and valued discussions were significantly related to positive student perceptions of course design. In another study, Twigg (2003) reported that a course redesign project focusing on active learning concepts resulted in higher course completion rates, improved student attitudes toward subject matter and increased overall student satisfaction. In their research on effective online learning strategies, Childs, Blenkensopp, Hall and Walton (2005) found that a lack of interactivity and personal contact among students and instructors are seen as barriers to student success. In

fact student involvement is one of the most important predictors of college success (Astin, 1993). Therefore, it stands to reason that effective online course design must actively encourage the student to take an active role in the learning process.

Active learning is defined as an instructional method that engages students in the learning process and requires them to participate in meaningful learning activities (Prince, 2004). Prince found that all forms of active learning had a positive effect on student achievement. He also found extensive and credible evidence that faculty should consider nontraditional models for promoting academic achievement and positive student attitudes. One learning theory based on student engagement and interactivity is constructivism and would therefore seem an appropriate theoretical foundation for developing an online course. Characteristics of successful online courses such as student-driven activities, peer collaboration and ongoing communication among faculty and students are supported in a constructivist learning approach (Brown & King, 2000; Jonassen et al., 1995). In addition, a constructivist approach supports authentic learning tasks that reflect real-life experiences. The absence of such activities and simulations has been identified as a weakness in many current online course designs (Herring, 2004; Rovai, 2004). The feasibility and efficacy of using constructivism as a foundation to design and deliver successful online courses will be addressed in the next section.

Constructivism

Constructivism is an approach to learning theory wherein the central premise is that knowledge is constructed by the individual rather than conveyed or absorbed from another source (Amory & Naicker, 2001; Bangert, 2006; Bellefeuille, Martin, & Buck, 2005; Brown & King, 2000; Herring, 2004; Hoover, 1996; Huang, 2002; Jonassen et al.,

1995; Rovai, 2004; Strommen & Lincoln, 1992). There is no shortage of constructivist literature and below I present a summary of their findings.

The central idea of constructivism is knowledge is built by the learner by integrating new information with previous ideas and experiences (Bellefeuille et al, 2005; Rovai, 2004). This contrasts with the behaviorist approach to learning theory applied in traditional classrooms. In a behaviorist approach, learning is a one-way process wherein a master or teacher passes knowledge to the student and the student is the passive recipient of that knowledge. Furthermore, that knowledge as presented is absolute and not subject to interpretation or change by the student (Rovai, 2004). The passive learning that defines behaviorism is minimized in a constructivist environment. Constructivism is built on two basic premises.

First, learners construct new knowledge based on what they already know and through interactions with their environments (Bangert, 2006; Bellefeuille et al, 2005; Brown & King, 2000). In other words, learners come to a learning situation with prior knowledge accumulated from previous experiences which influences the new knowledge gained or constructed from the current experience. Knowledge is not simply absorbed but rather developed by assimilating new information into preexisting notions and then modifying one's understanding. Additionally, there is no one absolute truth, but rather meaning is found in the context of the situation and shaped by the perspective and knowledge of the individual, so meaning will be different for each individual. Because knowledge is constructed by the interaction of the existing knowledge base with the environment and situations one encounters, learning is not restricted to the classroom but can take place in numerous environments.

Second, learning is an active process rather than passive and learners *actively* construct their own knowledge by integrating new information with preexisting knowledge (Bangert, 2006; Bellefeuille et al, 2005; Brown & King, 2000; Herring, 2004; Jonassen et al., 1995). If that new information is inconsistent with what the learner already knows, then his or her understanding can change to accommodate the new experience. Learners remain active in the process by evaluating new information, applying current understandings, analyzing differences and then modifying ones knowledge base accordingly. A summary of the major differences between the elements in traditional and constructivist learning environments is contained in the Table 1 below (Rovai, 2004, p. 81).

Table 1
Elements of Emphasis in higher education traditional and constructivist learning environments

Traditional	Constructivist
Instructional Emphasis Teaching, knowledge reproduction, independent learning, competition	Learning, knowledge construction, collaboration, reflection
Classroom Activities Teacher-centered, direct instruction, didactic, individual work	Learner centered, Socratic, authentic, individual and group work.
Instructor Roles Expert, source of understanding, lecturer	Collaborator, tutor, facilitator, encourager, community builder.
Student Roles Passive, listener, consumer of knowledge, note taker.	Active, collaborator, constructor of knowledge, self monitoring
Assessments Fact retention	Authentic knowledge application

Constructivism in Online Course Design

Many researchers have suggested that constructivism should be applied to online education to improve the student's learning experience (Bangert, 2006; Brown & King, 2000; Huang, 2002; Rovai, 2004). In fact, constructivist learning situations enabled and

supported by the online environment may be the key to quality in distance education courses (Meyer, 2002). Furthermore, computer mediated instructional design and the interactive options offered in online environments are more inherently constructivist in nature because they support self-directed and discovery learning where the outcomes are the result of individual student choices (Bellefeuille et al. 2005). Amory and Naicker (2001) added that the self-discovery and active learning components of constructivist-based learning are important in online learning environments that are characterized by independent and student-driven learning.

Constructivist-based courses can effectively engage online students because their interactive nature of the course provides a mechanism to motivate learners (Huang, 2002). Endorsements of constructivism as a theoretical base for quality online course development are ample. Brown and King (2000) found that using constructivism and problem-based learning facilitated learning and enhanced student motivation. Similarly, Rovai (2004) stated that an online course using a constructivist epistemology can be highly effective and result in a satisfying online learning experience. Ravenscroft (2001) acknowledged that "Internet technologies are providing an unparalleled technological foundation for designing innovative interactions that are highly engaging, communicative and participative" (p. 150). The learner centered nature of constructivism makes it an appropriate theoretical framework for developing quality online courses.

The application of the constructivist principles of active and contextual learning in online courses is a natural fit with the self-discovery and the independent nature of online learning. For example, Brown and King (2000) noted that learning communities that promote and support student collaboration and acquiring and sharing a common

knowledge base throughout the community can be developed. The technology can support the problem based learning that develops critical thinking skills using real life situations such as simulations. Rovai (2004) also found a good fit between constructivist principles and online applications. He stated multiple measures of feedback and open-ended assessment measures that promote inquiry are an essential part of the active learning component of constructivism. Instead of objective tests that require simple recall, online faculty can use simulations and investigations supported by information technology to apply the knowledge learned during the course.

As further evidence of the bond between online courses and constructivism, Rovai went on to list several constructivist-based course elements that should be considered when designing online courses. I have provided a summary below.

1. *Presentation of Content*: materials should be developed and organized in an integrated, intuitive manner that can be accessed anytime.

2. *Instructor-Student & Student-Student Interaction*: communication can be enhanced using discussion boards or other electronic activities to enable students to formulate ideas into words and then build upon with responses of others; fosters reflective interaction. In addition this interaction should support multiple instructor roles including a source of knowledge or a tutor supporting students engaged in problem-based learning;

3. *Student Assessment* (feedback): effective course design includes multiple measures to accommodate diverse learning styles as well as open-ended assessments; promotes collaboration, inquiry, and invention over ability to recall facts.

Constructivism can provide a theoretical basis for exciting and effective distance learning environments (Huang, 2002; Jonassen et al., 1995). As explained in this section, the active learning nature and authentic learning tasks of constructivism match the requirements for effective online instruction by engaging students in the learning process, promoting communication and collaboration among students and faculty and enabling self-directed learning (Bellefeuille et al. 2005; Liu, 2007; Mishra, 2002; Quilter & Weber, 2004). Also, given that students are expected to shoulder more of the burden in online courses, a marriage of online courses and constructivism makes sense (Brown & King, 2000). Given this weight of evidence and support, I can conclude constructivism does provide a strong theoretical framework for online course design.

Implications for Instruction

By definition then, constructivism uses active learning processes which meet the instructional design requirements of online courses and the needs of online learners by engaging the students in their own learning and promoting interactivity described by Astin (1993), Twigg (2003) and Swan (2002) among others. But this shift to a constructivist approach for online courses has significant faculty implications as well.

If students are changing the way they learn, then faculty must change the way they teach. Constructivist principles support and enable successful online instruction because they provide ways for instructors to create learner-centered and collaborative environments that support critical reflection and experiential processes (Jonassen et al., 1995). Courses designed with a constructivist approach also engage students in knowledge construction through collaborative activities (Brown & King, 2000). As described in the literature review above, constructivist-based course design can promote

student learning. However traditional faculty are often not prepared to teach this way. Many schools simply added online courses to existing curriculum with the expectation faculty would teach them the same way they teach on-campus courses (Cyrs, 1997). Hoover (1996) identified several skill sets online faculty need to be successful including shifting from being a presenter of knowledge to a facilitator of learning, recognizing and accommodating different learning styles, engaging students in problem solving and learning activities that are meaningful to them, and allowing ample time on task to enable knowledge to be built. Teachers who wish to develop constructivist-based distance learning environments need training in the creation of authentic, student-centered lessons (Herring, 2004). They must also become familiar with and use alternative teaching techniques, strategies and equipment (Aragon et al, 2002). Faculty can engage their students in their own learning by collaborative technologies such as web conferencing. Faculty can also encourage student learning by using tutorials, simulations, demonstrations and other learning activities made possible by internet resources and other information technologies.

Seven Principles of Good Practice in Undergraduate Education

In 1987, Chickering and Gamson published the *Seven Principles of Good Practice in Undergraduate Education* in an article in the AAHE Bulletin (1987). Drawing upon 50 years of educational research, these principles view education as active, collaborative and demanding (Gamson, 1995). This publication has become one of the best-known summaries of research-based instructional practices (Bangert, 2004).

Since their release, the principles have become an established and accepted rubric for evaluating quality in classroom instruction (Bangert, 2006; Buckley, 2003;

Chickering & Gamson, 1999; Quilter & Weber, 2004; Ray, 2005; Swan, 2002). The principles have been widely embraced by the higher education community. Chickering and Gamson (1999) reported that the principles have been adapted or incorporated into multiple studies, been developed into research instruments, provided the foundation for student orientation and faculty development programs, and have been the basis for other lists of good practice. According to Chickering and Gamson (1987), good teaching practices in undergraduate education:

1. Encourage student-faculty contact

2. Encourage cooperation among students

3. Encourage active learning

4. Give prompt feedback

5. Emphasize time on task

6. Communicate high expectations

7. Respect diverse talents and ways of learning

Acknowledging the ubiquity and impact of communication and technology tools since the principles were first published, Chickering revisited them in 1996. Similar to authors presented earlier in this literature review, Chickering (1996) stated technology is simply a tool that must be matched with the appropriate applications and employed in ways congruent with the seven principles. He described appropriate and effective methods for using these technologies to advance the seven principles of good instruction. Below is a summary of the original seven principles with instructional strategies revised for online applications and suggested by Chickering (1996);

1. Faculty student interaction

- Increase contact (especially with shy and time bound students)

- Promote shared learning experiences

- Asynchronous communication i.e. email enables faster communication while still allowing time to be thoughtful

2. Reciprocity & cooperation among students

- Traditional student collaboration tools (study groups, projects, discussions) can be greatly enhanced;

- Shown to encourage spontaneous student collaboration

- Collaboration unaffected by time and geographical limitations

3. Active learning techniques

- Supporting apprentice-like activities that require technology as tool

- Simulations (i.e. labs)

4. Gives prompt feedback

- To record & evaluate performance

- Facilitate portfolios

5. Emphasize time on task

- Encouraging student activity outside class

- Increase study time efficiency

6. Communicate high expectations

- Can communicate expectations explicitly & efficiently

- Potential wide exposure inspires students to excel

- Evaluation criteria more clearly explained

7. Respects diverse talents and ways of learning

- Technology can ask for different learning methods through visual, print, vicarious and virtual experiences

- Can engage multiple learning styles

- Accommodate different speeds and need for structure

- Facilitate and support collaboration among students with similar learning styles

Chickering pointed out that no technology is an automatic match for any particular principle, but rather the technologies must be managed by faculty students and administration.

Bangert (2006) and Bellefeuille et al. (2005) stated that the active and collaborative characteristics of the seven principles are a natural match for constructivist learning and are well suited for guiding design and delivery of quality online instruction. In fact, Bangert was unequivocal in his endorsement stating "The majority of learner-centered instructional practices which comprise the seven principles framework are clearly focused on constructivist-based teaching frameworks" (pp. 229-230). Constructivist principles such as problem-based learning, engaging in meaningful learning activities, student-faculty and student-student communication, self-paced learning and open-ended assessment are consistent with the seven principles that emphasize student-faculty interaction, cooperation among students, active learning and time on task (Bangert, 2004; Rovai, 2004). Chickering and Gamson (1991) suggested specific activities to assist faculty in integrating the principles of good practice into their

teaching. These activities can also serve a tool for evaluating teaching techniques. Some examples of the classroom applications suggested by Chickering and Gamson include:

1. Share past experiences, attitudes, and values with students;

2. Encourage students to participate in groups when preparing for exams and working on assignments;

3. Ask students to present their work to the class;

4. Return exams and papers within one week;

5. If students miss class, require them to make up lost work;

6. Encourage students to excel at the work they do;

7. Select readings and design activities related to the background of my students;

In addition to demonstrating the principles of good practice, these activities also reflect the active, collaborative and contextual learning activities called for in a constructivist learning design.

Seven Principles in Research Applications

Since the principles were first published in 1987, they have been widely adapted as a research and assessment tool in multiple studies across a wide range of academic applications from student orientation to faculty satisfaction to evaluating course quality (Chickering & Gamson, 1999). I reviewed many of the studies to validate my approach as well as identify gaps in the literature. My review of the literature found numerous studies which focused on using the seven principles to assess quality in online courses in relation to online pedagogy, student or faculty perceptions of satisfaction and teaching styles. Several of the studies are reviewed in detail below. The purpose of these studies ranged from attempting to refine a research tool to evaluating the use of the seven principles as a

predictor of student success to establishing a connection between the use of the seven principles and faculty or student satisfaction. However I selected those studies that used the seven principles as a rubric to identify and measure activities reflecting constructivist practices including student engagement and collaborative learning. Two of the studies linked constructivist-based principles as measured by the seven principles with quality in online courses. However they measured quality in terms of student or faculty satisfaction and I intend to measure it in terms of student attrition.

Several studies examined the extent to which faculty applied the seven principles in online courses. Chickering stated (1999) it was not necessary to incorporate all seven principles into a course, and the extent to which the individual principles are present in online courses can vary significantly. Ray (2005) examined the extent to which online instructors were implementing the seven principles (as listed on page 27 of this document). She distributed 72 surveys to faculty involved in web-based instruction at a university in Texas and received 65 usable responses for a 90.3% response rate. The survey asked instructors to rate the extent to which they used identified instructional strategies in their online courses. The strategies reflected the seven principles. Ray found that some of the seven principles were implemented more often than others. The principles of *gives prompt feedback* and *communicate high expectations* were the most frequently used. Ray also found that the three least used principles were *encourages active learning, respects diverse talents and ways of learning* and *encourages cooperation among student*. Ray concluded that developing and using teaching strategies to incorporate these principles required more planning and experience in course development and more time in course delivery. The low utilization rate could reflect the

need for more faculty training. Along the same lines she found that experienced faculty tended to use more of the principles.

Similarly, Taylor (2002) conducted a study to assess whether Internet course instructors use the principles. Using an inventory drawing on the activity list suggested by Chickering and Gamson (1991), Taylor surveyed a convenience sample of 200 instructors who taught online undergraduate courses at various colleges around the country. Taylor administered a 52-item survey divided into eight sections that asked faculty to numerically rate on a one to five Likert scale how well each survey item described their class. For example, statements such as "I ask my students to present their work to the class" or "I expect students to complete the assignment promptly" were contained in the survey. She found that the seven principles were being applied in class by both new and experienced faculty although, as in the studies cited above, there was variation among the extent to which different principles were applied. The results indicated that giving prompt feedback and maintaining contact with students were the most utilized principles while encouraging relationships among students and time-on-task were the least utilized. While Taylor concluded that these results may reflect a general lack of online teaching skill even among experienced professors, Taylor, like Ray, did not address the issue of student success.

Zhang and Walls (2006) also conducted a study to explore and describe the experiences of faculty members who taught undergraduate online courses at West Virginia University to determine the extent of implementation of the seven principles. Specifically, the questions the study sought to answer were:

1. What are the instructor's perceptions of the seven pedagogical principles in the online environment?

2. What factors influenced an instructor's implementation of the principle?

3. What is the relationship between faculty demographics and perceptions of implementation of the principles?

The target population was faculty who taught undergraduate online courses at the University of West Virginia during the spring, summer and/or fall of 2005. Zhang and Walls identified 107 instructors who taught 282 sections of 132 undergraduate online courses during that period. Out of 107 surveys distributed, 49 were returned for a 47% response rate. They used a modified survey based on the inventoried published by Chickering and Gamson (1991) that more specifically addressed online instruction. Content validity of the revised instrument was assessed and approved by an independent panel of experts.

In this study, the participants were asked to respond to five questionnaire statements for each of the seven principles for a total of 35 required responses. Using a Likert scale participants rated how frequently they used each of those 35 items in class. The instrument also contained two open ended questions at the end of each section. The first question asked respondents to list any factors that promoted implementing each of the seven principles. The second asked them to list factors that impeded or hindered implementation of the seven principles. By comparing the mean scores for each of the seven principles, Zhang and Walls determined the extent of implementation of each principle in the online environment. The researchers used a coding process to evaluate the qualitative data describing what factors influenced an instructor's implementation of

the seven principles. Third, an analysis of variance was used to examine the relationship between demographics and the implementation of the seven principles for research question number three. Zhang and Walls found undergraduate faculty teaching online courses indicated they often implemented five of the seven principles of good practice in their courses. However, their results also indicated a significant difference in the level and method of implementation of the seven principles among the participants with the principle of *communicating high expectations* being significantly higher than other principals while the principles of *encouraging student-faculty contact* and *encouraging cooperation among students* were the least frequently practiced.

Like the previous two studies, Zhang and Walls concluded faculty could use more training on how to consistently implement the seven practices, particularly encouraging cooperation and collaboration among students. However, their overall recommendation based on their study was course designers should include Chickering and Gamson's *Seven Principles for Good Practice in Undergraduate Education* as adapted to the online environment.

I examined other studies that addressed faculty perceptions of and experiences with applying the seven principles of good practice in an online environment. Blankson (2004) used a combined quantitative and qualitative approach to examine whether the use of technology by faculty at Ohio University was in accordance with the seven principles. The target population was 627 tenure track faculty members of whom 247 participated for a response rate of 39.4%. Using a similar survey instrument and data collection method as the previously cited studies, Blankson found a majority of participants (92.3%) placed a high priority on using teaching strategies that encouraged active learning when

designing and teaching their online course. However, encouraging student collaboration was again the lowest priority when it came to designing and teaching online classes. Overall, a majority of participants considered their teaching strategies compatible with the seven principles although implementation varied significantly from one principle to another. Blankson suggested expanding the use of the latest technologies to encourage faculty to use more innovative instructional practices.

In another faculty study, Meade (2003) compared self perceived teaching styles of full and part time faculty at one community college in southwest Virginia. She used a modified version of Chickering and Gamson's survey instrument (1991) that asked faculty to rate their response on a Likert scale. Meade targeted a single institution during the fall 2000 semester because it was preferable to mailing surveys to randomly selected participants across the country, and because the institution was local and the participants were willing. The target population at the college consisted of 74 full time and 150 part time faculty and Meade was able to achieve a 74% and 53% response rate for full time and part time faculty respectively. The criterion variable was teaching style as measured by the inventory and the predictor variable was full or part time teaching status. Using scale means to compare each of the seven criteria and analysis of variance to compare the two groups, Meade found no significant difference between self reported teaching styles of both groups relative to using the seven principles but did find full time faculty reported a slight but significantly higher level of interaction with students. Both faculty groups ranked themselves highest on *communicates high expectations* and *emphasizing time on task* while full time faculty ranked themselves lowest on *active learning*. Part time faculty's lowest rating was *faculty student contact.*

In one last study, Wingar (2000) used the seven principles as a lens to examine how faculty teach web-based courses. Using the literature to map pedagogical strategies to the seven principles, Wingar assessed faculty attitudes toward the principles, implementation frequency, barriers to implementation and relationships between attitudes and pedagogy as well as pedagogy and successful teaching. In Spring 2000, e-mail surveys were distributed to 50 pre-qualified faculty teaching web-based courses at South Dakota universities. All selected faculty had taught at least one online course with 29% reporting teaching six or more courses online. The participants all taught baccalaureate or masters level courses. Of the 50 surveys distributed, 34 were returned for a 74% response rate. The survey instrument was derived from Chickering and Gamson's seven principles of good practice (1991) and similar to the ones used in studies cited previously here. Like the previous studies, Wingar found general acceptance of the seven principles but considerable variation when it came to levels of implementation among the principles. Faculty attitudes toward the seven principles were analyzed by computing mean and standard deviations for corresponding survey questions. The principles of *encouraging student-faculty interaction* and *providing prompt feedback* received the most favorable ratings while *developing cooperation among students* scored the lowest. However the overall results indicated favorable faculty attitudes towards the principles as a whole.

Wingar also investigated barriers to successful teaching, but his findings focused on the perception of those barriers and not on successful teaching or even what the definition of what successful teaching was. This is consistent with the other studies listed, in that successful teaching is measured as a perception and not in terms of student academic achievement.

I also researched studies focusing on the relationship between the seven principles and the student experience. These studies tended to focus on student satisfaction, student perception, and evaluating or validating tools used to assess student perceptions of learning or faculty instruction. For example, Alvarez (2005) investigated the predictability that the perceived value of the application of the seven principles had on student perception of learning and satisfaction in graduate courses. The convenience sample for the study was 173 graduate students from a population of 498 students enrolled in 40 courses at a large Midwestern university in the spring 2005 semester. Students self-selected by responding to the survey. The data collection instrument was an online survey with three sections addressing the seven principles and one section collecting background information. Alvarez adapted Chickering and Gamson's inventory to gather information about the teaching effectiveness from the student's perspective. Alvarez used a panel of experts to establish construct validity for the instrument prior to its distribution. She found a strong correlation between perceived learning scores and the level of student satisfaction. Pearson correlation revealed a significant relationship between the perceived use of the seven principles and perceived learning indicating that students who rated their professors high on the use of the seven principles also gave high ratings to their level of perceived learning.

This study did not demonstrate evidence supporting the use of the seven principles as a predictor of student success because only active learning had a significant prediction value after removing the effects of the other six predictors. Alvarez (2005) concluded that students who felt faculty used the seven principles in their online courses had higher levels of perceived learning and satisfaction within those courses. While

differences were found in the perceived individual use of each of the principles, there was no significant perception difference in their overall use. Finally, Alvarez could only partially reject the hypotheses that the seven principles have no predictive value for student perceived learning or satisfaction with an online course. However, while this again provides further support for the use of the seven principles as a theoretical framework to guide design and implementation of online courses, it does not address student success in online courses in objective and measurable terms such as grades or attrition.

In a study of student perceptions, Buckley (2003) examined perceptions of student learning and how they correlated with the seven principles. Specifically using the seven principles as a lens, he examined the impact of course design, teacher interaction and student demographics on student attitudes, their online learning expectations and their perceptions of learning. A convenience sample of 67 students in three Educational Media graduate classes at the University of Central Florida in the spring 2003 semester comprised the participant pool. The three classes were taught by the same instructor who had experience designing and delivering online courses at the university.

Buckley (2003) used the Seven Principles Faculty Survey instrument initially developed by Chickering and Gamson (1991) but modified it slightly to reflect the student rather than the faculty perspective of the educational experience. Through the survey, participants indicated the extent that they experienced different teaching strategies in their classroom. Using Pearson Correlation Coefficient to analyze corresponding data items on the student survey, Buckley drew several conclusions. First, using the seven principles in the design and delivery of the course had a positive outcome

on the student learning experience. Second, students appreciated and responded to faculty who encouraged them to take responsibility for their own learning and help them plan and produce meaningful work. Finally, by measuring activities that reflect the seven principles of good practice, Buckley concluded there was a practical, significant relationship between instruction design and students' perception of their learning. Furthermore, how students perceived interaction with their teacher could impact their level of motivation. Students responded to faculty who showed an active interest in them.

Buckley's (2003) findings stressed the importance of creating an interactive environment for learning and designing discussion activities that trigger rich and meaningful online discourse. Again, this supports the notion of using the seven principles and a constructivist course design for online instruction but does not offer any objective measures of student success. These results were similar to those obtained by Swan (2002) who collected data from 73 courses offered through the State University of New York Learning Network in the spring 1999 semester. Students were asked to respond to a survey posted at the end of their online courses. Of the 3800 students enrolled in online courses, 1406 returned the survey for a 38% response rate. Swan felt the response was representative because although students who withdrew prior to completion wouldn't have participated in the survey, advanced students who finished early wouldn't have seen it either because it was posted late in the semester. Thus the outliers at both ends were eliminated from the sample. In addition, courses with less than five students enrolled or with less than a 40% survey response rate were eliminated from the sample because she didn't want to base analyses on courses with only one or two

students. That left a final sample size of 1108 students enrolled in 73 online courses. The survey instrument used multiple-choice, forced-answer questions to extract demographic data and information concerning students' satisfaction, perceived learning and activity in their courses. The survey asked students to rate 22 course design factors in the context of the student's perceived learning and satisfaction with the course and addressed activities or factors related to course assessment, course structure and interactivity within the course. Using analysis of variance to identify any relationship between student perceptions and course design, Swan found student satisfaction, perceived learning, perceived interaction with the instructor, and perceived interaction with peers were highly interrelated, although not identical. Specifically, the results demonstrated a significant relationship between the level of instructor interaction and how students felt about the course and their perceived level of learning. In addition, the results revealed significant relationships between student satisfaction and perceived learning and the level of interaction and collaboration with other students. Furthermore, Swan found significant relationships between student satisfaction and levels of perceived learning and:

1. clear and consistent course structure;

2. an instructor who interacts frequently and constructively with students;

3. valued and dynamic discussions within the course;

This study links the active learning aspects of constructivism for online learning and the seven principles of good practice because it reinforces the notion that students engaged in self discovery and actively guiding their own learning would require instructions to do so successfully. In addition, prompt feedback and meaningful interactions with peers have been established as essential to online learning and

constructivist design (Brown & King, 2000; Huang, 2002; Jonassen et al., 1995; Rovai, 2004). Faculty feedback and interaction with other students are identified in the Seven Principles of Good Practice as well (Chickering & Gamson, 1987). But while this further demonstrates the importance of creating opportunities for interaction in online learning environment and promoting a constructivist course design, it does not speak to student outcomes.

Batts (2005) took the research of the impact of the seven principles on online instruction a step further by examining both student and instructor agreement on perceived use of the seven principles in selected undergraduate courses. Batts sought to determine if faculty and students could perceive the use of the seven principles of good practice in undergraduate education and if they agreed on the perceived use of the seven principles in their online courses. He surveyed a pool of 28 students and five instructors enrolled in or teaching online courses respectively at a college of education in a southeastern university during the fall 2004 semester. Batts administered a modified version of the *Online Teaching Practices Survey* which is based on the seven principles of good practice. The survey addressed each of the seven principles and collected demographic information on the participants. Instead of asking participants to respond on a Likert scale, he asked them to simply respond yes or no as to whether that particular activity described their course since he was interested in whether the principles were present but not in the extent of that presence. Data analysis involved calculating the mean response for each of the principles for both students and faculty to determine perception level and then performing a series of t-tests comparing those means to determine if there was a significant difference in the perception. In his analysis, Batts

categorized the usage of six of the seven principles as medium (.36 - .70) or high (.71 - 1). Only one principle, *time on task*, had a proportion of low responses. His overall conclusion was that both faculty and students were in agreement about the perceived use of the seven principles. Although the small sample size (33) brings the generalizeability of the results into question, these findings were consistent with other studies presented here relative to the value and appropriateness of the use of seven principles in the development, design and assessment of online courses. Batts advocated institutionalizing the principles with direct training for faculty. However he also did not address evaluation of students.

Finally, believing existing student evaluation instruments do not adequately assess the constructivist principles recommended for successful online learning, Bangert (2006) conducted a study to develop and validate a student evaluation of online teaching effectiveness instrument based on the seven principles of good practice. The participants in this study were 807 students enrolled in online courses and blended courses at a midsize university during the fall 2004 semester with 68% enrolled in undergraduate classes. The survey was an instrument developed by the author to "assess each of the constructivist-compatible learning practices recommended by the seven principles of effective teaching" (p. 232). Students responded to queries on a six-point Likert scale ranging from strongly disagree (1) to strongly agree (6). A factor analysis of student responses showed that the 26 item inventory and all the best practice principles could be grouped into four factors: (a) student-faculty interaction, (b) cooperation among students, (c) active learning, and (d) time on task. Bangert concluded this is a useful instrument for supplying instructors with feedback relative to the instructional practices identified as

crucial for creating and delivering quality online courses. His study evaluates the effectiveness of a tool to measure classroom success and strongly binds the concepts of constructivist learning design, online courses and Chickering's seven principles of good practice. However it does not make a data-driven connection between those practices and student success.

Conclusion

The literature reveals that online courses offerings continue to grow at a rapid rate and show no sign of slowing down in the near future. Since publishing their first study in 2003, Allen and Seaman have documented the steady and dramatic increase of student enrollment in online courses. They reported online courses are now a permanent and significant part of the American higher education landscape (Allen & Seaman, 2007). In addition to being more convenient, modern information technologies enable online courses to provide a more authentic and engaging learning experience (Mills & Tincher, 2003; Ravenscroft, 2001; Surry & Land, 2000). While higher student attrition rates remain a concern, these rates are not a fundamental and necessary component of the online learning concept and a strong course design and delivery can go a long way in insuring student success (Bangert, 2006; Brown & King, 2000; Rovai, 2004; Twigg, 2003).

Constructivist learning theory provides a framework to develop active learner-driven courses for the online environment. Specifically, constructivism requires the student to take an active role in the learning process. The student creates his or her own knowledge and understanding by engaging in meaningful activities and then integrating this new information into their personal knowledge base. Constructivist principles

provide ideas to help instructors create learner-centered and collaborative environments that support critical reflection and experiential processes (Jonassen, et. al, 1995). Communicating and collaborating with other students and close communication with the instructor are key components of a constructivist approach (Strommen & Lincoln, 1992). In summary, constructivist learning is not the acquisition of knowledge but rather the building of knowledge.

Students must be actively engaged in their own learning if they were going to be successful in an online environment (Ravenscroft, 2001). Constructivist-based courses provide meaningful, authentic tasks and enable interaction with faculty and collaboration with fellow students which matches the demands of quality online courses (Bellefeuille et al. 2005; Brown & King, 2000; Herring, 2004). Effective online course teaching strategies that reflect the constructivist-based active include discussion forums, chats, group activities, streaming media and any other activities that promote social networking (Mishra, 2002). Chickering and Gamson's *Seven Principles of Good Practice for Undergraduate Education* (Chickering & Gamson, 1987) has become a standard of quality measurement and particularly has emerged as a rubric for evaluating online courses. These principles and the activities they prescribe strongly reflect the constructivist-based concepts of engaging the learner with meaningful and authentic tasks, creating learner centered environments, and promoting interaction with faculty and peers.

Multiple research studies have been published demonstrating that courses developed using the constructivists-compatible seven principles of good practice result in a positive educational experience for students and faculty and are considered to be quality

courses (Alvarez, 2005; Bangert, 2006; Taylor, 2002). However these studies point out that the presence of the seven principles indicates a quality course, but they do not measure the impact in terms of student success. If the presence of the seven principles reflects a strong constructivists-based course design and constructivist-based courses are more effective online courses, then more students should be successful in these courses than in courses that do not apply these principles. Specifically, students enrolled in online courses using constructivist learning principles as measured by the seven principles should have a lower attrition rate than courses that do not use constructivist learning principles.

While the studies cited above did weave together online courses, constructivist learning theory, and the seven principles of good practice, these studies measured effectiveness in terms of faculty and student satisfaction relative to the use of the seven principles but not in terms of student success as measured by course completion. In response to this shortcoming, my study addressed the hypothesis that courses using a constructivist-based learning design as reflected by the seven principles of good practice will have lower student attrition rates than courses that do not reflect those practices.

CHAPTER III:

METHODOLOGY

It appears that active learning techniques have been effective in promoting student success in online courses and the *Seven Principles for Good Practice in Undergraduate Education* (Chickering & Gamson, 1987), based on active learning concepts, have proven to be an effective rubric for assessing online courses. The problem to be investigated in this study is how do educators define and measure online learning in terms of content and instructional methodology in order to improve student success as defined by higher completion rates. Accordingly, the study has three research questions.

1. To what extent are faculty using Chickering's Seven Principles of Good Practice in their online courses?

2. What is the difference between the full-time and part-time faculty at each of the colleges using Chickering's Seven Principles of Good Practice in their online courses?

3. What is the association between implementing the seven principles and student attrition rates in online courses?

I sought first to establish a foundation that faculty are using the seven principles in their courses, and then I explored the nature of the relationship between using the seven principles and student success in those courses as measured through attrition rates.

Research Design and Rationale

In this study I used survey research which is a form of descriptive statistics. To address the first research question, participants were asked to complete a survey (see Appendix D) which enabled me to measure the extent that they apply the seven principles in their online courses. I then compared the scores between full and part-time instructors to determine if there is a difference in the usage of the seven principles. In order to address the third question I matched the survey scores with the attrition rates for their respective online courses to determine the relationship between them.

A survey approach to gather data for question one is appropriate for several reasons. Surveys can be effective when gathering factual or descriptive information that describes the characteristics of a population or ascertain levels of knowledge (McMillan & Shumacher, 1984). Surveys can also be used when the intent is to determine the status quo rather than manipulate a variable (Wiersma, 1969). In this case, I wanted to establish the current level, or status quo, of the use of the seven principles. In addition to seeking descriptive data, other aspects of my study make survey research a suitable choice. Surveys are used when observations or in-person interviews are impractical or unmanageable because of time, distance or sample size (Galfo, 1983). In this case, the sample population was dispersed among three colleges in Virginia and the time and expense required to interview the participants make that option unworkable. Also, the sample was faculty teaching online courses who can be assumed to be comfortable using technology and thus are good candidates for an online survey (Sue & Ritter, 2007).

Sites

The Virginia Community College System (VCCS) consists of 23 community colleges with 40 campuses across the state of Virginia; each college has its own defined service region. This system is a state agency with its own Board of Trustees, CEO, and funding line in the state budget. The colleges receive approximately 80% of their funding from the state with most of the remainder generated through tuition; each college has its own president and an advisory Board of Trustees. According to information found on the VCCS website (Virginia Community College System, n.d.), in 2005-06 those colleges enrolled 233,465 students with a full-time equivalent of 93,201. The largest college enrolled over 59,000 students and the smallest 1000 students in that same time period. The community college system covers a significant amount of territory; the furthest west college is closer to seven other state capitals than it is to Richmond and a 10-hour drive from the easternmost college yet no student is more than one hour's drive from a one of the forty-one campuses. According to the same web site, there are 1,993 full time faculty (51% female) teaching across the system.

Three VCCS colleges were used in this study and for privacy purposes they were identified by pseudonyms. The first is Hometown Community College. HCC has one main campus and three off site centers and serves more than 228,000 people within its geographical region. The college enrolled approximately 7000 students (unduplicated headcount) including approximately 1800 students in online courses ranking it at about the middle of all the VCCS colleges. Meadows Community College (MCC) is a multi-campus institution serving several counties. The college served approximately 7500 unduplicated credit students. During the same time period, the college served

approximately 2200 online students. The final college in the study is Peak View Community College (PVCC). Smaller and more rural than the first two colleges, PVCC served approximately 3900 unduplicated credit students in 2006-07 including almost 1600 online students. The president and senior administration of the colleges have agreed to support this research study and the Director for Institutional Research served as my contact and liaison.

Participants

According to the college directory, there are approximately 60 full time faculty at HCC. During the 2006-2007 academic year, 27 (45%) of the full time faculty taught at least one online course and an additional 16 part time faculty taught online during that time period for a total of 43 possible participants. Peakview Community College is a smaller institution with 28 full time faculty and had 23 full and part-time faculty teach an online course during the past academic year. Meadows Community College has approximately 70 full-time faculty and approximately 45 full and part-time faculty taught at least on online course over the past academic year. Therefore about 111 individual faculty, full and part-time, taught at least one online course during the fall 2006-7 academic year.

Participants were instructed to respond to the questions in the context of the most recent online course they taught so that I can do a direct match of their survey score with the attrition rate of their most recent online course. In addition, asking participants to respond to a particular behavior during a specific, recent time period can increase the accuracy of the information collected (Sue & Ritter, 2007). Given the past year's numbers described above, I had anticipated a sample of between 60 and 90 participants

With this sample size and because opinion scale items can be treated as interval data (Sue & Ritter, 2007), I was able to use measures of central tendency to analyze the data. In actuality the response rate was 50 or 45%.

Data Collection

The primary data collection instrument was a self-administered online inventory (see Appendix D) which faculty at the colleges completed as a self assessment of their implementation the seven principles of good practice. In addition I collected grade distributions for the most recent online course taught by each participant to determine the attrition rate – the percentage of students who failed, withdrew or were administratively dropped. The survey asked faculty to identify the course and term for their most recent online course so that their responses can be compared to the attrition rates in the corresponding course.

Every precaution was taken to ensure integrity and confidentiality during the data collection process. The first step was to contact faculty to request their participation in the study. The administration at one of the college's requested the Director for Distance Learning distribute the survey to their faculty with the cover letter I provided. The administrations at the other two colleges opted to provide the email addresses to me and have me email them directly.

Each faculty received an e-mail inviting them to participate in the project; this consisted of a cover letter explaining the purpose of this study, instructions for their participation and the URL for this survey as well as documentation of permission from the president (see Appendix A). How participant privacy and confidentiality were ensured was also included. Completed surveys were collected and stored on the website

where I could retrieve them. After one week, a reminder e-mail containing the instructions and URL was sent to nonrespondents by the same methods as the first one (see Appendix B). A third and last reminder was sent to the remaining nonrespondents after the second week (see Appendix C).

The Director of Institutional Research at each of the three institutions provided me with the appropriate grade distribution report for the most recent online course taught by responding faculty. I then matched the responding faculty and the appropriate course attrition rates while replacing the faculty name with a number to protect confidentiality.

Instrumentation

The *Inventories of Good Practice in Undergraduate Education* was developed to assist institutions and individual faculty members to examine instructional practices for consistency with the seven principles for good practice (Chickering & Gamson, 1987). The Inventories were published by AAHE and then reprinted by the Johnson Foundation as a separate publication. Complimentary copies of the inventoried are available through the Johnson Foundation which has filled requests for more than 100,000 copies of that publication for educational institutions across the U.S. and in Canada and the United Kingdom (Johnson Foundation, n.d.). However, the original version was designed for face-to-face classes and not online courses and therefore not ideal for use in this study.

Zhang and Walls (2006) modified the inventory so it would be meaningful for online instruction. This instrument, *The Online Implementation of Seven Principles* reduced the number of items in the inventory from 64 to 35 and then went through an extensive content validity assessment which is described in greater detail below. Zhang and Walls have granted permission for the instrument to be used in this study.

The Online Implementation Of Seven Principles poses a series of questions which measure the usage of each of the seven principles by requesting participants select one response on a 5-point Likert scale (5 representing very often; 4 representing often; 3 representing occasionally, 2 representing rarely; and 1 representing never). Each of the 35 survey items describes a specific teaching activity.

Faculty members rate the level they engage in each of those activities by circling an answer on a 1 to 5 scale. Marczyk, DeMatteo, and Williams (2002) term this type of self-reporting global ratings, wherein, a researcher attempts to quantify a particular variable by having the participant rate his or her response to a summary statement on a numerical scale. The scores for each of the 35 items reflect the level which faculty members engage in the teaching behaviors consistent with the seven principles providing a description of that participant's teaching style. This is the inventory used for the online survey. The only modifications I made to the survey instrument were to omit question related to participant demographic information and to delete the principle of good practice that was listed just prior to the set of questions that examined that principle. I removed the demographic questions because that data is not part of the evaluation, and the principles of good practice were removed so they would not have any influence on participant response. Other than those two things, I asked the same questions in the same order as in the study by Zhang and Walls (2006) (see Appendix D).

Validity

Validity refers to *what* the test or measurement strategy measures and *how well* it does so (Marczyk, DeMatteo, & Festinger, 2005), or more simply put, does the question measure what it is supposed to measure (Sue & Ritter, 2007). The original *Inventories of*

Good Practice for Undergraduate Education emerged from a panel of higher education scholars who synthesized findings from research studies that identified effective teaching practices (Bangert, 2004). Building upon that work, Zhang and Walls (2006) develop the *Online Faculty Inventory* which was the instrument used in the study. They assessed content validity for the new instrument by submitting the draft to an expert panel who then rated each item on a 1-4 scale for content validity relative to the seven principles and then selecting the highest five questions for each principle. Their *Online Faculty Inventory* had a mean of 3.73, a scale interrater agreement of 0.94 and a content validity index of 0.92. In addition to the work done by Zhang and Walls, (2006), the instrument's validity can be supported by numerous instances of the inventory being used by colleges and universities in throughout the country. Chickering and Gamson (1999) reported that the response to the inventory was overwhelming with over 500,000 requests for copies of the inventoried and they have been adapted as a tool in multiple studies, assessments and research instruments. The commitment to the seven principles and inventories as shown by the sheer numbers of their use is an endorsement of the validity of these instruments (Poulsen, 1991).

Validity can also be strengthened by a higher survey response rate (Galfo, 1983) and a strong cover letter is one way to achieve this. The cover letter accompanying the survey for this study included the purpose and significance of the study, the importance of the participant's information, assurances that the participant's information and responses were kept confidential and a deadline, which have all been identified as effective cover letter components (Galfo, 1983). A cover letter that personally appeals to participants by demonstrating personal benefit or identifying them as a member of a

select group can also increase the response rates (Galfo, 1983; Sue & Ritter, 2007). The letter I sent to faculty explained they were part of a select group (faculty teaching online) and that this research could enhance their online instruction. Follow-up letters were sent to non-responders one and two weeks after the first to help improve response rates (Galfo, 1983; Wiersma, 1969).

There are also a number of possible extraneous variables that are beyond the control of the researcher including (a) faculty attitudes toward online courses, (b) student characteristics, (c) courses with traditionally high attrition rates, (d) student and academic support issues i.e. textbooks don't arrive on time, (e) technology issues, and (f) late teaching assignments resulting in inadequate preparation. However, these issues could apply to any course and therefore are factors that could be presumed to even out across all courses. Furthermore, a review of the literature by Cruce, Wolniak, Seifert, and Pascarella (2006) found there is a large body of evidence to support the validity of the Seven Principles of Good Practice even in the presence of confounding and extraneous variables and the principles are positively linked to cognitive and non cognitive growth during a college career. However they also warn that most studies are limited to single institutions or within a small sample of institutions and consequently the generalizeability of the results are limited to students in similar institutions.

Reliability

Marczyk et al. (2005) define reliability as the consistency or dependability of a measurement technique, and the consistency or stability of the measurement obtained over time and across settings or conditions. They also included several strategies to improve reliability which I incorporated into my study including standardizing the

administration of the instrument and measurement procedures, ensuring participants understand the instructions and content for completing the instrument, and ensuring the integrity of data collection, compilation and analysis processes. All participants in this study completed the same online assessment and received a cover letter explaining the purpose of the research, directions for completing the survey instrument and assurance of preservation of participation confidentiality. I was the only one with access to the survey results and the Director of Institutional Research at each college provided the grade data directly to me. This minimal handling of data helped preserve its integrity.

Data Analysis

The three research questions were addressed through quantitative data analysis. The first question asks the extent to which faculty reported using the Chickering and Gamson's seven principles in their online courses and the second compares the usage scores of full and part-time faculty. Descriptive statistical procedures using central measures of tendency were used for the analysis because they provide the simplest and clearest method to present the data. The third question examines the association between implementing the seven principles and student attrition rates in online courses.

Variables

I have identified several important variables for this study and for clarity purposes I will identify them here.

Faculty. According to the VCCS Policy Manual (Virginia Community College System, n.d.) full time faculty teach a minimum of 12-15 credit hours per semester for two semesters each academic year. Regular part-time faculty are employed on a continuing basis to teach less than a full load. Adjunct faculty who teach less than a full

load are distinguished from part-time faculty in that they are hired on a semester by semester basis. For the purpose of this study, all faculty teaching less than a full load were identified as part time faculty.

Seven Principles Score. The participants completed an online survey that generated a score for measuring the extent to which the participant uses instructional practices reflecting the seven principles. The Likert score for each of the 35 inventory items was used to generate a mean score which was the seven principles score.

Attrition Rate. Students who did not successfully complete a course and received a failing grade, withdrew or were administratively dropped from the course (Virginia Community College System, 2000). The number of students who did not complete was divided by the official enrollment number to generate the attrition percentage rate.

Online Implementation of the Seven Principles

For research question one - to what extent are faculty using Chickering's Seven Principles of Good Practice in their online courses - the aggregate survey scores for each participant were totaled and the means and standard deviations were computed for each of the seven categories. These scores enabled me to evaluate the extent to which participants reported using the seven principles in their online courses. Using a mean score generated by the survey to measure the use of the seven principles has precedence. In their respective studies, Alvarez (2005), Batts (2005), Mead (2003), Ray (2005) and Zhang and Walls (2006) all surveyed faculty using instruments measuring responses on a ratings scale and then used the mean scores to gauge the extent to which the seven principles were being applied in the classrooms. This was also done comparing full-time

and part-time faculty in order to answer the second research question. I then used

appropriate descriptive techniques to analyze and display the data.

Association of the Seven Principles and Attrition

The third research question examines the relationship between all the faculty

mean scores and their corresponding mean attrition rates. I used SPSS to analyze the data

to determine the strength of the relationship between the two variables. I then examined a

scatter plot of the results when the survey scores were matched with the attrition rates to

look for any patterns. Correlation coefficient can provide information about the direction

(positive or negative) and strength of the relationship between two or more variables

(Marczyk, DeMatteo, & Festinger, 2005).

CHAPTER IV:

RESULTS

The purpose of this research is to examine the use and impact of certain instructional strategies in online courses. I have previously established that Chickering's Seven Principles of Good Practice can be used as an evaluation rubric to evaluate the application of these strategies. Faculty at three community colleges in Virginia who teach online courses were surveyed to determine the extent to which they utilize teaching strategies reflective of the seven principles. The institutional research officers at those three colleges provided me with the attrition rate for courses taught by their faculty so I could evaluate any relationship with the seven principles.

Return Rate

Based upon information provided by institutional research officers, I identified 111 full and part time faculty who taught at least one online course at the three participating colleges in the last two years. Of these, 50 completed the survey for a 45% return rate. All 50 surveys were usable, however corresponding grade information could not be provided for three of the participants so the final pool for examining the relationship with attrition rates was 47. Of the 50 respondents, 11 identified themselves as part time faculty. Thus for research questions one and two, N = 50 and for research question three, N = 47. A breakdown of respondents by college is provided in Table 1.

Table 1

Faculty Respondents to Survey by College and Full-Time or Part-Time Status

College	Responses/Eligible Faculty	% of Population
Hometown CC	31/43	72%
Meadows CC	8/45	18%
Peakview CC	11/23	48%

Faculty were invited to participate via an e-mail request. In the cases of Hometown Community College and Peakview Community College I emailed the faculty directly with college administrator's permission while the Meadows Community College forwarded my e-mail through their distance learning director (Appendix A). After one week, faculty who had not responded received a reminder e-mail (Appendix B) distributed the same way as the first one and the final reminder (Appendix C) was sent to non respondents one week later. A breakdown of the responses after each of the three emails is shown in Table 2. The disparity in response rates may be attributable to faculty familiarity with me. Within the last four years, I was assigned to the campuses of both Hometown Community College and Peak View Community College each for about a period of six months. In addition, my wife works full time at Hometown Community College. It is possible that the faculty of those two colleges felt a personal commitment to assist with my research while the faculty at the third college who only knew me from my role in the system office did not feel that extra sense of commitment.

Table 2

Survey Response In Numbers After Each E-mail Request

College	1st Request	2nd Request	3rd Request
Hometown CC	19	9	3
Meadowview CC	5	2	1
Peaksview CC	9	1	1

Tests of Assumption

Tests of assumption are assurances that the reported measures are appropriate for the data being reported (Cargan, 2007). I did a manipulation check to determine if the individual survey score variable worked as it was intended. To assess the extent to which faculty reported using the seven principles in their online instruction, several statistical analysis were performed on the individual mean scores of the survey instrument. The results of these tests indicate faculty report a high use of the principles in their online courses. Specific use for full and part time faculty as single and separate groups was calculated and is explained below.

I conducted a Cronbach alpha test to determine the internal consistency of the 35-item survey scale. The results produced a Cronbach alpha score of .93 which indicates a high consistency among the items in the survey instrument.

Faculty Using Instructional Strategies

The first research question asked to what extent faculty reported using the instructional strategies reflecting the seven principles of good practice in their online courses. This was measured through a survey instrument (see Appendix D). The survey

responses were calculated so that each participant received a mean score of their responses to the 35 items in the survey inventory. These means were then grouped into quartiles to examine the extent to which faculty reported using instructional strategies reflecting the seven principles used in their online instruction. Mean scores higher than 2.5 on a 1 through 5 Likert scale are considered to be a strong use of the seven principles of instruction (Alvarez, 2005; Taylor, 2002; Zhang & Walls, 2006). Of the 50 responses, 38% (19) of the mean scores were between 4.0 and 5.0 and 58% (29) of the mean scores were between 3.0 and 3.9. Just 4% (2) of the mean scores were between 2.0 and 2.9 while none of the mean scores was below 2.0. In fact, none of the scores was below 2.50. Based on these results, faculty reported a high use of the seven principles in their online courses. A bar graph illustrating these results is shown in Figure 1.
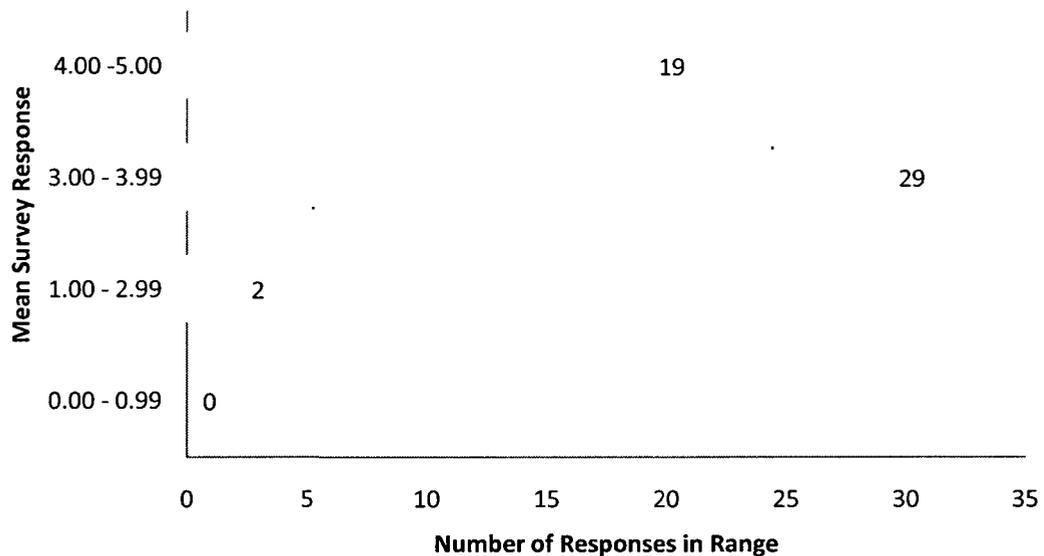

Figure 1. Faculty survey scores displayed in ranges

Examining the responses to individual questions can reveal which principles receive greater emphasis from faculty; this can provide insight into the strengths and weaknesses of their current instructional practices (Blankson, 2004; Ray, 2005; Taylor,

2002; Wingar, 2000; Zhang & Walls, 2006). So as part of the first research question I also looked at the responses to individual questions to determine to what extent they reflected faculty use of the seven principles. The means of the individual items range from 2.07 to 4.79, with the mean of the total scale of 133.93 (SD 19.71) out of a maximum possible score of 175 (35 questions multiplied by 5 if the highest response was selected for each question). Overall, participants' responses to the survey indicate they perceive a fairly high degree of use of the seven principles in their online instruction. However a closer look at the individual responses indicates high ratings for strategies one would expect to find in traditional classroom while strategies that could be considered more innovative and non-traditional received the lowest ratings. The individual top five questions in terms of mean score (*M*) are listed below along with the principle each reflects.

1. (item 30; *M*=4.86) I make clear my expectations in writing at the beginning of the course; *principle #6 Communicate High Expectations*

2. (item 32; *M*=4.80) I explain to students what will happen if they do not complete their work on time; *principle #6 Communicate High Expectations*

3. (item 33; *M*=4.77) I encourage students to speak up when they don't understand; *principle #7 Respect Diverse Talents and Ways of Learning*

4. (item 23; *M*=4.66) I expect my students to complete their assignments promptly; *principle #5 Emphasize Time on Task*

5. (item 19; *M*=4.51) I return examinations and papers within a week; *principle #4 Give Prompt Feedback*

The bottom five questions in terms of mean scores were:

1. (item 1; *M*=2.51) I invite my students to attend professional meetings or other events in my field; *principle #1 Encourage Student-Faculty Contact*

2. (item 17; *M*=2.91) I carry out research projects with my students; *principle #3 Encourage Active Learning*

3. (item 10; *M*=3.03) I ask my students to evaluate each other's work; *principle #2 Encourage Cooperation Among Students*

4. (item 12; *M*=3.09) I create "learning communities" study groups and project teams within my courses; *principle #2 Encourage Cooperation Among Students*

5. (item 16; *M*=3.15) I encourage my students to suggest new readings, research projects, field trips and other course activities; *principle #3 Encourage Active Learning*

To further examine the reported use of the seven principles by faculty I calculated a value for each of the principles by tabulating the mean and standard deviations for the five questions within each of the principles. The principle "Communicate High Expectations" was the highest rated among the respondents with a mean of 4.20 and a standard deviation of 1.00. The second highest principle was "Give Prompt Feedback" with a mean of 4.10 and also a standard deviation of 1.00. By contrast the lowest rated principles were "Encourage Cooperation Among Students" with a mean score of 3.20 and a standard deviation of 1.40 and "Encourage Active Learning" with a mean of 3.40 and a standard deviation of 1.30. These complete results are shown in Table 3 below.

Table 3

Full Time and Part Time Faculty

Principle	Mean	SD
1. Encourage student-faculty contact	3.47	1.30
2. Encourage cooperation among students	3.20	1.40
3. Encourage active learning	3.40	1.30
4. Give prompt feedback	4.10	1.10
5. Emphasize time on task	4.20	1.00
6. Communicate high expectations	4.40	0.90
7. Respect diverse talents and ways of learning	4.00	1.10

Full Time versus Part-Time Faculty

The second research question asked whether there was any observed difference between full time and part-time faculty in the reported use of the seven principles in their online instruction. Because the sample population is not representative, descriptive statistics are the most useful for evaluating this data. Measures of central tendency indicate the results of the two groups are very similar with full time faculty having a mean survey response score of 3.91 (SD = 0.532) and part time faculty posting a mean score of 3.61 (SD = 0.531). This information is presented in Table 4 below. In addition to the means being close and the dispersion almost identical, the medians for full time and part-time faculty were also close at 3.91 and 3.43 respectively. Scores for both groups tended to cluster around the mean and there were no outliers.

Table 4

Descriptive Information for Survey Scores for Full Time and Part Time Faculty

Status	Mean	N	SD
PT	3.61	15	.531
FT	3.91	35	.532

To further illustrate the relationship of the survey scores between full and part-time faculty I created a boxplot which is shown in Figure 2. While the mean for full time faculty is higher and the data for part-time faculty is slightly skewed, there is substantial overlap and no outliers, so again there appears to be no observed difference between the two groups relative to survey scores.
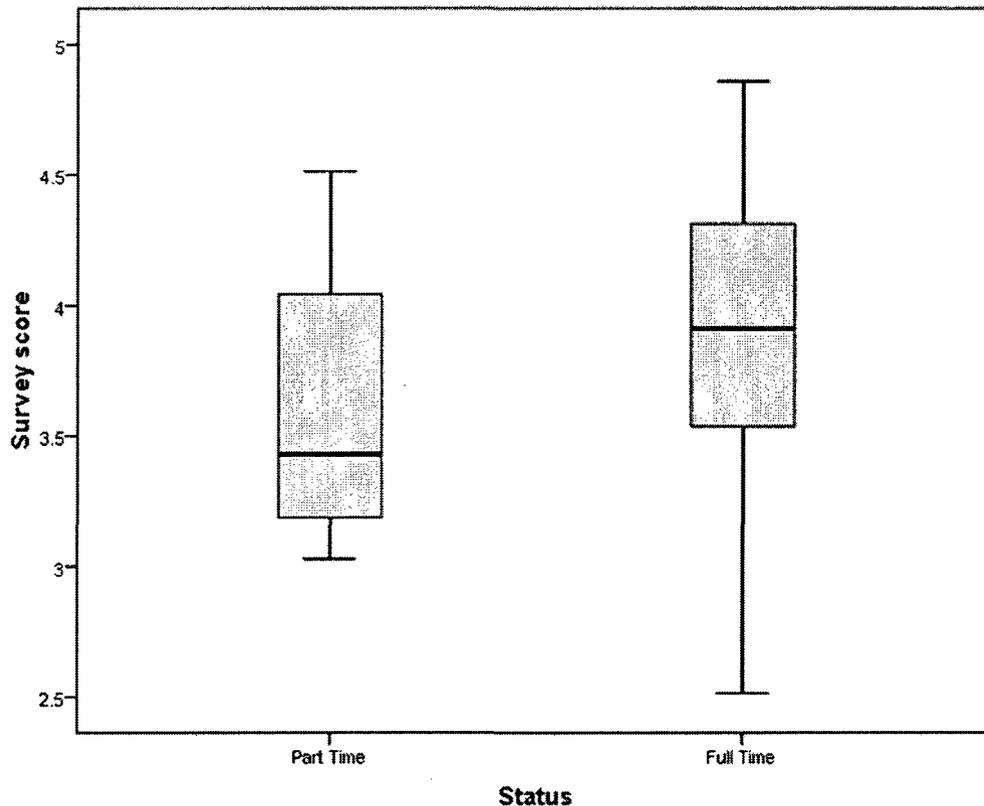
Figure 2. Full Time and Part Time Faculty Survey Scores

More information about the two groups is revealed when examining the distribution of the responses within the range quartiles. I did a cross tabulations between participants' full or part time status and the scores within each quartile which revealed a difference in the distribution of response scores within the ranges. The results showed 73% (N = 11) of the part time faculty scores was between 3.00 and 3.99 versus 51% (N = 18) of the full-time faculty scoring in that range. In addition, 43% of full-time faculty scored between 4.00 and 5.00 compared to only 27% (N = 4) of part time faculty as illustrated in Table 5.

Table 5

FT/PT Faculty and Survey Scores Ranges Crosstabulation

Faculty		Survey Score Range			
		2.00-2.99	3.00-3.99	4.00-5.00	Total
PT	Count	0	11	4	15
	% within Status	.0%	73.3%	26.7%	100%
FT	Count	2	18	15	35
	% within Status	5.7%	51.4%	42.9%	100
All	Count	2	29	19	50
	% within Status	4.0%	58.0%	38.0%	100%

So while the overall mean and standard deviation were not substantially different

between the two groups, full-time faculty scores tended to range higher and part time

faculty clustered in the middle. This tendency is illustrated in figure 3.
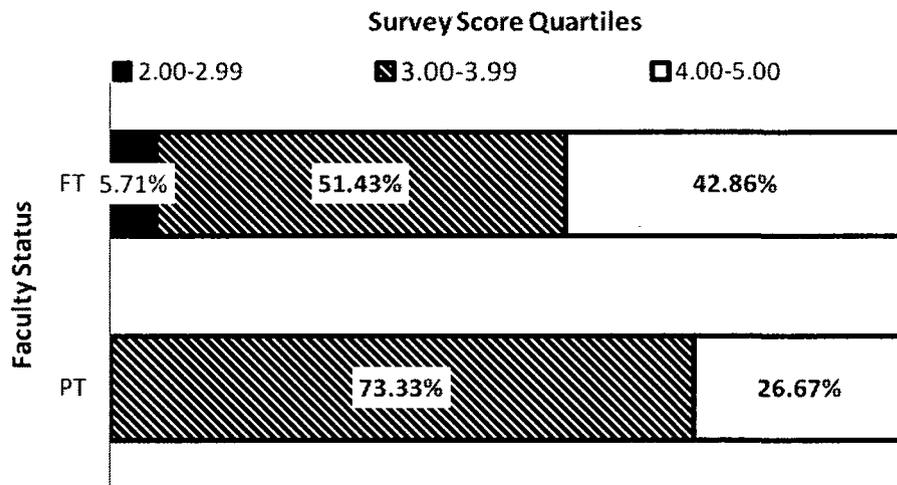

Figure 3. Percentage of Faculty Scores in Quartile Ranges

While there may be no observed difference between the groups relative to overall use of the seven principles, I wondered if there was a difference in which principles were emphasized more. To examine the question further, I ranked the scores for each of the seven principles grouped by full or part time status. Both groups scored highest on communicating high expectations while the lowest scores were the principles that promote student engagement. Those results are shown below in Table 6 below.

Table 6

Principle Ranking by Full or Part Time Status

Faculty	Full Time Faculty		Part Time	
Principle	Rank	M	Rank	M
1. Encourage student-faculty contact	5	3.63	7	2.98
2. Encourage cooperation among students	7	3.30	6	3.00
3. Encourage active learning	6	3.60	5	3.40
4. Give prompt feedback	2	4.20	3	3.90
5. Emphasize time on task	3	4.30	2	4.10
6. Communicate high expectations	1	4.40	1	4.20
7. Respect diverse talents and ways of learning	4	4.00	4	3.90

The Association of the Principles and Attrition

The third research question explores the association between implementing the seven principles of good practice and student attrition rates in those online courses. For the purpose of this study attrition is defined as students who drop, fail or are administratively withdrawn from the course. To do this I first determined if the attrition

data was normal and then tested the association between the two using Pearson

correlation and a scattergram.

One of the assumptions of the Pearson Correlation Coefficient is that each of the

variables is normally distributed within the population (Yockey, 2008). To evaluate this,

I created a histogram with a normal curve for the attrition rates of online courses taught

by the participants. The skewness value is .03 while the mean, median and mode are .25,

.26 and 0 respectively. When the skewness is between positive and negative one and the

mean, median and mode are close, the data is approximately normal (Morgan, et.al.

2007). Accordingly, this data is judged to be normal. The results of the histogram are

displayed in Figure 4.
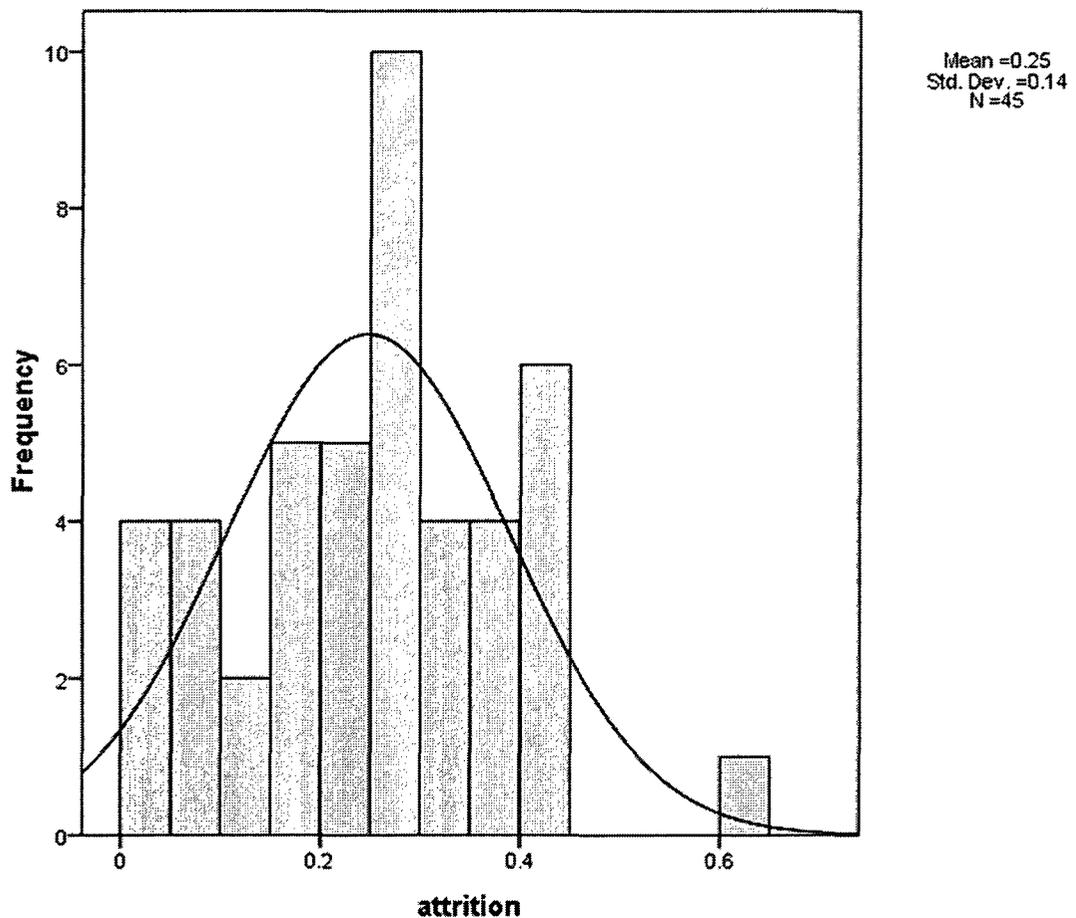
Figure 4. Histogram for student attrition rates

The first test used to examine the relationship between attrition rates in the mean

survey scores was Pearson correlation coefficient. The results of this test showed there

was a slight positive correlation between the survey scores and the attrition rates in online

courses, r (45) = .047. This information is illustrated in the scatter plot in Figure 5.
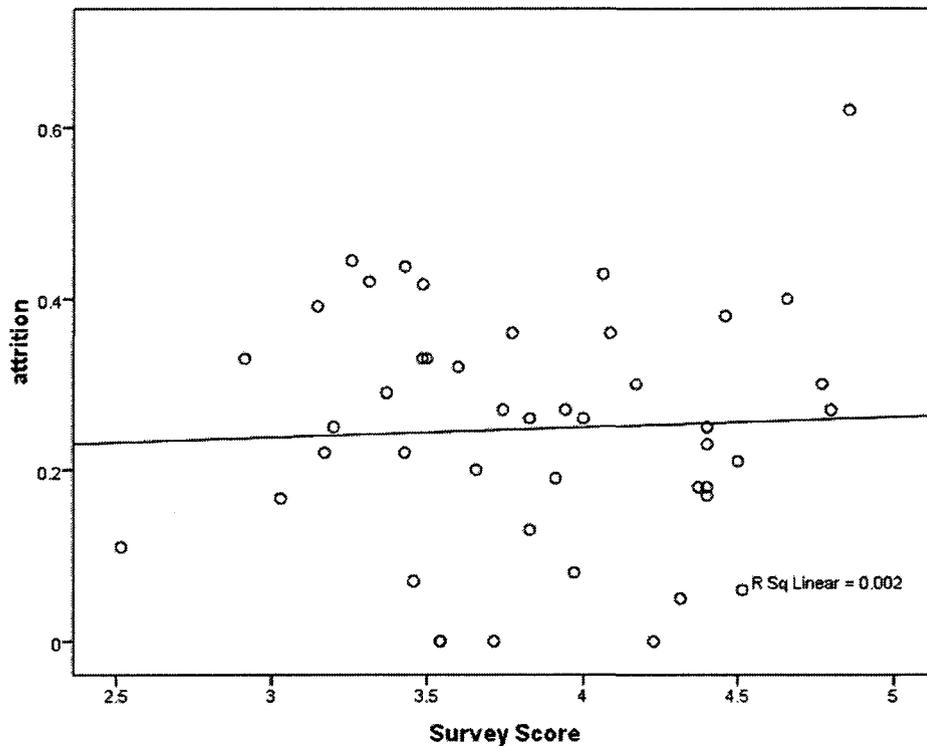
Figure 5. Survey Scores and Attrition Rates Scattergram

The Pearson correlation coefficient described above looked at all seven principles

and found very little relationship between the principles as a group and the attrition rate.

However this check did not provide any information as to whether any individual

principle had more of a relationship with attrition rates than the others. Therefore I

calculated the sample mean for each individual principle and then checked it against the

attrition rate for each participant using the Pearson correlation coefficient to identify any

relationships (see Table 7).

Table 7

Correlation between Individual Principles and Student Attrition Rates

Principle	r	Variance
1. Encourage student-faculty contact	-0.17	3%
2. Encourage cooperation among students	0.01	0%
3. Encourage active learning	-0.30	9%
4. Give prompt feedback	0.01	0%
5. Emphasize time on task	-0.18	3%
6. Communicate high expectations	-0.06	0%
7. Respect diverse talents and ways of learning	-0.17	3%

The third principle, "encourage active learning", returned the correlation value -

0.30 which according to Morgan (2007) is a medium strength correlation indicating

faculty who could make strides toward actively engaging students found some success in

reducing student attrition.

Summary

Survey results indicated faculty report a high use of instructional strategies

reflecting the seven principles in their online courses. Nearly all the individual survey

scores were in the upper 50% of the response range. Further evaluation indicated there

was no observed difference between full time and part-time faculty in reported use of these instructional strategies. Finally, while reported use of the seven principles was strong there was only some indication of a direct relationship between using the seven principles and attrition rates.

CHAPTER V:

DISCUSSION

The results of the study showed participating faculty reported a high degree of use of instructional strategies reflecting the seven principles of good practice in their online courses. In addition there was no observed difference in reported use between full and part time faculty. But further investigation found no relationship between the faculty's use of these instructional strategies and student attrition rates in those classes. Although one of the main thesis for the study could not be established, the results do raise implications for practice in online instruction which warrant further discussion. This will be followed by a study summary examining the issues and implications for further study for each research question.

Research Questions Addressed

Faculty Using Instructional Strategies

For the first research question, "To what extent are faculty using Chickering's seven principles of good practice in their online course", participating faculty reported a strong use of the principles in their instruction. On a Likert scale from one to five where five is high, 48 of the 50 respondent had a mean score for the 35-item survey of 3.0 or higher. This is consistent with other studies evaluating faculty use of the seven principles (Blankson, 2004; Meade, 2003; Wingar, 2000; Zhang & Walls, 2006). These studies also considered any score above the mean of 2.50 as high. However since these studies assessed use of the seven principles by evaluating the responses to questions on the survey instruments rather than the scores of the participants, direct comparisons of scores is not really possible.

An analysis of the responses to individual questions provides further insight into faculty use of the seven principles. The survey items with the highest mean scores as listed in chapter four describe activities that one would commonly expect in traditional classrooms such as setting clear expectations, encouraging students to ask questions when they don't understand, establishing consequences for not completing work and expecting promptness when receiving and returning student work. By contrast, the bottom five survey items describe non-traditional strategies reflecting innovation in promoting student engagement. These examples include attending professional meetings, creating learning communities and having students contributing to and directing learning activities. This gap may indicate faculty are simply transferring the teaching skills used in their traditional face-to-face classroom rather than adapting and evolving these skills to the level necessary to thrive in an online environment. However, further research that drills down into this hypothesis is needed.

While overall reported use of the seven principles was high, participants in this study rated the principles "encourage cooperation among students" lowest and "encourage active learning" as the second lowest principle applied in their online courses. This result is very consistent with other studies examining faculty's reported use of the seven principles whose participants rated "encouraging cooperation among students" as the lowest (Blankson, 2004; Ray, 2005; Taylor, 2002; Wingar, 2000) or second lowest applied principle (Batts, 2005; Zhang & Walls, 2006). This information also supports the notion that faculty are not adapting their teaching skills to the demands of online instruction.

Full Time versus Part-Time Faculty

The second research question investigated whether there is any difference between full time and part-time faculty at each of the colleges in using seven principles of good practice in their online classes. Results indicated no observed difference between these two groups in the responses on the survey instrument. One item of note is when comparing the scores of the individual principles for the full time and part time faculty groups, "encourage student- faculty contact" was the lowest ranked principle for part time faculty and the third lowest for full time. It makes sense that part time faculty who by definition have a looser relationship with the institution would place a lower emphasis on encouraging student contact. Both these findings were consistent with the research by Meade (2003) who examined instructional practices reflecting the seven principles between full and part time faculty also at a Virginia community college. In that study Meade stated she found no significant difference in the reported use of the seven principles between the two groups. When looking at the results of individual principles, Meade's results also showed both faculty groups ranked themselves high on *communicates high expectations* and *emphasizing time on task,* while just as in this study, part time faculty's lowest rating was *faculty student contact.* In that study, principles reflecting innovative and non-traditional instructional strategies also ranked lowest.

The Association of the Principles and Attrition

The third and final research question sought to examine the association between implementing instructional activities reflecting the seven principles and student attrition rates in online courses. When the participants' survey score was matched with the attrition rate from the most recent online course each one taught, no relationship between

the two variables was found. A Pearson correlation, r (45) = .047, showed a slight positive association between the participants' survey scores and the attrition rates for their online course. When illustrated in a boxplot, the dispersion of the data in a vague cloud with no discernable pattern again indicates no association or strength of relationship between the two variables.

While no direct relationship between participant's total survey score and attrition rates in their classes could be found, comparing these results to the most used of the seven principles of good practice as identified in the literature is particularly interesting. Studies examined as part of this literature review listed the first, third, fifth and seventh principles as the least utilized by participating faculty (Meade, 2003; Ray, 2005; Taylor, 2002; Wingar, 2000; Zang & Walls, 2006). In contrast, principles four and six which showed no correlation in this work were identified as the most used in those same studies. The third principle, "encourage active learning", returned the correlation value -0.30 which indicates faculty who could make strides toward actively engaging students found some success in reducing student attrition. Furthermore, three additional principles, "encourage faculty-student contact", "emphasize time on task" and "respect diverse talents and ways of learning", or numbers one, five and seven respectively, showed some correlation.

Arguably, the principles that showed some correlation with student attrition in this study could be the most challenging to incorporate into regular instruction, while principles such as "communicate high expectations" are part of routine classroom instruction. Thus, there are indications that utilizing the seven principles, especially the

ones promoting a higher level of student engagement, can have some positive effect on student attrition but further research is required.

While this investigation did not find a connection between the use of the seven principles and student success as measured through attrition rates, the absence of one does not preclude that this is a workable hypothesis. Several studies in the literature demonstrated a positive relationship between the use of the seven principles and levels of student satisfaction and perceived learning within those courses. Alvarez (2005), Batts (2005) and Buckley (2003) all found that students who felt faculty used the seven principles in their instruction gave higher ratings to the perceived learning and overall course satisfaction. Recommendations for future research to more effectively tie use of the seven principles to objective measures of student success such as attrition rates are discussed below.

Implications for Practice

This research did reinforce the validity of using Chickering and Gamson's *Seven Principles of Good Practice* as a rubric for evaluating online course design and online instruction. An examination of the literature determined constructivist learning theory provides the foundation for sound instructional practices promoting student engagement in online instruction experience (Bangert, 2006; Brown & King, 2000; Huang, 2002; Rovai, 2004). The seven principles of good practice reflect constructivist learning theory and so instruments based on the seven principles of good practice have been accepted as effective tools for evaluating online instruction (Bangert, 2006; Buckley, 2003; Chickering & Gamson, 1999; Quilter & Weber, 2004; Ray, 2005; Swan, 2002). This study also provides further evidence that faculty place a high value on the use of the

teaching values or strategies represented by the seven principles of good practice in their online courses as demonstrated by the high survey scores.

Examining the means and standard deviations of each question on the survey instrument revealed strengths and weaknesses of the instructional practices utilized by participating faculty. An analysis of the mean scores revealed higher scores were in the principles that could be considered common in traditional classrooms such as "communicate high expectations" and "give prompt feedback" and the lower mean scores tended to reflect strategies and activities that would be considered more innovative and nontraditional such as "encourage cooperation among students" and "encourage active learning". These results indicate faculty largely remain unfamiliar and/or uncomfortable with constructivist learning principles that promote student engagement. The results also indicate a gap exists between faculty teaching skills and the skills required for successful online teaching. An institution's professional development staff can use this information to design faculty training activities and materials to address specific weakness and shortcomings identified in the survey.

Other studies that found similar low participant response scores in principles reflecting or promoting student engagement concluded this indicated a general lack of online teaching skills (Taylor, 2002; Zhang and Walls, 2005). This is important because the level of student perception of involvement and interaction with faculty and peers is closely related to perceptions of learning and overall course satisfaction (Alvarez, 2005; Buckley, 2003). In other words, faculty who do not build activities promoting engagement and interaction into their online courses run the risk of lower levels of learning and higher levels of dissatisfaction among their students. Thus, staff members

charged with faculty development could use the information gained from surveying their faculty with a similar instrument to develop appropriate activities to promote innovative applications and student involvement.

Issues and Implications for Further Study

Several issues emerged from this study that could be addressed in future research in order to further refine the question of to what extent faculty are using the seven principles in their online instruction. First, this study did not distinguish among different disciplines. Faculty scores were not sorted by subject or even by discipline. Patterns within these subsets that might have emerged were lost when all the data was grouped together. Future research controlling the disciplines of responding faculty may find relationships between disciplines and certain principles or whether certain disciplines are more apt to use the seven principles in their online instruction.

A second issue that could be addressed in future research is limitations resulting from the size and makeup of the target population. This study drew upon faculty at three community colleges with similar demographics in that they were all small to medium size rural community colleges in Virginia. This also resulted in a limited number of part-time faculty participating in the study. A purposefully designed study drawing upon a larger target population could not only increase the validity and reliability of the results but also support comparisons of population subsets such as college size, urban or rural settings and courses or academic disciplines.

Studies using a survey instrument to gather data rely upon the honesty and accuracy of the participants. In addition those instruments do not provide any understanding of the thinking behind the answers or allow for different interpretations of

the questions; the data assumes everyone read the survey the same way. Such gaps led previous researchers to state they are measuring the perception of the use of the seven principles rather than their actual use (Batts, 2005; Meade, 2003; Ray, 2005; Zhang & Walls, 2006). Gathering data from a sufficient size population through observation techniques would likely be impractical. However, future research could combine qualitative assessment to gain a better understanding of not just the extent of the use of the seven principles but the motivation and reasons behind it.

Comparing the practice and behaviors of full and part time faculty relative to the use of the seven principles in online instruction is also fertile ground for future research. Previously noted, the sample size of part time faculty participating in this study was small. Future studies using a larger sample for both full and part time faculty could provide more insight into any differences between the two groups. In addition, future studies that can control for subject discipline may reveal patterns and relationships that are masked by more heterogeneous groupings; looking at differences between full and part time faculty could be a subset in future studies that examine subject discipline patterns in the sample population as a whole. Finally, studies that control for the length of teaching experience could reveal differences between new and veteran faculty that would be masked in a general grouping. While studying this variable could be useful for both full and part time faculty, being able to target specific areas or weaknesses with new faculty might salvage those who may have discontinued their teaching before they had a chance to learn the ropes on their own.

The absence of any discernable relationship between faculty use of the online principles and student attrition rates as shown in the amorphous scattergram could have

resulted from uncontrolled variables related to grades and faculty and student factors that can be addressed in future research. This question could be explored and expanded in future research by addressing these variables.

For example, this study only looked at successful completion of the course while not investigating more revealing variables such as individual grades. Examining grade distributions within the online course rather than just the completion rates would provide a more precise evaluation of any relationship; in other words, do courses reflecting a high use of the seven principles of good practice generate more A's and B's than those courses that do not? Similarly, comparing the overall grade point average of online courses would enable the researcher to evaluate the positive impact of the seven principles (higher grade point average) rather than the negative impact of not using them (higher attrition rates).

Another suggestion is to control for nonstarters. These are students who enrolled in an online class but withdrew very early or completed little or no coursework. As nonstarters, these students will have a negative impact on the measurement of the seven principles even though they ceased participating in the class before they could realistically be affected one way or the other by the seven principles. To expand that notion farther, this study did not examine or control for other reasons a student did not complete a course. The true impact of using the seven principles on attrition rates might have been diluted among the other reasons for not completing the course that were not directly tied to teaching strategies. Studies that can control these variables or otherwise isolate the relationship between instructional strategies and course completion should be better able to measure the impact of the seven principles on student success.

Another reason I could find no relationship between faculty's reported use of the seven principles and student success as measured by course completion could be the subjective nature of self assessment. Faculty may have been too generous in evaluating the extent to which they use sound instructional strategies. Furthermore, faculty may assess their use of a strategy in the context of face-to-face instruction where they are comfortable and experienced rather than the online environment where they are still trying to adapt. For example, faculty may communicate and reinforce high expectations to students regularly in the routine course of classroom activity. However in the asynchronous online environment that does not automatically provide the opportunity for regular communication, faculty must intentionally build these into the course. Thus they may answer positively to the questions about communicating high expectations in online classes because it's what they have always done in their face to face classes.

Finally, several studies examined student perception of the use of the seven principles in their class and tied it to the student satisfaction (Alvarez, 2005;Batts, 2005; Buckley, 2003; Swan, 2002). However these studies did not look at any measure of student success in those courses. Future research could build on the work done here to examine student perception of the seven principles and then tie it to measureable outcomes such as grades.

REFERENCES

Alvarez, G. (2005). *Seven principles of good teaching practice: Predictors of perceived learning and satisfaction with online courses. Ph.D. dissertation.* Retrieved October 11, 2007, from Proquest Digital Dissertations Database: Publications number AAT 316855

Amory, A., & Naicker, K. (2001). *Web-based Notes is an Adequate Learning Resource.* ED-MEDIA 2001 World Conference on Educational Multimedia, Hypermedia & Telecommunications. Proceedings (13th, Tampere, Finland, June 25-30, 2001) (ERIC Reproduction Services No. ED466128.

Anderson, D., Sweeney, D., & Williams, T. (2002). *Statistics For Business & Economics* (8th ed.). Mason, OH: Southwestern.

Aragon, S., Johnson, S., & Shaik, N. (2002). The Influence of Learning Style Preferences on Student Success in Online Versus Face-to-Face Environments. *The American Journal of Distance Education, 16*(4), 227-244.

Astin, A. (1993). *What Matters in College? Four Critical Years Revisited.* San Francisco: Jossey Bass.

Bangert, A. (2006). The development of an instrument for assessing online teaching effectiveness. *Journal of Educational Computing Research, 35* (3), 227-244.

Bangert, A. (2004). The seven principles of good practice: A framework for evaluating on-line teaching. *Internet and Higher Education, 7* (4), 217-232.

Batts, D (2005). *Perceived agreement between student and instructor on the use of the seven principles for good practice in undergraduate education in online courses. Ed.D. Dissertation.* Retrieved September 21, 2007, from ProQuest digital dissertations database: Publication number AAT 3166877

Bellefeuille, G., Martin, R., & Buck, M. (2005). From pedagogy to technology in social education: A constructivist approach to instructional design in an online competency-based child welfare practice course. *Child and Youth Care Forum, 34* (5), 371-389.

Berge, Z., & Huang, Y. (2004). *A model for sustainable student retention.* Retrieved October 19, 2007, from DEOSNEWS: http://www.ed.psu.edu/acsde/deos/deosnews/deosnews13_5.pdf

Blankson, J. (2004). *The use of technology by faculty members at ohio university. Ph.D. dissertation.* Retrieved October 1, 2007, from ProQuest Digital Dissertations Database: Publication number AAT 3160190

Brown, S., & King, F. (2000). Constructivist pedagogy and how we learn: Educational psychology meets international studies. *International Studies Perspectives, 1,* 245-254.

Buckley, K. (2003). *How principles of effective online instruction correlate with student perceptions of their learning. Ed.D. Dissertation,.* Retrieved October 1, 2007, from Proquest Digital Dissertations Database: Publication number AAT 3094793

Cargan, L. (2007). Doing Social Research. *Roman & Littlefield.* Lanham MD

Carr, S. (2000). As Distance Education comes of age, the challenge is to keep the students. *Chronicle of Higher Education, 46* (23), A39-A41.

Chickering, A., & Ehrman, S. (1996). Implementing the Seven Principles: Technology as a lever. *AAHE Bulletin* 10, 3-6.

Chickering, A., & Gamson, Z. (1987). Seven principles of good practice in undergraduate education. *AAHE Bulletin, 30* (7), 3-7.

Chickering, A., & Gamson, Z. (1991). Applying the seven principles for good practice in undergraduate education. *New Directions for Community Colleges, 47.*

Chickering, A., & Gamson, Z. (1999). Development & adaptations of the seven principles of good practice in undergraduate education. *New directions for Teaching and Learning* (111), 75-81.

Chickering, A., Gamson, Z., & Barsi, L. (1987). *Faculty Inventory: Seven principles for good practice in undergraduate education.* Racine, Wisconsin: American Association of Higher Education and the Johnson Foundation.

Childs, S., Blenkinsopp, E., Hall, A., & Walton, G. (2005). Effective e-learning for health professionals and students—barriers and their solutions A systematic review of the literature—findings from the. *Health Information And Libraries Journal, 22* (2), 20-32.

Conger, S. (2005, July). If there is no significant difference, why should we care? [Electronic version] *Journal of Educators Online, 2* (2)

Creswell, J. W. (1994). *Research design: Qualitative and quantitative approaches.* Thousand Oaks, CA: Sage.

Cruce, T., Wolniak, G., Seifert, T., & Pascarella, E. (2006, July/August). Impacts of good practice is on cognitive development, learning orientations, and graduate degree plans during the first year of college. [Electronic version] *Journal of college student development;* http://findarticles.com/p/articles/mi_qa3752/is_200607/ai_n16629409

Cyrs, T. (1997). *Teaching and learning at a distance: what it takes to effectively design, deliver and evaluate programs.* San Francisco: Jossey-Bass.

Davis, A. (2004). Developing an infrastructure for online learning. In T*heory and practice of online learning* (chap.4) Retrieved October 3, 2007, from http://cde.athabascau.ca/online_book/ch4.html

Diaz, D. (2002, September). Online drop rates revisted. *The Technology Sources Archive* Retrieved October 24, 2007, from: http://technologysource.org/article/online_drop_rates_revisited/

Diem, K. (2002, December). Using research methods to evaluate your extension program. *Journal of Extension* Retrieved October 15, 2007, from: http://www.joe.org/joe/2002december/a1.shtml.

Distance Learning Reports. (2007). Retrieved November 26, 2007, from Virginia Community College System: http://system.vccs.edu/vccsasr/Research/DLreports.htm

Galfo, A. (1983). *Educational Research Design and Analysis.* Boston: United Press.

Gamson, Z. (1995). *The Seven Principles For Good Practice: A historical perspective.* Retrieved October 8, 2007, from Winona State University: http://www.winona.edu/air/nca2001/otherairfiles/nca7pbackground.htm

Gilner, J., & Morgan, G. (2000). *Research methods in applied settings: an integrated approach to design and analysis.* Mahwah, NJ: Erlbaum.

Herring, M. (2004). Development of Constructivist-based Distance Learning Environments. *The Quarterly Review of Distance Education, 5* (4), 231-243

Hoover, W. (1996). *SEDL Letter Volume IX Number 3.* Retrieved September 28, 2003, from SEDL Letter: http://www.sedl.org/pubs/sedletter/v09n03/practice.html

Huang, M. (2002). Four Constructivism for Adult Learners Inonline Learning Environments. *British Journal of Educational Technology, 33* (1), 27-37.

Jonassen, D. (2004). *Handbook on Research on Educational Communications and Technology.* Mahwah: Erlbaum Associates.

Jonassen, D., Davidson, M., & Collins, M. C. (1995). Constructivism and Computer-mediated Communication in Distance Education. *The American Journal of Distance Education, 9,* 7-26.

Liu, Y. (2007). A Comparitive Study of Learning Styles between online and traditional students. *Journal of Educating Computing Research, 37* (1), 41-63.

Marczyk, G., DeMatteo, D., & Festinger, D. (2005). *Essentials of Research Design and Methodolgy*. Hoboken, NJ: Wiley & Sons.

McDonald, J. (2002, August). Is "as good as face-to-face" as good as it gets? [Electronic version] *Journal Of Asynchronous Learning Networks, 6(2)*

McMillan, J., & Shumacher, S. (1984). *Research in education: A conceptual framework*. Boston: Little, Brown & Company.

Meade, T. (2003). *Teaching styles and behaviors: A comparison of one community college's part-time and full-time faculty*. Retrieved October 1, 2007, from ProQuest Digital Dissertations Database: Publication number AAT 3091158

Merriam, S. (1988). *Case study research in education: A qualitative approach*. San Francisco: Jossey-Bass.

Meyer, K. (2002). *Quality in Distance Education*. ERIC Clearinghouse on Higher Education ERIC Report. (ERIC Document No ED470542)

Meyers, J., & Well, A. (2003). *Research Design and Statistical Analysis*. Mahway; NJ: Earlbaum.

Mills, S., & Tincher, R. (2003). Be the technology: redefining technology integration and classrooms. *Journal of Research on Technology in Education, 35* (3), 207-220.

Mishra, A. (2002). A design framework for online learning environments. *British Journal of Educational Technology, 33* (4), 493-96.

Morgan, G.; Leech, N.; Gloeckner, G. & Barrett, K. (2007) *SPSS for Introductor Statistics: Use and Interpretation*. Mahway; NJ: Earlbaum.

Naquin, D. (2002, December). Online Learning: Creating Systemic Organizational Change in Higher Education. *International Journal of E-Learning*, 33-40.

O'Banion, T. (1999). *Launching A Learing-Centered College*. Mission Viejo CA: League for Innovation.

Poulsen, S. (1991). Making the best use of the seven principles and the faculty and institutional inventories. *New Directions in Teaching and Learning, No 47*, 27-35.

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education, 93* (3), 223-231.

Quilter, S., & Weber, R. (2004, April-June). quality assurance foonline teaching in higher education: considering and identifying best practice of e-learning. *International Journal on E-Learning*, pp. 64-73.

Ravenscroft, A. (2001). Designing The learning interactions in the 21st century: Revisiting in rethinking the role of theory. *European Journal Of Education, 36* (2), 133-151.

Ray, J. (2005). *Examination of web-based teaching strategies at the University of North Texas.* . Retrieved October 1, 2007, from Proquest Digital Dissertations Database: Publication No AAT3196173

Rovai, A. (2004). A Constructivist approach to online college learning. *Internet and Higher Education, 7,* 79-93.

Russell, T. (1999). *The No significant difference phenomenon.* Chapel Hill, NC : Office Of Instructional Telecommunications University Of North Carolina.

Sapp, D., & Simon, J. (2005). Comparing grades in online and face to face writing courses: Interpersonal accountability and institutional commitment. *Computers and composition* (22), 471-489.

Southern Association of Colleges and Schools. (2007). *Resource manual for the principles of accreditation: foundations for quality enhancement.* Southern association of colleges and schools. Retrieved October 15th, 2007, from: http://www.sacscoc.org/pdf/handbooks/Exhibit%2031.Resource%20Manual.pdf

Southern Regional Education Board. (2004). *Principles of good practice.* SREB. Retrieved November 21, 2007, from: http://www.ecinitiatives.org/publications/Principals_2004.pdf

Strommen, E., & Lincoln, B. (1992). *Constructivism technology and the future of classroom learning.* [Electronic version] Education and Urban Society, 24 (4),466-476. Retrieved October 3, 2007, from http://www.playfulefforts.com/Archives/Papers/EUS-1992.pdf

Stumpf, A., McCrimon, D., & Davis, J. (2005). Carpe diem: Overcome misconceptions in community college distance learning. *Community College Journal of Research adn Practice, 29,* 357-365.

Sue, V., & Ritter, L. (2007). *Conducting Online Surveys.* Thousand Oaks: Sage Publications.

Summers, J., Waigandt, A., & Whittaker, T. (2005). A comparison of student achievement and satisfaction in an online versus a traditional face to face statistics class. *Innovative Higher Education, 29* (3), 233-250.

Surry, D., & Land, M. (2000). Strategies for motivating higher education faculty to use technology. *Innovations in Education and Training International, 37* (2), 8pp.

Swan, K. (2002). Building learning communities in online courses: The importance of interaction. Education, Communication & Information. *Education, Communication & Information, 2* (1), 23-49.

Taylor, J. (2002). *The use of principles for good practice in undergraduate education in distance education.* Thesis retrieved September 17, 2007, from http://scholar.lib.vt.edu/theses/available/etd-05162002-121245/

Twigg, C. (2003, September/October). Improving learning and reducing costs: New models for online learning. [Electronic version]*Educause Review,* 38(5) 29-37.

Virginia Community College System. (2007). *Distance Learning Reports.* Retrieved November 22, 2007, from Virginia Community College System: http://system.vccs.edu/vccsasr/Research/DLreports.htm

Virginia Community College System. (n.d.). Retrieved September 16, 2007, from www.vccs.edu

Virginia Community College System. (2000). *Quality Assurance for Asynchronous Distance Learning in the VCCS.* Retrieved November 25, 2007, from Virginia Community College System: http://system.vccs.edu/vccsit/Quality.pdf

Wiersma, W. (1969). *Research Methods in Education.* Philadelphia : Lippincott Co.

Wingar, M. (2000). *An exploration of seven principles for good practice in Web-based courses. Ed.D. dissertation.* Retrieved October 1, 2007, from Proquest Digital Dissertations Database: Publication number AAT 3091158

Yockey, R. (2008). *SPSS Demystified.* Prentice Hall: Upper Saddle River

Zhang, J., & Walls, R. (2006). Instructors Self-Perceived Pedagogical Principle Implementation in the Online Environment. *Quarterly Review Of Distance Education, 7*(4), 413-426.

APPENDIX A:

FACULTY RECRUITMENT EMAIL

DATE: October 26, 2008
TO: Online Teaching Faculty
SUBJECT: An Invitation to Participate in Research on Student Success in Online Courses

COLORADO STATE UNIVERSITY

Hello:

Many of you will remember me from my seven years in the VCCS working on many e-learning projects. Now I have moved on to Montana State University and I am completing my doctoral research at Colorado State University.

The purpose of this research is to investigate the relationship between employing teaching strategies consistent with Chickering and Gamson's Seven Principles of Good Practice for Undergraduate Education and student attrition rates in online courses. For this research I am sampling faculty at Central Virginia Community College.

Because you are teaching online courses, I am interested in learning about your experience. I am asking for your help by completing a short online survey that asks you to evaluate your use of certain instructional strategies. This should take you no more than 10 minutes to complete. Your participation is completely optional and all results will be strictly confidential. There are no risks to you to participate in this survey and you may find the information in it useful.

To access the survey, please follow this link: [*insert actual link here*]
Instructions for completing the survey are included and it should take no more than 10 minutes. Please complete the survey by November 2, 2008. If the link does not work from this page, please copy and paste the link into a new browser window. If you have any questions or problems, contact us using the information below

Participation in this study is strictly voluntary but I am relying on a convenience sample of selected faculty so your participation is important and greatly appreciated. Be assured that complete confidentiality will be maintained. Results will only be reported in aggregate and no information that could identify any individual will be contained in the presented data or the final report. Of course I would be happy to share the results with you if you are interested. If you have any questions or comments about this study, you can contact us using the information below. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research Administrator at 970-491-1655.

Thank you for your assistance.

Ph.D. Candidate, SOE	Assistant Professor, SOE	[Name of College Director]
Timothy Tirrell	Dr. Don Quick, Advisor	Director of Institutional Research
(406) 247-5776	(970)491-4683	[Name of College]
ttirrell@msubillings.edu	Don.Quick@cahs.colostate.edu	[Phone & email of director]

APPENDIX B:

EMAIL FIRST REMINDER LETTER

DATE: November 2, 2008
TO: Online Teaching Faculty
RE: Follow-up on Research Invitation

                                                     COLORADO STATE UNIVERSITY

Hello:

Last week I contacted you about assisting me in my research endeavors by completing a survey relative to your online teaching experiences. I understand how busy and chaotic the end of the semester can be so I am following up with a gentle reminder and request to take a few minutes to complete this survey. I am only contacting a limited number of faculty with online teaching experience so your input is extremely valuable. If you have already completed this survey then please accept my thanks.

You can find the survey here:[insert actual link here] It should take less than 10 minutes to complete and you may find some useful information in there as well.

Thank you in advance for your assistance and let me know if you have any questions.

Tim Tirrell

APPENDIX C:

FINAL EMAIL LETTER REMINDER

DATE: November 9, 2008
TO: Online Teaching Faculty
RE: Follow-up on Research Invitation

COLORADO STATE UNIVERSITY

Hello:

I want to thank everyone who responded to my request to participate in the online survey to support my investigation into the relationship between employing teaching strategies consistent with Chickering and Gamson's Seven Principles of Good Practice for Undergraduate Education and student attrition rates in online courses. As mentioned earlier, only a limited number of faculty were asked to participate making your input even more valuable.

For those who have not be able to complete the survey, you still have an opportunity to do so. You can find the survey here:[insert link here]. It should take less than 10 minutes to complete and you may find some useful information in there as well. Please complete it as soon as possible

Thank you in advance for your assistance and let me know if you have any questions.

Tim Tirrell

APPENDIX D:

ONLINE IMPLENTATION OF SEVEN PRINCPLES SURVEY IN STRUMENT

Tim Tirrell's PhD Survey

Thank you very much for assisting me with my PhD. All information will be kept strictly confidential and are used only for the research study which will not include names. These questions ask you about instructional strategies in your online class. You will be asked to identify the most recent online course you taught and completed (if you taught more than one that semseter just select one) Please respond to these questions with that online class in mind.

* 1. Name of Instructor:

(This is needed to look up the attrition rate on the course you indicate in Question #2; it will not appear anywhere in the final report and will be kept confidential.)

Name:

* 2. Please identify course and semester for the most recent online course you taught and completed i.e. English 111 Spring 07. (do not list courses for the current semester

3. I invite or take my students to attend professional meetings or other events in my field.

	Never	Rarely	Occasionally	Often	Very Often
Answer:	O	O	O	O	O

4. I advise my students about career opportunities in their major field.

Answer:	O	O	O	O	O

5. I share my past experiences, attitudes, and values with students.

Answer:	O	O	O	O	O

6. I know my students by name by the end of the first 2 weeks of the term.

Answer:	O	O	O	O	O

7. I serve as an informal advisor to students via e-mail.

Answer:	O	O	O	O	O

8. I encourage my students to prepare together for classes or exams.

Answer:	O	O	O	O	O

9. I encourage students to do projects together.

Answer:	O	O	O	O	O

10. I ask my students to evaluate each other's work.

Answer:	O	O	O	O	O

Tim Tirrell's PhD Survey

**11. I ask my students to discuss key concepts with other students whose backgrounds and viewpoints
are different from their own.**

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

12. I create "learning communities," study groups, and project teams within my courses.

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

13. I ask my students to relate outside events or activities to the subjects covered in my courses.

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

14. I encourage students to challenge my ideas, the ideas of other students, or those presented in readings or other course materials.

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

15. I give my students concrete, real-life situations to analyze.

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

**16. I encourage my students to suggest new readings, research projects, field trips, or other course
activities.**

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

17. I carry out research projects with my students.

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

18. I prepare online activities which give students immediate feedback on how well they do.

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

19. I return examinations and papers within a week.

Answer:　　　　　○　　　　○　　　　○　　　　○　　　　○

Tim Tirrell's PhD Survey

20. I give students detailed evaluations of their work early in the term.

	Never	Rarely	Occassionally	Often	Very Often
Answer:	O	O	O	O	O

21. I ask my students to schedule conferences (phone calls, chat room, or on-campus) with me to discuss their progress.

Answer: O O O O O

22. I give my students written comments on their strengths and weaknesses on exams and papers.

Answer: O O O O O

23. I expect my students to complete their assignments promptly.

Answer: O O O O O

24. I clearly communicate to my students the minimum amount of time they should spend preparing for classes.

Answer: O O O O O

25. I underscore the importance of regular work, steady application, sound self-pacing, and scheduling.

Answer: O O O O O

26. I contact students who fall behind to discuss their study habits, schedules, and other commitments.

Answer: O O O O O

27. If students miss my classes, I require them to make up lost work.

Answer: O O O O O

28. I tell students that I expect them to work hard in my classes.

Answer: O O O O O

29. I emphasize the importance of holding high standards for academic achievement.

Answer: O O O O O

Tim Tirrell's PhD Survey

30. I make clear my expectations in writing at the beginning of the course.

Answer: ◯   ◯   ◯   ◯   ◯

31. I help students set challenging goals for their own learning.

Answer: ◯   ◯   ◯   ◯   ◯

32. I explain to students what will happen if they do not complete their work on time.

Answer: ◯   ◯   ◯   ◯   ◯

33. I encourage students to speak up when they don't understand.

Answer: ◯   ◯   ◯   ◯   ◯

34. I use diverse teaching activities to address a broad spectrum of students

Answer: ◯   ◯   ◯   ◯   ◯

35. I select readings and design activities related to the background of my students.

Answer: ◯   ◯   ◯   ◯   ◯

**36. I integrate new knowledge about women and other underrepresented populations into my
courses.**

Answer: ◯   ◯   ◯   ◯   ◯

**37. I try to find out about my students' learning styles, interests, or backgrounds at the beginning of
each course.**

Answer: ◯   ◯   ◯   ◯   ◯