ADJUSTING ONLINE DELIVERY TO MEET STUDENT LEARNING STYLES

by

JENNIFER LEIGH COOK EDWARDS

(Under the Direction of Jay W. Rojewski)

ABSTRACT

This action research study examined student perceptions and achievement of online course materials when designed and delivered to meet different learning styles. The Felder-Silverman (1988) model of learning styles guided the design, development, and delivery of selected instructional learning modules. Prior to the delivery of course content, students’ individual learning styles were assessed with the Felder and Soloman’s (1998) Index of Learning Styles Survey. Students completed a demographics questionnaire providing personal information, and responded to a survey describing their perceptions of previous online courses. Using the cyclical, iterative process of action research, the first cycle involved a unit of study administered in a traditional, asynchronous, online teaching format; all content was readily available with deadlines clearly communicated and marked. Data from Pre-Satisfaction surveys, Written Narratives, homework, and a unit quiz were gathered and analyzed at the end of the first cycle. This data served as a baseline of how students performed in a traditional, self-directed online teaching design and also revealed that verbal learners performed best compared to other learning styles. Student perceptions of this method were determined, which indicated moderate to low levels of satisfaction. The next cycle identified the types and distribution of students’ learning preferences. The second cycle consisted of a unit of study containing assignments and
activities designed to meet visual learners which were the predominant student learning preference and the lowest performers from the previous cycle. Results of the second cycle were used to identify the learning style with the least academic improvement, active and reflective learners, which led to a third phase. The third cycle incorporated activities designed to meet learning style needs of both active and reflective learners. A fourth and final cycle attempted to meet all learning styles by allowing students to choose from a variety of assignment designs posted in the online course.

Student academic performance was average when course content was delivered with no consideration to learning styles. However, achievement scores improved among all learner groups when instructional content was designed and delivered to meet learning styles. Significant improvements in course satisfaction were also noted when individual learning styles were met or when the course was delivered in an attempt to meet all learning styles.

INDEX WORDS: online learning, online teaching, student learning styles, online achievement, online satisfaction
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B.S., Mercer University, 1997

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A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial
Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

ATHENS, GEORGIA

2015
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December 2015
ACKNOWLEDGEMENTS

I thank my daughters, Meredith and Grace Edwards, for their steadfast love and support during this journey. Your constant faith and encouragement kept me focused. To my parents, who unselfishly devoted their lives to their children, I will forever be grateful for instilling in me a passion for learning. Finally, thank you to all my family and friends for your patience and support throughout this process. I am truly blessed to have such wonderful people in my life.

To Dr. Jay Rojewski, my advisor and major professor, thank you for your guidance and encouragement during the completion of my doctorate. Your wisdom and scholarly insight challenged my thinking and helped guide my research and writing. Your confidence in me will be forever appreciated.

To my committee members and professors, Dr. InHeok Lee and Dr. Myra N. Womble, thank you for your devotion in sharing with me your expertise and valuable points of view over the years. You, along with Dr. Rojewski, have made this life-changing process a pleasant and worthwhile endeavor and I thank you all for your kindness.
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CHAPTER 1

INTRODUCTION

Rationale

Online learning in higher education continues to grow in popularity. The 2013 Sloan Consortium report noted that the number of higher education students taking at least one online course has exceeded 7.1 million. This represents an annual growth rate of 6.1%, an additional 400,000 students, taking at least one online course. Since 2002, online enrollment has increased 16.1% (Allen & Seaman, 2008). According to the National Center for Education Statistics (2009), undergraduates enrolled in online courses at two-year postsecondary institutions rose from 16% in 2003-04 to 20% in 2007-08.

Enrollment in distance education courses offered by Georgia’s two-year postsecondary technical colleges has also steadily increased (Technical College System of Georgia [TCSG], 2012). For fiscal year 2010, the Technical College System of Georgia (TCSG) reported over 185,000 students enrolled in its system, which was approximately 30,000 more students than the previous year. This boost in enrollment reflected, in part, a corresponding 20% increase in TCSG online enrollment in fiscal year 2010. In fiscal year 2011, TCSG’s Georgia Virtual Technical College students received almost one million credit hours of online instruction. According to the Georgia Virtual Technical College (GVTC) 2013 End-of-Year Report, nearly 72,000 students took online courses.

Despite the popularity of online learning and increases in postsecondary education online enrollment nationally, student retention is often cited as a problem. Attrition is defined as “withdrawal from an online course” (Hart, 2012, p. 30). For universities that offer only online
courses, the national attrition rate ranges from 20% to 50% (Diaz, 2002). Some online college programs have reported attrition rates as high as 70% to 80% (Dagger, Wade, & Colan, 2004).

In the 2013 academic year, Southern Crescent Technical College (SCTC) reported that over 30% of its student body completed online only courses, while 68.8% took both face-to-face and online courses. Over 4,000 students were registered in online courses. SCTC reported a 7.5% attrition rate in online learning courses compared to a 3.9% attrition rate in face-to-face courses (Technical College System of Georgia [TCSG], 2014).

While delivering instruction through the Internet has become increasingly popular, little consideration has been given to student learning styles for instruction delivery in online contexts. Akdemir and Koszalka (2008) highlighted the importance of and relationship between learning style and instructional strategies in online teaching environments. They explained how understanding the influence of learning styles and students’ perceptions of their engagement in online courses can help instructors plan, design, and deliver effective online courses. When instructors are aware of student learning preferences represented in their virtual classrooms, they can deliberately attempt to reach each style by altering the ways learning content is delivered. Moreover, instructors can use information about learning styles to increase students’ learning, performance, and retention (Federico, 2000).

Learning style reflects a consistent preference adopted by students as they process, conceptualize, organize, and remember information (Ellis, 1985). Curry (1983) described learning styles as individual differences in the intellectual approach and process of learning. Entwistle and Peterson (2004) explained that “learning styles are relatively consistent preferences for adopting learning processes, irrespective of the task or problem presented” (p. 537). Learning styles are also known as learning preferences and are thought to be developed genetically, culturally, or through past learning experiences. According to Cassidy (2004), there
have been numerous theories developed on learning styles, however, no one theory can be applied to learning generally. Learning preferences can change depending on the responsiveness or demands of a situation or experience.

There are inconsistencies in the literature about whether or not assessing and incorporating instructional strategies to meet student learning styles leads to improved academic performance. Pashler, McDaniel, Rohrer, and Bjork (2008) investigated learning preferences to determine if evidence existed to support considering learning styles in instruction. They concluded, “Although the literature on learning styles is enormous [we] found virtually no evidence [supporting the notion that] instruction is best provided in a format that matches the preference of the learner” (p. 105). They claimed that studies using effective experimental designs, contradicted the popular assumptions that student performance is improved when student learning styles are met. Pashler argues that instructors should focus less on matching instruction to learning styles and more on matching their instruction to course content. He believes if students perform better under instruction that attempts to match learning styles, it is primarily due to the fact that the instructor is paying more attention to the delivery of their instruction. It is important to develop a greater understanding of student needs and learning preferences in online learning to clarify whether or how instructional strategies designed to meet learning styles affect academic achievement.

Designing instructional content to match learning styles has been linked to academic success. Abraham (1985) found that matching instructional styles to student learning styles improved students’ performance. In his study, two computer-assisted lessons were delivered, one was highly structured and rule-oriented, while the other contained fewer rules. The goal of the study was to determine if a less rigid teaching approach, with fewer rules was more
beneficial to students in an English as a second language class. Results showed that students who did well in the class received course instruction that matched their learning styles.

Numerous advantages have been reported when educators consider student learning styles in their instruction delivery. When teachers have a greater understanding of the variety of learning styles or learning preferences represented by students in class, they tend to be more cognizant of their usual or preferred method of teaching. This can lead to more thoughtful lesson planning and approaches to teaching and communicating with learners (Felder & Spurlin, 2005). Another advantage of understanding student learning styles is that teachers can better understand and identify difficulties or barriers that may be present to learning. To address these difficulties, teachers can change delivery methods, using alternate teaching strategies and customizing assignments.

Finally, improving student satisfaction and persistence in online courses could result from instructors meeting a variety of learning styles through course content (Jazzar, 2012). Satisfaction with online learning has been identified as an underlying cause of student persistence (Weimer, 2013). According to Hart (2012), satisfaction levels for graduates of online programs ranges above 90%. Students who withdraw from online courses report satisfaction at 20% or lower.

Although increases in enrollment align with strategic goals for technical colleges, successful completion of distant learning courses has been consistently below rates achieved for students attending traditional face-to-face classes and has had a negative impact on graduation rates (Technical College System of Georgia [TCSG], 2014). In fiscal year 2013, TCSG reported the online attrition rate to be 9.5 % for technical colleges across the state of Georgia. With an already depressed 61% statewide graduation rate, technical colleges in Georgia need to examine online learning needs to address problems with attrition. A more comprehensive understanding
of complex factors affecting student online success is vital. Instructional strategies used to
design and deliver content to students in online courses should rely on an in-depth understanding
of how students prefer to learn. The goal of this action research study was to have lasting impact
on student academic achievement and satisfaction, while establishing a framework for
understanding student learning needs.

**Purpose of Study**

The purpose of this action research study was to explore the effects of designing and
delivering online course materials to meet a variety of student learning styles in an effort to
improve student performance in and satisfaction with online courses. Instructional design
strategies suggested in this study may deepen my understanding of student learning needs and
serve as a guide of how to develop and design future online courses to produce successful
students. Although online enrollment growth continues for technical education, student
performance and satisfaction in online courses remain noticeably below that of students
attending traditional face-to-face classes (Technical College System of Georgia [TCSG], 2014).

Stahl’s (2002) research did not find significant differences between instructional
strategies and student achievement, however, Lovelace’s (2005) study suggested that when
instructors deliver content in methods that align with students’ learning strengths, academic
performance and attitudes are improved. Academic achievement can be defined as students
reaching satisfactory or superior levels of performance in education. Trow (1956) described
academic achievement as the mental capacity to perform tasks in school that are typically
measured through tests and conveyed by a grade based on performance. Student satisfaction
with online learning was described by O’Leary and Quinlan (2007) as “an emotional response
that can be induced by actual product, service, or process quality or some combination of product
and service quality” (p. 135). Thurmond, Wambach, Connors, and Frey (2002) defined student
satisfaction as “a concept that reflects outcomes and reciprocity that occur between students and an instructor” (p. 176). In order to create strategies that maximize academic performance and satisfaction, instructors can consider learning styles as they plan and implement their instructional strategies.

The variables of interest, student academic achievement and satisfaction, were examined after customized instructional modules, designed to meet a variety of learning styles, were delivered to students in a first-year online business management course. The research questions for this study were:

1. Is student academic performance affected by the manipulation of teaching materials in an online course?
2. Is student satisfaction affected when teaching materials are manipulated to reach student learning styles?
3. Are students more satisfied with their instructional experience when individual learning styles are specifically targeted or when the course is delivered in an attempt to meet all learning styles?

**Conceptual Framework**

The Felder-Silverman Dimensions of Learning Style Model (FSLSM) provided the conceptual framework for this study. The FSLSM encourages educators to vary their teaching methods and not exclusively design lessons according to a narrow range of student learning preferences or learning styles. Learning style, as described by James and Gardner (1995), is an individual’s natural and preferred systematic method of gathering and processing information in order to learn. Felder and Silverman (1988) defined learning style as the way a student prefers to “receive and process information” (p. 674). Since the 1970s, understanding and assessing these
individual differences and approaches to learning has been researched and assessed in an effort to improve educational practices.

The main idea of the Felder-Silverman (1988) model, that makes it unique from other learning style models, is that it does not advocate that teachers customize teaching materials to student preferences; rather, it recommends a balance in the variety of instructional delivery methods (Moallem, 2007). Felder-Silverman (1988) explained that due to the complexity of trying to tailor materials around each individual learning preference, instructors should simply alter the ways in which content is presented to all learners. Furthermore, Felder and Henriques (1995) claimed that students do not always learn better or more effectively with a preferred teaching style. Rather, students can benefit from being challenged to learn in less preferred styles (Felder, 2010).

The FSLSM (Felder-Silverman, 1988) is particularly well-suited for this study since academic achievement and student satisfaction will be the measured against instructional delivery methods. Felder (1993), a co-creator of the FSLSM, believed that students whose learning styles are compatible with the teaching style of a course instructor, tend to retain information longer, apply it more effectively, and have more positive post-course attitudes toward the subject than do their counterparts who experience learning/teaching style mismatches. (p. 286)

According to Carver, Howard, and Lane (1999), the Felder-Silverman model is most appropriate for online teaching environments because it provides a more detailed description of learning styles than other models and, for this reason, it very often used in research related to learning styles in distance education (Graf, Viola, Kinshuk, & Leo, 2007). Additionally, the FSLSM can generate detailed learning characteristics, such as adaptability or preference to group work, whereas other learning style models are more suited for traditional learning. Finally, the
FSLSM is suitable for guiding the flexible tailoring of instruction to various student learning styles and needs, which is one of the most important requirements for this study and for effective e-learning systems.

**Importance of Study**

The mission and vision for technical colleges is to promote lifelong learning and develop students to become work-ready through effective training and instruction. However, technical instructors are increasingly losing personal contact with students because many students are electing online courses over traditional face-to-face classes. In order to remain effective, instructors need to reassess student needs and delivery strategies for their virtual classrooms. One approach to reach online students is to evaluate student learning styles. According to Hand (1992), instructors can reach many learning styles by offering a variety of instructional delivery methods that provide opportunities for learners to acquire new knowledge through their preferred style of learning. This action research study, which used the FSLSM as the conceptual framework, could help other online instructors develop interactive, experience-based activities and other student-centered activities to enhance online learning by clarifying the role of learning styles with satisfaction and achievement.

Important benefits, such as increased student retention, enhanced student learning, improved student experience, and increased institutional effectiveness are expected when instructors shape course delivery to match student learning styles. The most important impact this study could make would be to improve student achievement and satisfaction in my online classes. According to Honigsfeld and Dunn (2006), research data revealed a significant rise in academic achievement when student learning styles were met with complimentary resources.

Another possible gain from this study could be the improvement of retention rates in online technical education classes. Tinto (1987) suggested that when a learning environment
promotes student achievement, student retention increases. It is fair to assume that if student performance improves and achievement is promoted, college retention rates will rise, along with graduation rates, and that the overall learning experience of students will be enhanced. These benefits will ultimately reflect the effectiveness of technical education and strengthen its reputation.

In an attempt to improve class performance and student satisfaction in online courses, this action research study explored the effects of designing and delivering materials to meet a variety of student learning styles. Instructional design strategies suggested in this study have deepened my understanding of student learning needs and will now serve as a guide of how to develop and design future online courses to produce successful students. This study will also improve my practice as an online instructor and help provide a means for me to engage in a systematic analysis and investigation in order to develop more effective online courses.
CHAPTER 2

LITERATURE REVIEW

This chapter reviews literature pertaining to students’ learning styles in online education. Topics include a brief history of online education, an examination of learning styles, and the impact of student learning styles on academic achievement and satisfaction in online education. Concerns of online academic achievement, instructional strategies, and learning style theories are also discussed. This chapter concludes with a review of advantages and limitations of incorporating student learning styles into the development and delivery of classroom instruction.

Online Teaching and Learning

1940s to Present Day

The first use of computers in education dates to 1944 when Harvard University introduced the MARK I and 1946 when the University of Pennsylvania adopted ENIAC from the United States Army. Although both computers were initially developed for military purposes, academics found relevant use for them inside the classroom as a new tool to teach mathematics. MARK I and ENIAC became known as the first operational, scientific computers used as educational tools to solve complex mathematical and technical problems (Levien, 1972).

A decade later, the “teaching machine,” created by B. F. Skinner in 1954, earned national recognition for providing individualized learning through computer-based instruction (CBI) (Sözcü, İpek, & Taskin, 2013). Teaching machines contained programmed materials or computer-based tutorials that presented questions to users, required the user to respond, and then provided correct answers (Skinner, 1958). Once teaching machines were broadly acquired by schools, programmers began to develop and customize software according to subject area and
school needs. For example, spelling lessons were developed in 1957, and in 1959 high school mathematic lessons became available for teaching machines. Features of the teaching machine allowed users to listen to lectures, record answers and receive automated feedback; soon teaching machines began to replace tutors and quickly brought about the new field of educational technology, computer-based learning (CBL), and computer-based instruction (CBI) (Molenda, 2012).

Computer-based learning experienced rapid growth in the late 1960s when the National Science Foundation (NSF) networked 30 regions and made computers accessible to more than 300 higher educational institutions and secondary schools. Over two million students had used classroom computers by 1974, and by 1975 over half the nation’s schools had computer access with 23% using computers for instruction and education (Molnar, 1997).

Up until the late 1980s, computer-based learning (CBL) and computer-based instruction (CBI) was completely individualized or one-way with no means to communicate with others. With the development of fiber-optics, distance learning finally allowed for two-way transmission and interaction (Simonson, Smaldino, Albright, & Zvacek, 2000). Although this advancement in technology was beneficial to students because it created a new channel of communication with instructors and classmates, it was costly for colleges to establish networks for student access (Bower & Hardy, 2004). In 1982, CALCampus in Rhode Island became the first Computer-Assisted Learning Center for adult learners and by 1994, it quickly embraced the World Wide Web into its mission, offering the first completely online curriculum for adult learners (“History of Online Education,” para. 2). CALCampus fashioned the way for other colleges and universities to create online courses and also showed that there was an online market available that could help recover investment costs in technology (Holzen & Rickman, 2003; Oblender &
Glass, 2004). CALCampus continues to offer online courses to adult learners, and now has courses for high schools and secondary schools (Gaytan, 2007).

Due to the high costs of networking and technology, along with time spent on developing online materials, the 1990s brought about the need for learning management systems (LMS) or a place where faculty could share online course content and resources. An LMS supports faculty and students by providing a wide range of tools, such as gradebook and reporting tools. For educators, LMS are helpful with course management and grading. For students, LMS offer tools for online communication, homework, and course evaluations (Yueh & Hsu, 2008). Before the mid-1990s, most institutions with LMS were strictly contained within a local area network (LAN) and, therefore, restricted outside educators’ access. It was not until 1997, during the dotcom era that LMS were no longer LAN-based and anyone with Internet capability could access LMS systems (Williams & Goldberg, 2005).

Today, online learning is flourishing in the United States with more than 5.5 million postsecondary learners taking at least one online course (U.S. Education Department, 2010). This number is predicted to continue to surge in the coming years. According to the 2013 Sloan Report, most academic leaders are positive that online learning will continue to influence higher education students and that a majority of American students will take at least one online course in the next five years (National Center for Education Statistics [NCES], 2014). Table 1 reflects the milestones of computerized learning.
Table 1

**Historical Context of Online Education Development**

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<thead>
<tr>
<th>Era</th>
<th>Focus</th>
<th>Educational characteristics</th>
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<tbody>
<tr>
<td>1975-1985</td>
<td>Programming; Drill and practice; Computer-assisted Learning CAL</td>
<td>Behaviorist approaches to learning and instruction; programming to build tools and solve problems; local user-computer interaction</td>
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<tr>
<td>1983-1990</td>
<td>Computer-based training multimedia</td>
<td>Use of older CAL models with interactive multimedia courseware; passive learner models dominant; constructivist influences begin to appear in educational software design and use</td>
</tr>
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<td>1990-1995</td>
<td>Web-based education and training</td>
<td>Internet-based content delivery; active learner models developed; constructivist perspectives common; limited end-user interactions</td>
</tr>
<tr>
<td>1995-2005</td>
<td>eLearning</td>
<td>Internet-based flexible courseware delivery; increased interactivity; online multimedia courseware; distributed constructivist and cognitivist models common; remote user-user interactions</td>
</tr>
<tr>
<td>2005-present</td>
<td>Mobile learning and social networking</td>
<td>Interactive distance courseware distributed online through learning management systems with social networking components; learning facilitated via a wireless device such as a PDA, a smart phone or a laptop; learning with portable technologies where the focus is on the mobility of the learner.</td>
</tr>
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</table>

(Keengwe & Kidd, 2010).

**A Comparison of Online Teaching and Traditional Delivery Methods**

Smith, Ferguson, and Carnis (2002) cited numerous reasons why some educators prefer online course delivery over traditional face-to-face class delivery. Benefits of teaching online can begin in the course development phase when educators confront, analyze, and consider new and different ways of delivering traditionally face-to-face course content. Course quality can also be improved when converting a face-to-face course to the online environment because instructors are required to reassess materials, chunk information into small segments or lessons and sequence each part in a logical and presentable manner.
Smith et al. (2002) found that instructors who favor online course delivery over traditional delivery methods do so because of the ease of integrating additional learning resources into online classes. Additionally, time spent online is more focused than time spent in face-to-face environments. Another benefit of online teaching is the capability to allow outside guests, who may reside at a distance, to login and participate in class discussions or present during synchronous sessions. Student participation in online discussions are often expansive and deeper because students have time to reflect on content before responding.

Flexibility of time and location are cited as significant advantages of online education for both instructors and students. As such, many adjunct faculty who work full-time jobs, perform teaching responsibilities at their convenience, without cost of travel (Clark-Ibánez & Scott, 2008; Shea, 2007). Also, students and instructors have ample time for reflection and feedback (Clark-Ibánez & Scott, 2008). Increasingly, online education is favored because it provides access to diverse groups, such as working adults, who might otherwise be unable to attend traditional classes (Gordon, 2006; Larreamendy-Joerns & Leinhardt, 2006).

Professional sharing and networking, equity, and record keeping are also identified reasons for favoring online teaching over traditional delivery methods. Through online communities, teachers can connect and share course information and resources with other educators and professionals in their disciplines. Unlike traditional classroom settings, online delivery provides an equal opportunity for students and teachers living with a disability because they can participate or facilitate without ever leaving home (Clark-Ibánez & Scott, 2008). Finally, administrative duties such as class rosters, calendars, gradebook entries, attendance, communication, and participation are indisputable, secure, and streamlined through computerized features and reports (Coleman, 2014).
What may be perceived as instructors favoring online delivery could actually be educational institutions pushing or even mandating faculty to teach online classes in order to be competitive with other schools. Because higher education is a competitive environment, it must offer quality online instruction in order to survive financially (Hiltz & Turoff, 2005). In fact, the 2012 Survey of Online Learning performed by the Babson Survey Research Group and the Sloan Consortium reported that within academic leadership, 70% believed online learning must be included in long-term strategic planning and that 77% rate learning in online as same or superior to face-to-face environments (Allen & Seaman, 2013, p. 3). Accordingly, the survey demonstrated that the investment in faculty training for online instruction would set their institutions in a more competitive position for enrolling students.

**Online Models, Design, Development, and Delivery**

Online models serve as frameworks to reduce design costs and produce course consistency, transparency, quality, and standardization (Siemens, 2002). Instructional designers are commonly faculty members who are responsible for creating course content, designing layout, and delivering online classes. There are, however, some institutions that hire outside instructional designers to work with faculty to design and develop online courses. Nonetheless, designers must implement and evaluate the course design for effectiveness against set objectives and goals while uniting education with technology in a way that benefits students and faculty organizations. Through the use of models, instructional designers can ensure a degree of quality in course design and structure while addressing concerns of online attrition, learner resistance, and poor academic performance (Siemens, 2002).

Learning models have existed for many years in education; however, the first models specifically designed for online instruction were developed nearly a quarter century ago (Andrews & Haythornthwaite, 2007). The 1990s brought about significant developments in the
area of student online access to course materials (Mason, 1998). The earliest online models still used today, are Mason’s Content and Support Model (1998) and Sloman’s web-based training model (Sloman, 2002). Both models are designed to be delivered with minimal interaction or support from instructors (Fee, 2009). Mason’s Content and Support Model (1998) breaks a course down into course content and instructor support. This model supports the idea that content is rarely changed and that a course can be facilitated or tutored by individuals other than the content author. Courses designed using the Content and Support Model and the web-based training model, are simple and straightforward. Students are expect to be self-directed, individualized learners who consult instructors only when needed.

As technology developed, so did the way courses were delivered online. The Wrap Around Model was the next model created by Mason (1998) and contains activities and exercises around existing content and requires that half of a student’s time be spent actively participating, while the other half be spent on set content. Similar to Sloman’s (2002) live e-learning model, these models involve live synchronous learning and real-time online events that occur through screen sharing software (Fee, 2009). Unlike the Content and Support Model which was created with predetermined content, the Wrap Around and live e-learning models require instructors to be more interactive and create content-centered activities and discussion each time the course is offered.

Mason’s (1998) Integrated Model was developed to provide collaborative activities and group assignments. This model is based on learner satisfaction, unlike previous models that focused more on knowledge-constructive assignments (Ke & Xie, 2009). According to Mason (1998), “The heart of the course takes place online through discussion, accessing and processing information and carrying out tasks. The course contents are fluid and dynamic as they are largely determined by the individual and group activity” (p. 8). Most student learning is done
through collaboration, and content is typically determined by the learners (O’Leary & Ramsden, 2002).

As online teaching and learning continue to evolve, so will the emergence of new models. These models demonstrate how design and delivery of online instruction have changed over time. The role of instructional designers has also changed drastically. No longer do their duties simply involve uploading PowerPoints and text files into a blank course, they now include understanding how students learn and finding methods through technology to make it better (Tucker, 2007).

**Popularity and Concerns of Online Learning**

Popularity in online learning for higher education is increasingly rising in the United States. There were over 7 million students enrolled in online courses in 2013, which represents 400,000 additional students than in the 2012 academic year (Allen & Seaman, 2013). Two-year postsecondary schools have also experienced online annual enrollment growth rates of 20% (NCES, 2010).

Online enrollments spikes have also been experienced at Georgia’s two-year postsecondary technical education system (Technical College System of Georgia [TCSG], 2012). In 2010, TCSG reached its highest online enrollment growth rate of 31.8%. With nearly 72,000 students in online courses, almost half of TCSG’s overall enrollment is online (GVTC, 2013). Since the online enrollment count is almost equivalent to face-to-face enrollment numbers, the future of Georgia’s technical education system will rely heavily on the students’ completion of and satisfaction with online courses.

Although national popularity in online learning continues to rise, problems with student persistence and retention in online courses is commonly reported. National online universities
have reported dropout rates from 20% to 50% (Diaz, 2002). Other online college programs have experienced attrition rates as high as 70% to 80% (Dagger, Wade, & Conlan, 2004).

Attrition rates are also reported for online students in Georgia’s technical education system. Southern Crescent Technical College (SCTC) has nearly 30% of its student body enrolled in completely online courses, with an attrition rate of 7.5%. Face-to-face attrition is 3.9% by comparison (Technical College System of Georgia [TCSG], 2014).

There are many reasons adult learners prefer an online environment over face-to-face classes. Some of the reasons given are working at your own pace, fewer distractions, and convenience of taking a course that fits a busy schedule. While it may be easy to understand the benefits of taking online courses, it is also important to understand the reasons why many learners are unsuccessful with online learning.

Whether a classroom is face-to-face or online, it will generally be comprised of multiple student learning style types, however, little consideration has been given to student learning styles for instruction with online learning. Akdemir and Koszalka’s (2008) study provided insight into the importance and relationship between learning style and instructional strategies in online teaching environments. The study involved 12 graduate students in an online course. Students were instructed to take the online Psychological Differentiation Inventory to measure the extent they prefer to work with others toward a common goal. They were also asked to take an online questionnaire to determine their perceived learning outcomes, and their perceived level of participation and interaction in the online course module. “Results suggested that matches between students’ learning styles and instructional strategies did not affect learner perception of their own learning outcomes, level of effort and involvement, and level of interactions in the course” (Akdemir & Koszalka’s, 2008, p. 11). However, they explained that understanding the influence of learning styles and students’ perceptions about engagement in online courses can
help instructors plan, design, and deliver effective online courses. When instructors know the variety of student learning preferences represented within their online classrooms, they can deliberately effort to reach each style by altering the ways content is delivered. Moreover, instructors can use information about learning styles to increase students’ learning, performance, and retention by incorporating multiple assignments designed to meet a variety of learning preferences (Federico, 2000).

**Student Learning Styles**

The concept of learning style reflects a consistent preference adopted by students as they process, conceptualize, organize, and remember information (Ellis, 1985). Curry (1983) described learning styles as individual differences in the intellectual approach and process of learning. Entwistle and Peterson (2004) explained that “learning styles are relatively consistent preferences for adopting learning processes, irrespective of the task or problem presented” (p. 537). Learning styles are also known as learning preferences, or an individual’s most preferred way to learn, and are thought to be developed genetically, culturally, or through past learning experiences.

**Student Learning Styles Connected to Student Achievement**

Academic achievement can be defined as students reaching satisfactory or superior levels in education as they advance through school. Trow (1956) defined academic achievement as the mental capacity to perform tasks in school that are typically measured through tests and conveyed by a grade based on student’s performance. Good (1973) explained that academic achievement is knowledge acquired in school subjects usually calculated by grades given by the teacher.

There are conflicts in the literature about whether integrating instructional strategies to meet student learning styles will lead to improved student academic performance. In response to
the claim that there is no connection between student learning styles and academic achievement, numerous studies have indicated that when teachers change their delivery methods to reach student learning styles, academic achievement is increased. Several studies that applied the Meyers-Briggs Test Indicator (MBTI), which measures cognitive styles or personality traits for approaching problems, concluded that intuitive learners in theoretical and analytical type courses performed better on assessments that related to problem-solving, while sensing type learners did better on assessments that required observation (Felder, Felder, & Dietz., 2002; Godleski, 1984; Rosati, 1993; Zywno & Waalen, 2001). These outcomes and expectations are based on research showing that students whose learning preferences are matched with similar instructional style perform better than those who had the opposite preferences (Honigsfeld & Dunn, 2006).

Abraham (1985) also found that matching instructional styles to student learning styles improved students’ performance. In his study, two computer-assisted lessons were delivered, one was highly structured and rule-oriented, while the other contained fewer rules. The goal of the study was to determine if a less rigid teaching approach, with fewer rules would be more beneficial to students in an English as a second language class. The results of the study showed that students who did well in the class were delivered a course that contained assignments and instructional content that matched their learning styles.

When instructors deliver content in methods that align with students’ preferred way of learning, academic performance and attitudes are improved (Lovelace, 2005). In order to create strategies that meet or compliment learning differences, instructors need to consider learning styles as they plan and implement their instructional strategies. According to Favre (2007), once there is an understanding of the diversity of learning styles represented inside a classroom, “Teachers make a concerted effort to eradicate the one-size-fits-all approach and acknowledge the need to modify their classrooms, instructional practices, and assessments” (p. 82).
Teaching to all student learning styles can present a challenge, especially if class size is large or if there are multiple styles represented; however, learning style still has a place in instructional design and strategies (Felder, 2010). Instructors can use learning style inventories to effectively create balance in their lesson plans so that each style is addressed at some point during a lesson for a reasonable amount of time. Felder and Spurlin (2005) recommended that instructors use the Felder-Soloman (1998) Index of Learning Styles instrument to understand learners’ preferences and to also help learners understand their own learning strengths and identify their learning challenges.

Lumsdaine, Lumsdaine, and Hollander (1993) found that when there is a lack of congruence, or a weak connection among the student’s learning style, design of subject matter, and teaching style, there is comparatively lower motivation, satisfaction, poorer performance, and higher attrition. Similarly, Felder and Silverman (1988) stated that when there is congruence among student learning style, subject material, and teaching style, level of achievement is improved and the attrition is lower.

**Learning Styles in an Online Environment**

Delivering instruction through the Internet has become increasingly popular; however, little consideration has been given to student learning styles for instruction. Akdemir and Koszalka (2008) addressed the importance and relationship between learning style and instructional strategies in online teaching environments. They explained how understanding the influence of learning styles and students’ perceptions about engagement in online courses can help instructors plan, design, and deliver effective online courses. Moreover, instructors can use information about learning styles to increase students’ learning, performance, and retention (Federico, 2000).
Common Theories of Student Learning Styles

**Jung and the Myers-Briggs Indicator.** The concept of learning style began in 1927 when Carl Jung recognized differences in how individuals perceived information (through sensation or by intuition), how they made decisions (logically or through feeling), and how they interacted with new knowledge, either through actions or reflection (extroversion or introversion). Applying Jung’s theory, Isabel Myers and Katherine Briggs produced the Myers-Briggs Type Indicator (MBTI) in an effort to understand individual personalities and how they influence the differences in how people learn (McCrae & Costa, 1989). Using the MBTI, individuals’ psychological type can be easily identified and help people understand how they prefer to perceive and judge new information.

**The Dunn and Dunn Model and the VAK Model.** Rita and Kenneth Dunn (2003) developed one of the oldest and most commonly used theories and approaches to understanding learning styles. The VAK learning style model represents and uses the three primary sensory receivers: visual, auditory, and kinesthetic to determine an individual’s preferred learning style. The Dunn and Dunn (1995) theory claims that either one or two sensory receiving styles is normally dominant. The most dominant style represents the most preferred method for a person to learn (Dunn, 2003; Dunn & Griggs, 2003). An important principle in Dunn and Dunn’s model is the idea that student achievement is greatly influenced by fixed characteristics (Dunn, Griggs, Olson, Beasley, & Gorman, 1995). Dunn (1990) claimed that when students are taught in ways that match their learning preferences, they achieve at higher levels than students taught with mismatched methods. She believed that identifying student learning styles with a reliable instrument was a powerful strategy for educators.

**Kolb’s Experiential Learning Theory.** In 1984, Kolb developed an experiential learning theory that operates on two levels; a four-stage learning cycle and four distinct learning...
styles (McLeod, 2010). Kolb’s theory was founded on a belief that true learning occurs through actual experience. To Kolb, learning takes place through a four-stage process guided by experience and conceptualization. The first stage occurs as learners acquire concrete experience. Concrete experience is followed by reflection and observation about the experience in the second stage. The third stage consists of analysis of and conclusions about the experience. In the fourth stage, learners try out or test their idea(s), thereby creating new experiences.

Kolb (1984) also identified four learning styles to describe the ways people accomplish the four learning stages; diverging, assimilating, converging, and accommodating. Kolb’s (1984) model forms a continuum with one learning style or preference on the left and the other on the right. As depicted in Figure 1, accommodators and divergers grasp new knowledge best through concrete experience, whereas convergers and assimilators prefer abstract conceptualization. Accommodators and convergers both prefer active experimentation, while divergers and assimilators prefer reflective observation. The following paragraphs will detail the differences among the four learning styles named in Kolb’s model.
Diverging learners like to feel and watch as they approach new information. They enjoy and excel in situations where new ideas need to be generated. These learners are people-oriented, creative, emotional, open-minded, and usually perform well in the arts. They are open to feedback and use their imagination to solve problems. They enjoy brainstorming, gathering information, and working in groups (McLeod, 2013).

Assimilating learners, like to watch and think, and focus more on ideas and concepts rather than people. They prefer concrete data, and sound theories that are logical and practical. These learners generally do well in information and science occupations. In academic environments, these learners prefer lectures, analyzing models, reading, and reflecting back on content (McLeod, 2013).
Converging learners are known as doing and thinking learners. They enjoy technical tasks and like to experiment with new ideas, to simulate, and to work with practical applications. These learners tend to prefer science and technology occupations, and are most comfortable when there is a single solution to a problem. They do not prefer solving complex social issues and are generally not open-minded to new ideas.

Accommodating learners are known as doing and feeling learners. They typically rely on others for guidance and information rather than depend on their own analysis. These learners are hands-on, and trust their instinct rather than logic. The accommodating learning style is most prevalent among all styles (McLeod, 2013).

**The Felder-Silverman Dimensions of Learning Style model (FSLSM).** The Felder-Silverman Dimensions of Learning Style model (FSLSM) applies elements of Kolb’s (1984) theory along with the Myers-Briggs model (Moallem, 2007). The Felder and Silverman (1988) model classifies students into four learning styles also. Felder and Soloman (1998) transformed this model into the (ILS) Index of Learning Styles (Felder & Silverman, 1988; Felder & Soloman, 1998). The ILS is a 44-question, self-scoring instrument that assesses learners’ individual preferences on four dimensions of learning. The sensory-intuitive dimension is based on an individual’s preferred modality to receive information, which could be through sight, sound, physical sensations, or memories and thoughts. The active-reflective dimension refers to one’s preferred way to process information, which could be through active participation, discussion, or contemplation. The visual-verbal dimension refers to how individuals prefer instructional content to be presented, which could include images, charts, demonstrations, or written and spoken explanations. Finally, the sequential/global dimension refers to the approach taken to understand an issue, either though linear steps or in big chunks of information. Table 2
provides a brief description of each learning style and a proposed strategy offered by Felder and Soloman (1998) to help each learner.

Table 2

Summary of Different Learning Styles

<table>
<thead>
<tr>
<th>Learning style</th>
<th>Description</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active learners (ACT)</td>
<td>Learn best by discussing or explaining to others</td>
<td>Group activities, Activities that apply new information</td>
</tr>
<tr>
<td>Reflective learners (REF)</td>
<td>Learn best by thinking</td>
<td>Written assignments</td>
</tr>
<tr>
<td>Sensing learners (SEN)</td>
<td>Prefer to learn facts and solve problems through well-established methods.</td>
<td>Assignments that connect information to the real world applications</td>
</tr>
<tr>
<td>Intuitive learners (INT)</td>
<td>Prefer to learn by discovering possibilities and relationships.</td>
<td>Assignments that use theories to link facts</td>
</tr>
<tr>
<td>Visual learners (VIS)</td>
<td>Learn best through pictures, diagrams, demonstrations</td>
<td>Assignments that require finding diagrams, photos, videos, to describe course material</td>
</tr>
<tr>
<td>Verbal learners (VRB)</td>
<td>Prefer to learn through written and spoken explanations</td>
<td>Group discussions and written summaries</td>
</tr>
<tr>
<td>Sequential learners (SEQ)</td>
<td>Learn best through logical steps</td>
<td>Outlining course material in a logical order</td>
</tr>
<tr>
<td>Global learners (GLO)</td>
<td>Prefer to learn by chunking information</td>
<td>Assignments that relate new information to things already known</td>
</tr>
</tbody>
</table>
**Honey and Mumford Learning Styles Questionnaire (LSQ).** After four years of experimenting on student learning styles, in 1992, Honey and Mumford developed the Learning Styles Questionnaire (LSQ). Initially designed to determine management trainees’ preferred learning styles, the LSQ was adapted for educators and students in higher education (Duff & Duffy, 2002). Different from the VAK model, the LSQ is designed to find the students’ relative strengths using four learning styles (Honey & Mumford, 1992); activist, reflector, theorist and pragmatist. Activists prefer to learn by doing, while reflectors prefer to learn by observation and thinking. Theorist learners who have the desire to understand the theory behind actions and prefer to analyze and synthesize new information. Pragmatic learners prefer to see the relevance of new knowledge to the real world and enjoy experimentation and new ideas. Honey and Mumford (1992) believed that learners should become fluent and proficient in all four stages of the learning cycle and that no one style is better than any other.

**Advantages of Identifying Student Learning Styles**

There are a number of advantages to identifying student learning styles within a classroom. When teachers have a greater understanding of the variety of learning styles represented in their class, they tend to be more cognizant of their usual or preferred method of teaching. This can lead to more thoughtful lesson planning and approaches to teaching and communicating with learners (Felder & Spurlin, 2005). Another advantage of understanding student learning styles is that teachers can better understand and identify difficulties or barriers that may be present to learning. To address these difficulties, teachers can change delivery methods, using alternate teaching strategies and customizing assignments. Finally, when students assess their own learning styles and needs, they are engaging in metacognition, which could be the biggest advantage of learners using instruments to identify learning styles.
Limitations of Identifying Student Learning Styles

Skeptics and critics of learning styles contend that there is no concrete evidence to support any one learning style theory and that the process of learning is far too complex for any one theory or model to adequately explain (Arter & Jenkins, 1979). Additionally, some say that knowing learning styles alone does not provide enough data to predict how students will perform academically or react to learning, and that other external factors exist to consider such as curriculum requirements, social interactions, and actual learning environments (Felder & Spurlin, 2005). Another criticism of learning style models is that categorizing or labeling students according to learning styles is an inherent risk that educators take when they require students to reveal their test results (Kopsovich, 2001). Teachers may make false assumptions based on learning styles of students, which could possibly lead to discrimination. It is recommended that rather than labeling students, instructors should instead label robust teaching strategies. Table 3 lists general advantages and disadvantages of using learning styles in education.

Table 3

Advantages and Disadvantages of Classifying Student Learning Styles

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers become more aware of their usual method of teaching</td>
<td>No concrete evidence to support any one learning style theory</td>
</tr>
<tr>
<td>Leads to more thoughtful lesson planning and approaches to teaching and communicating with learners</td>
<td>Process of learning is far too complex for any one theory or model to simplify</td>
</tr>
<tr>
<td>Teachers can better understand and identify difficulties or barriers that may be present to learning</td>
<td>Knowing learning styles alone is not enough data to predict how students will perform academically</td>
</tr>
<tr>
<td>Students engage in metacognition</td>
<td>Categorizing or labeling students according to learning styles is an inherent risk that educators take</td>
</tr>
</tbody>
</table>
CHAPTER 3

METHOD

This chapter restates a summary of the purpose of this action research study and the research questions. The chapter also describes the methods and procedures used in the study. The Felder-Silverman (1988) model, which determines an individual’s learning style based on differences in the approach to and process of learning, provided the conceptual framework for this study. The Felder-Silverman (1988) model recommends that teachers should balance different instructional delivery methods in an effort to reach as many student learning styles as possible (Moallem, 2007). According to Felder and Silverman (1988), congruence exists among student learning style, subject material, and teaching style; additionally levels of achievement are improved and attrition is lower. Lovelace (2005) found that when instructors delivered content using teaching methods that align with students’ learning styles, students’ academic performance and attitudes improved. In order to create strategies that meet or compliment learning differences and improve student satisfaction with online learning, instructors need to consider learning styles as they plan and implement instructional strategies.

Purpose of Study

The purpose of this study was to explore the results of designing and delivering online course materials to meet student learning styles. Instructional design strategies were implemented to deepen my understanding of student learning needs and to guide the development and design of future online courses in order that I may improve student performance and satisfaction.
Student academic achievement and satisfaction were examined after delivery of customized instructional units, emphasizing a variety of learning styles, to students in a first-year online business management course at Southern Crescent Technical College (SCTC). The research questions for this study were:

1. Is student academic performance affected by the manipulation of teaching materials in an online course?
2. Is student satisfaction affected when teaching materials are manipulated to reach student learning styles?
3. Are students more satisfied with their instructional experience when individual learning styles are specifically targeted or when the course is delivered in an attempt to meet all learning styles?

**Design**

Because this study was created to help teachers improve their teaching and learning through systematic cycles of planning, action, data collection, and reflection (Mertler, 2012), action research was deemed to be the most appropriate design. My research explored the effects of congruent and non-congruent teaching and learning styles by delivering instructional content specifically designed to match selected student learning styles in an online business management course at SCTC. Action research is a design that supports educators and administrators inquiring and evaluating their own work (Whitehead & McNiff, 2006), while focusing on instructional change and improvement (Vulliamy, 1990). It also serves as a guide for practitioners as they implement changes to their practice in a systematic way (Taylor, Wilkie, & Baser, 2006). Johnson (2008) describes action research as a systematic approach of inquiry into one’s own instructional practice. Action research allows teachers to analyze their own practices, students, and instructional methods to gain a better understanding and improve the quality and
effectiveness of how they perform (Mertler, 2012). Numerous models have been created for action research, however, there is a consensus that action research involves the use of a cyclical process (Lacey, 2013). Action research establishes the researcher as a change agent for an actual problem in an educational environment typically using a four-stage cyclical process (Coghlan & Brannick, 2009). The process involves constructing, planning, taking action, and evaluating action (Hall, 1997). The researcher implements change to an initial strategy or intervention based on the results of a previous research cycle. The process is repeated several times in order to achieve maximum improvements in performance. This series of steps is often referred to as the dialectic action research spiral (Mills, 2011).

Kemmis and McTaggart’s (1988) model is the most commonly cited action research model (Nelson, 2013). Their model consists of four broad phases of planning, action, observation, and reflection. The first phase, planning, is an initial diagnosis of the problem and development of a plan of action predicted to improve the identified issue. Next, the plan is implemented and data is collected. Then, data is analyzed to find out if the action made a difference. In the final phase, the initial problem is re-evaluated and another cycle begins. This process is repeated until a solution is found or until a predetermined number of cycles is completed.

Action research is different from other research in that it is participatory, democratic, and simultaneous (Carr & Kemmis, 1986). As such, when educators systematically gather data on their practice, they begin the process of professional growth and development. As lessons are viewed and analyzed through self-reflection for factors that may be affecting teaching and learning, teachers begin to develop a true mastery of teaching. Furthermore, action research helps address school-wide initiatives because as faculty conduct action research on issues of concern, and all other faculty members actively participate, substantial improvement can occur.
school wide. When these combined efforts come together to reach goals, or when an entire
faculty focuses on student development, team learning happens simultaneously as a professional
culture is born and established.

Action research is reflective, collaborative, driven by participants, specific in context, and
effective in leading to improvements in teaching and learning (Scott, Clarkson, & McDonough,
2012). Creswell (2013) states that the key characteristics of action research are its practical
focus, educators research their own practices, it is a collaborative and dynamic process, it
involves an action plan, and it is shared research. Creswell (2013) stresses that understanding
the characteristics of action research will help educators better plan and design classroom-based
research studies.

Action research has advantages over other research designs because of its relevance to
teachers striving for continuous improvement (Maheshwari, 2012). Also, since the study is
performed in the classroom, educators can easily observe, discuss, and gather data. Flexibility of
data collection and interpretation are also advantages of conducting action research (“Action
research”, 2009). Furthermore, due to the flexibility and independence of action research,
researchers are empowered to express their viewpoint and challenge guidelines of instruction,
thus further advancing their knowledge and professional abilities (Borgia & Schuler, 1996;
Choudry, 2010; Fandino, 2010; Stringer, 2004).

Weaknesses of action research, such as conflicts of interest, involve ethical implications
of teachers who perform studies on their own classes, students, and teaching practices (Nolen &
Putten, 2007). Because teachers are motivated to solve their classroom issues, it is possible that
they cannot offer unbiased reflection because of their direct involvement with the problem.
Questions regarding conflicts of interest, biases, skewing of data, and researcher inexperience are
all potential threats to the internal and external validity of action research (Newton & Burgess,
Huitt, Hummel, and Kaeck (1999) describe internal validity as “how confidently one can conclude that the change in the dependent variable was produced solely by the independent variable and not extraneous ones” (para. 1). They describe external validity as “the extent to which a study's results can be generalized/applied to other people or settings” (para. 3).

To minimize threats, action researchers can use data triangulation to establish the validity of their findings. Triangulation involves the use of independent, *multiple* sources of collected data (Mertler, 2012). For this study, data concerning satisfaction was collected from pre and post satisfaction surveys and Written Narratives, while data on achievement was collected through tests and assignment grades. Validity refers to the certainty or truth that research findings are accurate and can be supported by evidence (Guion, Diehl, & McDonald, 2011). Research studies are strengthened by use of data triangulation because it ensures that all sides of a study support a common claim (Reason & Bradbury, 2013).

An online MGMT 1105—Organizational Behavior course provided the context for this research. MGMT 1105 is a required introductory course for students enrolled in the Business Management program. As a building block, course content mastered in this class is critical to understanding materials in subsequent courses for the program. MGMT 1105 provides a general knowledge of the human relations aspects of the senior-subordinate workplace environment. Topics in this course include employee relations principles, problem-solving and decision-making, leadership techniques to develop employee morale, human values and attitudes, organizational communications, interpersonal communications, and employee conflict.

This study took eight weeks to complete and occurred during the second eight week mini-semester of the spring 2015 semester. The online course contained four learning units which served as my four action research cycles. Each learning unit contained a minimum of two chapters of instruction from textbook *Human Relations Interpersonal Job-Oriented Skills,*
chapter PowerPoint slides, homework assignments, and a quiz. Each unit was two weeks in length.

The first unit covers Chapter 1, Chapter 2, and Chapter 3 of the textbook. Chapter 1 introduces students to a general knowledge of interpersonal skills and common developmental needs found in business. Chapter 2 describes individual differences of personnel in the workforce, such as personality, mental ability, emotional intelligence, and values. Approaches to respond to those differences are also presented. Chapter 3 explains how managers can build self-esteem and confidence to improve employee performance.

The second learning unit covers Chapters 4 and 5. Chapter 4 describes the basic steps in the communication process and explains how to build relationships through effective interpersonal communication. Chapter 5 discusses etiquette as it relates to digital technology in a business environment and the use of appropriate interpersonal skills through social networking.

The third learning unit includes Chapters 7, 8, and 9. Chapter 7 explains strategies and techniques for group problem solving and decision making. Topics of diversity, cross-cultural communication barriers, and cultural values are included in Chapter 8. Chapter 9 examines effective approaches for resolving conflicts with others within organizations.

The fourth and final learning unit contains Chapters 10 and 11 and deals with understanding leadership characteristics and traits. These chapters also detail popular methods of motivating and persuading employees.

**Participants**

A convenience sample of students enrolled in an Organizational Behavior online course (MGMT 1105) at Southern Crescent Technical College (SCTC) during a single semester was selected. A convenience sample was used because the target group of students was easily accessible and willing to participate (Gall, Gall, & Borg, 2007). Action research emphasizes
relevance to the researcher rather than finding generalizations or trends. Therefore, the target sample for this study was comprised of students who voluntarily enrolled in an online Organizational Behavior (MGMT 1105) course during the 2015 spring semester. Students who enrolled in the course were asked to complete the Informed Consent Form, (see Appendix A), the Demographic Questionnaire (see Appendix B), the Student Satisfaction Pre-Survey (see Appendix C), and the Felder-Soloman (1998) Index of Learning Styles Questionnaire (see Appendix D).

Students in MGMT 1105 are typically first-year students pursuing a diploma or degree in the Business Management program at SCTC. There are no prerequisite course requirements for enrollment, although provisional admission to SCTC is required. Provisionally admitted students are those who do not meet all test score requirements for regular admission into a selected program. These students are, however, allowed to take certain occupational courses such as MGMT 1105.

Gall et al. (2007) wrote that it is imperative to select participants from a specific population most relevant to the study. As Table 4 displays, the study sample appeared to be representative of other SCTC Business Management students in terms of age, gender, and race/ethnicity. Most SCTC students are completely new to higher education, either having just graduated high school or earned a General Education Diploma (GED). While ages vary, a majority of SCTC’s students are part-time, adult learners with full-time jobs that support themselves and their families (Technical College System of Georgia [TCSG], 2014). The race/ethnicity of the Southern Crescent Technical College student body consists of 51% White, 42% African American, 3% Hispanic, and 4% other. The Southern Crescent student body is 34.5% men and 65.5% women. In terms of the age of Southern Crescent students, 52% are under the age of 25, 17% over the age of 40, and 31% were between the ages of 26 and 39. Data
is limited on Southern Crescent Technical College’s students’ socioeconomic status. In fiscal year 2012, 95% of students at Southern Crescent Technical College received financial aid (TCSG, 2014). With most financial aid awards being determined by personal or parent’s income, a reasonable assumption is that a large majority of the college’s student population is of a lower socioeconomic status.

Table 4

Representative Sample Data

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
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<th>Black</th>
<th>Other</th>
<th>21-29</th>
<th>30-39</th>
<th>40-49</th>
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<tbody>
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</tr>
<tr>
<td>Percent</td>
<td>11%</td>
<td>89%</td>
<td>53%</td>
<td>47%</td>
<td>0%</td>
<td>47%</td>
<td>29%</td>
<td>24%</td>
<td></td>
</tr>
</tbody>
</table>

Students eligible for this study included all currently enrolled business management students who had not previously attempted the MGMT 1105 course. Once students were registered for the course and logged into the class, they received a course announcement that described the purpose of the study. Interested students were asked to acknowledge the Informed Consent document (see Appendix A) and send the following statement via the course learning management system (LMS): *I, (type your name and student number), have read and agreed to the terms of the Informed Consent form for the study ADJUSTING ONLINE DELIVERY TO MEET STUDENT LEARNING STYLES. I understand that my participation is strictly voluntary and that my decision to participate or stop participating at any point will not affect my grade for this class. I will not be offered incentives for participating in the study and will not be penalized for declining participation.*

A demographic questionnaire was administered to participants on the first day of the semester to gather age, gender, and race/ethnicity information about the study sample (see Appendix B). A pre-survey instrument aided in understanding the sample’s prior online
experiences and perceptions with online learning. Additionally, the results of the Felder-Soloman (1998) Index of Learning Styles Questionnaire identified the various learning styles of students.

**Data Collection**

Multiple instruments were used for data collection in this action research study (see Table 5). A Pre-Satisfaction and Post-Satisfaction survey instrument (see Appendix C and E), the Felder-Soloman (1998) Index of Learning Styles Questionnaire (see Appendix D), Written Narratives (see Appendix F), and four learning unit quizzes (see Appendix G). Students were also asked to complete a short demographic questionnaire (see Appendix B).
Table 5

Data Collection Instruments

<table>
<thead>
<tr>
<th>Construct</th>
<th>Instrument</th>
<th>Description</th>
<th>Score</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Descriptive</td>
</tr>
<tr>
<td>Prior online attitudes and perceptions</td>
<td>Pre-survey—Likert scale</td>
<td>Experiences in online learning</td>
<td>1-5</td>
<td>High scores = high satisfaction with prior online courses with design and delivery of instructional content</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Post-survey—Likert scale</td>
<td>Experience in the research online learning course</td>
<td>1-5</td>
<td>High scores = high satisfaction with MGMT 1105</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Written narratives</td>
<td>Opinions on online learning guided questions</td>
<td></td>
<td>Inductive analysis</td>
</tr>
<tr>
<td>Demographics</td>
<td>Demographics questionnaire</td>
<td>Characteristics of students</td>
<td>Age</td>
<td>Descriptive</td>
</tr>
<tr>
<td>Academic achievement</td>
<td>Unit quizzes Experimental assignments</td>
<td>Academic skills in an online business management course</td>
<td>0-100%</td>
<td>Higher scores = higher achievement in MGMT 1105</td>
</tr>
</tbody>
</table>
**Pre- and Post-Surveys**

A survey was completed at the beginning of the study to gather information about students’ prior experiences with and attitudes about online learning (see Appendix C). Questions on this survey uncovered student satisfaction with the appropriateness and authenticity of online assignments, instructor feedback, and the sense of community in past online courses. A post-study survey was administered to gather information regarding overall satisfaction with the online course (MGMT 1105) and satisfaction levels based on application of assignments specifically designed to meet targeted learning styles (see Appendix E). Both surveys asked students to rank questions using a Likert scale using the following choices for each answer: No satisfaction at all, very little satisfaction, some satisfaction, much satisfaction, or complete satisfaction.

**Learning Styles**

Participants were assigned to assess and report to me their individual learning styles by completing the online version of Felder and Soloman’s (1998) Index of Learning Styles Questionnaire (see Appendix D). This online instrument contains 44 questions that assess learning preferences based on four categories of learning: active/reflective, sensing/intuitive, visual/verbal, and sequential/global. These categories of learning styles reflect a learning style model created by Felder and Silverman (Felder, 1996). Table 2 provides a brief description of each learning style and a proposed strategy offered by Felder and Soloman (1998) to help each learner. For example, because active learners learn best by discussing and explaining ideas with others, it is recommended that instructors assign these learners group activities. Written assignment designs are suggested for reflective learners and verbal learners since reflective learners learn best by thinking and verbal learners prefer to learn through written and verbal...
explanations. The strategy suggested for visual learners is to require them to find diagrams, photos, videos or any visual representation to describe the course material.

Results from the Felder-Soloman (1998) Index of Learning Styles Questionnaire were provided to students immediately upon completion in the form of scales (see Table 6). Additionally, students were provided a document that explained how to interpret results (see Appendix H). The scale ranked each student along the four dimensions (active/reflective, sensing/intuitive, visual/verbal, and sequential/global) of learning styles based on Felder and Silverman’s (1988) learning styles model. The scale is divided into two dimensions with six items per dimension. Scores between 1 and 3 are considered balanced on the two dimensions of the scale. However, those who score between 5 and 7 have a moderate preference for one dimension, whereas those who score between 9 and 11 have a strong preference for one dimension. The example in Table 6 reflects a student who would be classified as a sensing learner because the student scored a 5 on the sensing dimension.

Table 6

Sample Results from the Felder-Soloman (1998) Learning Styles Questionnaire

<table>
<thead>
<tr>
<th></th>
<th>Dimension One</th>
<th></th>
<th>Dimension Two</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>11 9 7 5 3 1</td>
<td>X</td>
<td>1 3 5 7 9 11</td>
<td></td>
</tr>
<tr>
<td>SEN</td>
<td>11 9 7 5 3 1</td>
<td>X</td>
<td>1 3 5 7 9 11</td>
<td></td>
</tr>
<tr>
<td>VIS</td>
<td>11 9 7 5 3 1</td>
<td>X</td>
<td>1 3 5 7 9 11</td>
<td></td>
</tr>
<tr>
<td>SEQ</td>
<td>11 9 7 5 3 1</td>
<td>X</td>
<td>1 3 5 7 9 11</td>
<td></td>
</tr>
</tbody>
</table>
Student Satisfaction—Narratives

Written Narratives were completed by students at the end of each two-week learning unit or study cycle, through a discussion board inside the online classroom. Student identities were kept anonymous through a setting within the LMS. The discussion board contained guided questions to elicit comments about student satisfaction with each learning unit (see Appendix F). Students were asked to provide opinions and feedback about their experiences and attitudes concerning the unit’s assignments and their delivery approach. These postings contained valuable feedback about what was happening inside the course and helped me determine needed changes for subsequent cycles (Mills, 2011). At the end of each unit, discussion posts of perceptions, attitudes, experiences, and opinions were all printed, recorded, and stored electronically inside the online course. By requesting end of cycle or unit postings, I established a systematic way to reflect on instructional strategies and discovered what was or what was not working in order to plan for and employ other ways to improve each cycle. Feedback gathered from the Written Narratives helped determine if students were resistant or unsatisfied with any elements of the online course.

Academic Achievement

Summative assessments evaluate what students have learned and achieved at the end of a designated instructional period (Mertler, 2012). For this study, four unit quizzes, containing 20 to 30 multiple choice questions, were given regarding content covered within each learning unit (see Appendix G). Each cycle targeted a certain style of learner, and content was delivered in a manner that appealed most to that targeted learner group. At the end of each cycle, unit scores were compared to see if the attempt to teach to this certain learning style improved those learners’ performances more than others. Results from unit quizzes, Written Narratives, and
experimental homework assignments for each cycle were compared to the results of the prior cycle. This study used quantitative results from the four unit quiz grades, satisfaction survey data, and experimental homework assignment grades largely to support the qualitative data from Written Narratives. Results gathered from the quantitative instruments were compared to results from the qualitative instruments to discover any connection between student satisfaction and student performance. This process of triangulation made the narrative data concerning student satisfaction more meaningful, because it was interpreted in conjunction with critical quantitative data on performance.

Procedure

Permission to conduct this study was obtained through the Human Subjects Office, Office of the Vice President for Research at the University of Georgia and the Institutional Review Board (IRB) (see Appendix I). An administrative review was conducted because this study involved measuring educational practices in an online classroom setting. Once the application was complete, a copy of the research design, procedure, and instruments were attached and submitted for approval. Students’ identification remained confidential throughout the study. Student college identification numbers were used to protect confidentiality.

Once students were enrolled in the course, they received a detailed e-mail (see Appendix J) and course announcement that provided instructions on how to access and submit consent forms, the two survey instruments, the Felder-Soloman (1998) Index of Learning Styles Questionnaire, the discussion forms, and the demographic questionnaire. Students were not offered incentives for participation and were informed that participation was voluntary and a decision to either participate or not participate would not affect their course grade.
This action research study involved the delivery of four instructional cycles, delivered through four learning units that lasted two weeks each to an online MGMT 1105 Organizational Behavior course. Table 7 depicts the content areas that were taught for each cycle: interpersonal skills development, individual differences, employee self-esteem and self-confidence, interpersonal communication, digital etiquette, teamwork skills development, group problem solving, diversity, conflict resolution, leadership, and motivation strategies. Each two-week cycle contained static elements including lecture notes, chapter slides, discussion boards, homework, and unit quizzes. Homework assignment content was crafted and delivered based on the research cycles described in Table 8. All homework assignments were intentionally created using learning competencies established by TCSG’s Business Management Consortium, the governing body for all business management instructors in Georgia’s technical colleges (TCSG, 2014). Also, homework assignments were designed using the learning styles represented in the Felder-Soloman (1998) Learning Styles Index and were constructed to meet each style need.

Although chapter content differed from one research cycle to the next, each cycle was structured identically. Each unit contain chapter slides, chapter lecture notes, video files, a unit quiz, discussion boards, and a homework assignment. The main focus of this study was to detect changes in grades and satisfaction among participants.
### Table 7

**Assignment Inventory Based on Learning Styles**

<table>
<thead>
<tr>
<th>Unit of Study</th>
<th>Reflective</th>
<th>Intuitive</th>
<th>Sensing</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit 1</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Chapter 1:</td>
<td>These assignments require students to reflect on new knowledge</td>
<td>These assignments allow students options on how to complete the unit</td>
<td>These assignments are designed for students to find real-world relevance to concepts learned</td>
<td>These assignments are designed for collaborative group work</td>
</tr>
<tr>
<td>Interpersonal Skills Development</td>
<td>Write a 3-5 page paper using the self-assessments from Chapters 1 and 2. Describe how you can apply the information you learned to your future career.</td>
<td>Using the video lectures on Chapters 1 and 2, select the topic that you feel is most important in management. Select from writing a 3-5 page paper or answering all end-of-chapter questions.</td>
<td>Interview a manager about the importance of interpersonal skills and diversity in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
<td>Teamwork project – Develop a presentation on Chapters 1 and 2, also create handouts for audience, along with a written report of main concepts.</td>
</tr>
<tr>
<td>Chapter 2:</td>
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<tr>
<td>Individual Differences</td>
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<td></td>
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<tr>
<td>Chapter 3:</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Building Self-Esteem And Confidence</td>
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</tr>
<tr>
<td><strong>Unit 2</strong></td>
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<tr>
<td>Chapter 4:</td>
<td>Write a 3-5 page paper that describes how you will train employees about digital etiquette.</td>
<td>Using the video lectures and project examples, choose to either write a 3-5 page policy on digital etiquette or write a 3-5 page paper on how you will train employees on digital etiquette.</td>
<td>Interview a manager about the importance of building confidence in your employees and issues of digital etiquette in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
<td>Teamwork project – Develop a presentation on Chapters 3 and 5, also create handouts for audience, along with a written report of main concepts.</td>
</tr>
<tr>
<td>Communication</td>
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<tr>
<td>Chapter 5:</td>
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<tr>
<td>Interpersonal Skills for the Digital World</td>
<td></td>
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<tr>
<td><strong>Unit 3</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Chapter 7:</td>
<td>Write a case study that depicts an employee-conflict situation. Write an answer key that describes the ideal solution using information you learned from the chapter.</td>
<td>Using the video lectures and project examples, choose to either write a case study and answer key for conflict resolution or write a 3-5 page policy on conflict resolution.</td>
<td>Interview a manager about the importance of group problem solving and conflict resolution in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
<td>Teamwork project – Develop a presentation on Chapters 7 and 9, also create handouts for audience, along with a written report of main concepts.</td>
</tr>
<tr>
<td>Group Problem Solving and Decision Making</td>
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<tr>
<td>Chapter 8:</td>
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<tr>
<td>Diversity</td>
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<tr>
<td>Chapter 9:</td>
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<td></td>
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<tr>
<td>Resolving Conflicts with Others</td>
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<tr>
<td><strong>Unit 4</strong></td>
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</tr>
<tr>
<td>Chapter 10:</td>
<td>Write a 3-5 page paper that describes how you will motivate your employees and how you will model effective leadership.</td>
<td>Watch unit videos and either write a 3-5 page paper that describes how you will motivate your employees and how you will model effective leadership, or write a case study and answer key on employee motivation.</td>
<td>Interview a manager about the importance of leadership and continual motivation in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
<td>Teamwork project – Develop a presentation on Chapters 10 and 11, also create handouts for audience, along with a written report of main concepts.</td>
</tr>
<tr>
<td>Becoming an Effective Leader</td>
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<tr>
<td>Chapter 11:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivating Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit of Study</td>
<td>Visual</td>
<td>Verbal</td>
<td>Sequential</td>
<td>Global</td>
</tr>
<tr>
<td>---------------</td>
<td>--------</td>
<td>--------</td>
<td>------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Unit 1</strong></td>
<td><strong>Chapter 1:</strong> Interpersonal Skills Development</td>
<td>Write a 3-5 page paper using the video content and self-assessments from Chapters 1 and 2. Describe how you can apply the information you learned to your future career.</td>
<td>Using audio lectures on Chapters 1 and 2, select the topic that you feel is most important in management. Select from writing a 3-5 page paper or answering all end-of-chapter questions.</td>
<td>Interview a manager about the importance of interpersonal skills and diversity in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
</tr>
<tr>
<td><strong>Chapter 2:</strong> Individual Differences</td>
<td></td>
<td></td>
<td></td>
<td>Teamwork project – Develop a presentation on Chapters 1 and 2, also create handouts for audience, along with a written report of main concepts.</td>
</tr>
<tr>
<td><strong>Chapter 3:</strong> Building Self-Esteem and Confidence</td>
<td>Write a 3-5 page paper that describes how you will train employees about digital etiquette. Refer to video demonstration within this unit.</td>
<td>Using the video lectures and project examples, choose to either write a 3-5 page policy on digital etiquette or write a 3-5 page paper on how you will train employees on digital etiquette.</td>
<td>Interview a manager about the importance of building confidence in your employees and issues of digital etiquette in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
<td>Teamwork project – Develop a presentation on Chapters 3 and 5, also create handouts for audience, along with a written report of main concepts.</td>
</tr>
<tr>
<td><strong>Unit 2</strong></td>
<td><strong>Chapter 4:</strong> Communication</td>
<td>Using the videos and slides provided, write a case study that depicts an employee conflict situation. Write an answer key that describes the ideal solution using information you learned from the chapter.</td>
<td>Using the video lectures and project examples, choose to either write a case study and answer key for conflict resolution or write a 3-5 page policy on conflict resolution.</td>
<td>Interview a manager about the importance of group problem solving and conflict resolution in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
</tr>
<tr>
<td><strong>Chapter 5:</strong> Interpersonal Skills for the Digital World</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unit 3</strong></td>
<td><strong>Chapter 7:</strong> Group Problem Solving and Decision Making</td>
<td>After reviewing the video on motivation techniques, write a 3-5 page paper that describes how you will motivate your employees and how you will model effective leadership.</td>
<td>Watch unit videos and either write a 3-5 page paper that describes how you will motivate your employees and how you will model effective leadership, or write a case study and answer key on employee motivation.</td>
<td>Interview a manager about the importance of leadership and continual motivation in the business environment. Paper must be 3-5 pages and include an introduction and summary.</td>
</tr>
<tr>
<td><strong>Chapter 8:</strong> Diversity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chapter 9:</strong> Resolving Conflicts with Others</td>
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</tr>
</tbody>
</table>
Action research involves a systematic process of planning, action, data collection, and reflection (Mertler, 2012). Table 8 describes each step of the planning, acting, observing, and reflecting cycle in this action research study. Figure 2 diagrams the action research plan. Each cycle involves the steps of planning, taking action, observing, and reflecting. The plan for Cycle 1 was to acclimate students to the online learning environment of MGMT 1105 and inform participants about the intent of the study. The plan also included asking students to complete the pre-survey instrument, demographic and learning style questionnaires, and to deliver the first unit of study using an automated delivery style in an online learning format.

**Cycle 1:** Deliver content to all students using an automated teaching style

**Cycle 2:** Deliver designed content to predominant learning style group

**Cycle 3:** Deliver designed content to lowest performers as a group of learning styles from Cycle 2

**Cycle 4:** Deliver content to all students based on analysis of results from the previous three cycles

*Figure 2.* Proposed action research cycle for MGMT 1105 Organizational Behavior.
# Table 8

**Action Research Steps for Study**

<table>
<thead>
<tr>
<th>Planning</th>
<th>Action</th>
<th>Observation</th>
<th>Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cycle 1 (Weeks 1 and 2)</strong></td>
<td>Plan to gather consent forms for study, data on student demographics, prior online learning perceptions, and student learning styles. Plan to deliver Unit 1, including Unit 1 quiz using previous, self-directed teaching style.</td>
<td>Send information about study through e-mail and video. Request students to complete consent forms, demographic questionnaire, and Satisfaction Pre-survey. Deliver Unit 1 in traditional teaching style (self-directed). Launch Unit 1 quiz. Request students post to the discussion board about Unit 1. Collect data from all instruments.</td>
<td>Analyze collected data from all instruments. Determine predominate student learning style in class. Determine satisfaction from discussion posts. Determine which assignment style to deliver from Table 7 for Cycle 2 based on data from Cycle 1.</td>
</tr>
<tr>
<td><strong>Cycle 2 (Weeks 3 and 4)</strong></td>
<td>Plan to deliver the assignment designed to match the most predominant learning style in the class. Plan to deliver Unit 2 and Unit 2 quiz.</td>
<td>Deploy prescribed assignment from Table 7 that is predicted to match the predominant learning style. Launch Unit 2 quiz. Request students post in discussion board about Unit 2. Collect data from all instruments.</td>
<td>Analyze collected data. Determine which learning style performed lowest. Determine satisfaction from discussion posts. Determine which assignment style to deliver for Cycle 3 based on Cycle 2 data.</td>
</tr>
<tr>
<td><strong>Cycle 3 (Weeks 5 and 6)</strong></td>
<td>Plan to deliver designed content to lowest performers as a group of learning styles. Plan to deliver Unit 3 and Unit 3 quiz.</td>
<td>Deploy prescribed content from Table 7 to match the lowest performers’ learning style group. Launch Unit 3 quiz. Request students post in discussion board about Unit 3. Collect data from all instruments.</td>
<td>Analyze collected data. Determine if delivery helped Cycle 2’s lowest performers. Determine satisfaction from discussion posts. Determine which learning style group needs improvement and deliver content accordingly.</td>
</tr>
<tr>
<td><strong>Cycle 4 (Weeks 7 and 8)</strong></td>
<td>Plan to deliver to lowest performers as a group of learning styles OR allow students to choose the assignment design that appeals most to them individually.</td>
<td>Deploy assignment(s) predicted to improve overall class performance. Launch Unit 4 quiz. Request students post in discussion board about Unit 4. Collect data from all instruments.</td>
<td>Analyze collected data. Determine if delivery helped the entire class performance. Determine satisfaction from discussion posts. Conclude if attempts to match assignments to learning styles improve performance and satisfaction.</td>
</tr>
</tbody>
</table>
The intended actions for Cycle 1 were to send an informational e-mail containing an explanation of the purpose of the study, along with links to both questionnaires and the pre-survey. Students were asked to submit via the course LMS, completed questionnaires and surveys as their first assignment. The first unit of study was delivered in Cycle 1 through an automated approach to provide more time to adequately analyze initial incoming data, plan action steps for Cycle 2, and establish a baseline of student performance under this automated and traditional online delivery method. To automate the delivery of the first unit, all Unit 1 content folders were preloaded with chapter slides, lecture notes, homework assignments, and a unit quiz. Settings for each folder within this unit were preset to allow access to and expiration of units automatically by predetermined dates. Students were instructed through course announcements, e-mails, and the course syllabus on how to complete the requirements of Unit 1 and were notified of due dates and deadlines. Finally, students were asked to record, through the discussion board, their satisfaction or dissatisfaction of how content was delivered in Cycle 1.

The observation phase of Cycle 1 included reviewing all collected data and activity gathered from this cycle. Data collected from the demographics questionnaire served to describe the study sample, while data from the pre-survey helped gauge satisfaction levels of prior online learning experiences. These prior satisfaction levels were instrumental as newly collected satisfaction data was collected and measured from each cycle. Results from the learning styles questionnaire helped categorize students into the various learning styles found in Table 2 and also helped determine which styles were most and least represented in the class. Results were analyzed and recorded using the format represented in Table 9. Student performance was also observed from unit quizzes and homework assignments. Finally, satisfaction data was observed, recorded, and analyzed from discussion board postings.
Table 9

**Incoming Data Record (example for each cycle)**

<table>
<thead>
<tr>
<th></th>
<th>Visual</th>
<th>Verbal</th>
<th>Active</th>
<th>Reflective</th>
<th>Range</th>
<th>Mo</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X-X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Quiz</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X-X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Before Cycle 2 began, it was necessary to reflect on data collected in Cycle 1 and determine if the performed actions were effective and what changes could be made to improve student performance and satisfaction in the next cycle. It was through this reflection that the delivery of the next unit of study was shaped and determined. Because the goal was to improve performance and perceptions of online learning, the next cycle specifically targeted the most predominant learning style group represented in the class. This information was obtained through results of the Felder-Soloman (1998) Index of Learning Styles Questionnaire.

The plan for Cycle 2 was to deliver the Unit 2 assignment in a manner that would best match the learning preference of the most predominantly represented group in the class. Table 7 guided the selection of the most appropriate design for these learners. Although this plan does not meet all learning preferences, the purpose of this action was to improve overall class performance and satisfaction with particular emphasis on meeting the most prevalent student learning style. The plan was also to include the Unit 2 quiz and collect satisfaction data from discussion board postings.

The action steps for Cycle 2 were to deploy chosen assignments from Table 7 and the Unit 2 quiz. Students were instructed to post a thread in the discussion board regarding their level of satisfaction with the delivery of Unit 2. Quizzes and assignments were graded, and data from the discussion board were collected and recorded.
Activities, grade performance, and satisfaction data were all observed, analyzed, and monitored. Incoming data from this cycle was compared to data collected from Cycle 1. Using the newly collected data, these important observations led directly into the reflection phase of Cycle 2, where a determination of the best plan of action for Cycle 3 was made.

Cycle 3 targeted the lowest performers as a learning style group from Cycle 2. Using the same approach as the last cycle, an assignment for Unit 3 was selected from Table 7 as the most appropriate design for the lowest performers’ learning style. A Unit 3 quiz was delivered, and discussion board posts were required to record student satisfaction. Assignments and quizzes were graded and recorded, and discussion board posts were observed, recorded, and analyzed. Data collected from Cycle 3 was compared against data received from Cycles 1 and 2 to determine if any improvements were made in performance and satisfaction when assignments were delivered to the lowest performers’ learning preference. At the end of this cycle, in the reflection stage, a new course of action was determined for Cycle 4.

The final cycle attempted to reach all learning preferences in the course. Using the initial data collected from the learning styles questionnaire, assignments for Unit 4 were selected from Table 7 and posted inside the course. Students were given a list of assignments and were allowed to select the design that appealed to them most. As with the last three cycles, students were required to post to the discussion board their thoughts and perceptions concerning the delivery of Unit 4. Assignments and quizzes were graded and recorded. Discussion posts were collected, analyzed, and recorded. Data from Cycle 4 was compared against the previous three cycles. A final reflection determined if student performance and satisfaction were improved when assignments were designed and delivered to meet learning preferences.

Table 10 illustrates the rubric that was used to measure performance for experimental assignments. Student assignments were evaluated in the following areas: following directions
according to instructions, thoroughly completing the assignment, applying new knowledge, formatting, and spelling and grammar. Unsatisfactory performance in any of the evaluation areas received points between 0-5. Students who only met some of the expectations within an evaluation area received between 6-10 points. Those who met the expectations of the assignment earned between 11 and 15, while those who exceeded expectations in an evaluation area received between 16 and 20 points.
Table 10

*Assignment Grading Rubric*

<table>
<thead>
<tr>
<th>Evaluation Criterion</th>
<th>Exceeds expectations</th>
<th>Meets expectations</th>
<th>Meets some expectations</th>
<th>Unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Followed directions</td>
<td>16-20</td>
<td>11-15</td>
<td>6-10</td>
<td>0-5</td>
</tr>
<tr>
<td>Clearly followed assignment directions and information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignment was submitted to proper Dropbox</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignment was submitted by due date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used correct software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thorough completion</td>
<td>16-20</td>
<td>11-15</td>
<td>6-10</td>
<td>0-5</td>
</tr>
<tr>
<td>Ample information was provided to answer all questions or components of the assignment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>16-20</td>
<td>11-15</td>
<td>6-10</td>
<td>0-5</td>
</tr>
<tr>
<td>Use of terms and concepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher level thinking – made good judgments of terms and theories according to relevance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate format</td>
<td>16-20</td>
<td>11-15</td>
<td>6-10</td>
<td>0-5</td>
</tr>
<tr>
<td>MLA double spacing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLA page numbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLA Works Cited page</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLA front page of report</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLA in-text citations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity and excellence</td>
<td>16-20</td>
<td>11-15</td>
<td>6-10</td>
<td>0-5</td>
</tr>
<tr>
<td>Submission was professionally delivered with no grammatical errors, easy to understand and follow.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity – displays a greater understanding of concepts through examples, visuals, and ideas.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data Analysis

I examined student performance and perceptions of online course materials when they were designed and delivered to meet a variety of compatible and non-compatible student learning styles. Both qualitative and quantitative data were gathered. Quantitative data was gathered from surveys administered at the beginning and end of the course. Information on demographics, including age, gender, and ethnicity was gathered through a questionnaire. Data regarding levels of satisfaction from previous online learning experiences was included in survey results. Other questions, were included such as items rating assignment clarity and effectiveness, level of ease/difficulty with online learning, and perceived levels of support from the instructor. Table 11 displays how this information was recorded.
Table 11

Percentages for Satisfaction in Online Learning

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th>Total Count</th>
<th>No Satisfaction</th>
<th>Very Little Satisfaction</th>
<th>Some Satisfaction</th>
<th>Much Satisfaction</th>
<th>Complete Satisfaction</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Survey Responses</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td>1. Clear Assignments</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2. Appropriate Work</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3. Feedback Effective</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4. Feedback Timely</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>5. Discussion Evaluation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6. Instructor</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Communication</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7. Clear Syllabus</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8. Clear Schedule</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9. Informative Links</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>10. Error-Free Content</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>11. Drop box Ease</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12. DB Interaction</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>13. Content for different Learning Styles</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>14. Authentic Activities</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>15. Content Layout</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>16. Technological Tools</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>17. DB Critical Thinking</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>18. Adequate Resources</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian or Alaska</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Native</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Asian</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Black or African American</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Native Hawaiian or Other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>White or Caucasian</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Female</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
In addition to gathering data about student perceptions of their online learning experiences, scores on unit quizzes were also collected and measured. Quizzes were based on two main objectives: to develop the student’s knowledge base regarding contemporary issues in management, as well as to provide future managers with approaches for dealing with others and the ability to handle interpersonal issues that can be difficult in management. Quizzes were comprised of multiple choice questions.

This study included four cycles that lasted two weeks each. At the end of each cycle, data were gathered and analyzed to determine where adjustments needed to be made to improve the next cycle. I collected important details from the Written Narratives (student discussion posts) regarding students’ perceptions of course design, delivery methods, and instructional content. I also discovered through these discussion posts what modifications students believed should be applied to the course and how satisfied they were with the course overall. These narratives provided critical, detailed information, from the students’ perspective, about what online strategies either worked or did not work or if there was any affect at all on outcomes when delivery methods were altered to meet learning styles.

Qualitative data gathered from Written Narratives and surveys were examined through a coding scheme created in Microsoft Excel. As I read narrative entries, I searched for repeated patterns and behaviors in order to create categories. Once my categories were created and coded, I next described each category that I found and made connections through reflection on my research questions. Finally, I interpreted the data that I had carefully coded and separated, looking for any connections, contradictions, or relationships that would help answer my research questions. I was careful to engage in this reflective practice or introspection in order to keep my objectivity throughout the course of my study (Schwalbach, 2003).
Descriptive statistics were used to analyze quantitative data gathered from unit quizzes and surveys. Measures of central tendency were performed to understand how students typically and collectively perform and respond attitudinally to online learning. For unit quizzes and homework scores, I calculated the mean score, and for Likert scale questions, I calculated the median or middle score.

Because this action research study consisted of four cycles of gathered data, it was necessary to calculate measures of dispersion in order to compare data from one cycle to the next. This was done through calculations of standard deviations. Table 12 details the overall approach to this study including research questions, the variables of interest, and statistical methods used.
Table 12

*Data Analysis for Research Questions*

<table>
<thead>
<tr>
<th>Research questions</th>
<th>Variables of interest</th>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is student academic performance affected by the manipulation of teaching styles in an online course?</td>
<td>Academic achievement</td>
<td>Means, standard deviations, percentile</td>
</tr>
<tr>
<td>2. Is student satisfaction affected when teaching style matches or is mismatched with student learning styles?</td>
<td>Course satisfaction</td>
<td>Inductive analysis</td>
</tr>
<tr>
<td>3. Do students achieve at a higher rate when individual learning styles are specifically targeted or when the course is delivered in an attempt to meet all learning styles?</td>
<td>Academic achievement</td>
<td>Means, standard deviations, percentile</td>
</tr>
<tr>
<td>4. Are students more satisfied with their instructional experience when individual learning styles are specifically targeted or when the course is delivered in an attempt to meet all learning styles?</td>
<td>Course satisfaction</td>
<td>Inductive analysis</td>
</tr>
</tbody>
</table>
CHAPTER 4

RESULTS

This chapter presents student perceptions and achievement when online course materials were designed and delivered to meet multiple learning styles for college students enrolled in a business management course (MGMT 1105). First, the study sample and a presentation of results from the 4 action research cycles are described. Next, the purpose of the study is restated, along with a discussion of the data analysis procedures used to answer the three research questions. The concluding section summarizes the findings.

Participants

A total of 21 students agreed to participate in the study, however the final sample consisted of 17 participants. Four students were dropped because they did not submit one or more quizzes or assignments. All participants were students at Southern Crescent Technical College in the state of Georgia, and enrolled in the business management course, MGMT 1105 Organizational Behavior, during an eight-week mini-semester in the spring of 2015.

Demographics Description

Students completed a brief demographic questionnaire (see Appendix B) to determine gender, race/ethnicity, and age. There were 15 female and 2 male participants, while distribution of race/ethnicity was relatively equal with 9 white students and 8 black students. The age of participants ranged from 20 to 49. Nearly half of participants were between 20 to 29 years of age, while the other half were 30 years of age or older. Nine were 20 to 29 years of age, while 5 students were 30 to 39. Three participants were in the 40 to 49 years of age. Demographic data for this sample appears to be consistent with SCTC’s student population with respect to gender,
race, and age, according to TCSG’s Knowledge Management System (KMS) report for spring semester 2015 (see Table 13).

Table 13

**TCSG Data Center Report for Spring Semester 2015**

<table>
<thead>
<tr>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>White</th>
<th>Black</th>
<th>Other</th>
<th>Under 21</th>
<th>21-30</th>
<th>31-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>4545</td>
<td>1555</td>
<td>2999</td>
<td>1888</td>
<td>2334</td>
<td>323</td>
<td>423</td>
<td>983</td>
<td>891</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>%</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>34.2%</td>
<td>65.8%</td>
<td>41.5%</td>
<td>51.4%</td>
<td>7.1%</td>
<td>18.4%</td>
<td>42.8%</td>
<td>38.8%</td>
<td></td>
</tr>
</tbody>
</table>

**Learning Styles**

During the first week of the spring semester 2015, participants were asked to assess and report their individual learning styles by completing the online Felder-Soloman (1998) Index of Learning Styles Questionnaire. More than half of the students in the class reported their learning style to be visual, while the other half stated their learning style to be active, verbal, or reflective. Of the 17 participants, 10 were visual learners, four were active learners, two were reflective learners, and one was a verbal learner.

**Pre-satisfaction of Participants**

To determine participants’ perceptions of past experiences and attitudes with online courses, students completed a satisfaction survey during the first week of the course. This survey contained 18 questions about prior online course experiences, which were rated using a 5-point Likert-type scale. Students rated each question with one of the following responses: 1 = No satisfaction (NS), 2 = Very little satisfaction (VLS), 3 = Some satisfaction (SS), 4 = Much satisfaction (MS), or 5 = Complete satisfaction (CS). Higher scores indicated higher satisfaction. Participants’ overall mean satisfaction scores for all items were quite high, with all resulting in a score of 4.0 or higher. Students indicated most satisfaction with assignments being linked to
course objectives, course content being free of grammatical and spelling errors, and font size and
type being consistent throughout the course. Students expressed the least satisfaction with
discussion board assignments leading to higher levels of interaction with other students, and
assignments being authentic or real-life to their field of study. There were no instances of no
satisfaction (see Table 14).
Table 14

Pre-Survey Response Summary

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
<th>NS</th>
<th>VLS</th>
<th>SS</th>
<th>MS</th>
<th>CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Requirements for drop box submissions were specified and easy to follow.</td>
<td>4.6</td>
<td>.589</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>33.3</td>
<td>57.1</td>
</tr>
<tr>
<td>2. Links were descriptive and provided information regarding the content.</td>
<td>4.5</td>
<td>.592</td>
<td>0</td>
<td>0</td>
<td>9.5</td>
<td>28.6</td>
<td>57.1</td>
</tr>
<tr>
<td>3. Assignments and activities were clearly linked to the course objective.</td>
<td>4.6</td>
<td>.583</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>28.6</td>
<td>61.9</td>
</tr>
<tr>
<td>4. Assignments were appropriate and effective for learning course content.</td>
<td>4.5</td>
<td>.592</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>38.1</td>
<td>52.4</td>
</tr>
<tr>
<td>5. Feedback was informative and clearly articulated.</td>
<td>4.5</td>
<td>.671</td>
<td>0</td>
<td>0</td>
<td>9.5</td>
<td>28.6</td>
<td>57.1</td>
</tr>
<tr>
<td>6. Evaluation criteria for discussion board activities were clearly specified in advance.</td>
<td>4.4</td>
<td>.663</td>
<td>0</td>
<td>0</td>
<td>9.5</td>
<td>38.1</td>
<td>47.6</td>
</tr>
<tr>
<td>7. Instructor effectively communicated any changes/clarified any misunderstanding regarding course requirements.</td>
<td>4.5</td>
<td>.592</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>38.1</td>
<td>52.4</td>
</tr>
<tr>
<td>8. Dates on the course schedule corresponded to drop box and discussion board submissions.</td>
<td>4.5</td>
<td>.671</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>33.3</td>
<td>57.1</td>
</tr>
<tr>
<td>9. Online course materials were free of spelling errors and grammatical errors.</td>
<td>4.6</td>
<td>.583</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>28.6</td>
<td>61.9</td>
</tr>
<tr>
<td>10. Discussion board assignments fostered a high level of interaction among students.</td>
<td>4.3</td>
<td>.714</td>
<td>0</td>
<td>0</td>
<td>14.3</td>
<td>38.1</td>
<td>42.9</td>
</tr>
<tr>
<td>11. Online course content included varied types of assignments to appeal to different learning styles.</td>
<td>4.4</td>
<td>.726</td>
<td>0</td>
<td>0</td>
<td>14.3</td>
<td>33.3</td>
<td>47.6</td>
</tr>
<tr>
<td>12. Online assignments included authentic, real-life activities.</td>
<td>4.3</td>
<td>.583</td>
<td>4.8</td>
<td>9.5</td>
<td>33.3</td>
<td>42.9</td>
<td></td>
</tr>
<tr>
<td>13. Font size and layout of the online content was consistent.</td>
<td>4.6</td>
<td>.583</td>
<td>0</td>
<td>0</td>
<td>4.8</td>
<td>28.6</td>
<td>61.9</td>
</tr>
<tr>
<td>14. Technological tools were used appropriately for the course content.</td>
<td>4.4</td>
<td>.663</td>
<td>0</td>
<td>0</td>
<td>9.5</td>
<td>38.1</td>
<td>47.6</td>
</tr>
<tr>
<td>15. Discussion board activities were designed to evoke further critical thinking about course content.</td>
<td>4.4</td>
<td>.726</td>
<td>0</td>
<td>0</td>
<td>14.3</td>
<td>33.3</td>
<td>47.6</td>
</tr>
<tr>
<td>16. Selected readings and resources were adequate for the course objectives.</td>
<td>4.5</td>
<td>.671</td>
<td>0</td>
<td>0</td>
<td>9.5</td>
<td>28.6</td>
<td>57.1</td>
</tr>
<tr>
<td>17. Feedback was delivered in a timely manner.</td>
<td>4.4</td>
<td>.726</td>
<td>0</td>
<td>0</td>
<td>14.3</td>
<td>33.3</td>
<td>47.6</td>
</tr>
<tr>
<td>18. Dates on the syllabus and course schedule corresponded to online readings.</td>
<td>4.5</td>
<td>.674</td>
<td>0</td>
<td>0</td>
<td>10.0</td>
<td>30.0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

Note. NS = No satisfaction. VLS = Very little satisfaction. SS = Some satisfaction. MS = Much Satisfaction. CS = Complete Satisfaction.
Action Research Cycles

This action research study involved four instructional cycles that were delivered as units to students, each lasting two weeks. The following pages describe how each unit was designed and delivered, how students performed academically with each unit, and how students liked or disliked elements of each unit.

Cycle 1

The first action research cycle did not attempt to design instruction to meet student learning styles, but was used to establish a baseline to determine how students performed under a self-directed teaching method, which is the predominant online instructional format at SCTC. This first cycle also allowed students time to acclimate to the online environment and complete preliminary data collection requirements. The first action research cycle lasted two weeks and was delivered as Unit 1. Students were assigned chapter readings, asked to view chapter slides, and completed a homework assignment that required answering end-of-chapter questions by a designated due date. After completing required readings and assignments, students were required to complete the Unit 1 quiz. Study participants were asked to submit consent forms, demographic questionnaires, pre-satisfaction surveys, and learning style assessment results. They were also requested to provide anonymous feedback about the delivery of the Unit 1 material through a discussion board posting labeled Written Narratives. The discussion board asked the following three guiding questions:

1. What did you like about this Unit’s online course?
2. What did you dislike about this Unit’s online course?
3. What would you change about this Unit’s online course?

The homework assignment in this unit, and the following three units, were graded using a basic rubric that evaluated students in the following categories:
1. Clearly followed given instructions regarding online submission. (Submitted to proper drop box, submitted by deadline, used correct software);

2. Ample information was provided to answer all questions or components of the assignment; Use of terms and concepts displaying a higher level of thinking;

3. Appropriate format used (MLA, spacing, page numbers, Works Cited, in-text citations);

and,

4. Length, grammar, conceptual flow, prioritization of concepts and ideas.

The Unit 1 quiz contained 30 multiple choice questions and was automatically graded by the online learning software.

**Cycle 1 observations and results.** Students’ academic performance for the Unit 1 quiz ranged from 33 to 100. Homework grades ranged from 0 to 100. Low student scores for Unit 1 homework reflected students not following directions, not submitting the assignment on time, or not completing all assigned questions. The lowest performing learner group was visual learners whose test scores averaged 72 and homework scores averaged 60. The verbal learning style group, which only represents one learner, outperformed other learning groups with a quiz grade of 83 and a homework grade of 100. The next highest performing group, reflective learners, had two students represented, followed by four active learners. The entire class returned an overall mean homework score of 86.13 and a mean quiz score of 75.66. The 18.37 standard deviation for homework was considerably higher than the 5.06 standard deviation for quiz scores because several students did not submit their homework and received a grade of zero.
Table 15

*Action Research Cycle 1 Performance*

<table>
<thead>
<tr>
<th></th>
<th>Visual</th>
<th>Verbal</th>
<th>Active</th>
<th>Reflective</th>
<th>Range</th>
<th>Mo</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>60.13</td>
<td>100</td>
<td>84.36</td>
<td>100</td>
<td>0-100</td>
<td>100</td>
<td>92.18</td>
<td>18.37</td>
</tr>
<tr>
<td>Quiz</td>
<td>71.9</td>
<td>83</td>
<td>72.75</td>
<td>75</td>
<td>33-100</td>
<td>83</td>
<td>73.88</td>
<td>5.06</td>
</tr>
</tbody>
</table>

**Narratives.** To gain an understanding of student satisfaction under a self-directed online learning unit, participants were asked to make anonymous posts to a discussion board labeled Written Narratives. They were asked to report what they liked or disliked about the delivery of Unit 1 and what they would like changed. A coding scheme was developed to help interpret the narratives. Because students were asked three basic questions about course satisfaction, dissatisfaction, and recommend changes, these three topics became the major categories for coding. Next, after rereading this data, I created codes for passages according to the three established categories. For the first major category, satisfaction, codes were created for the four items that satisfied students most concerning the course—course satisfaction, instructor satisfaction, assignment satisfaction, and design satisfaction. Design satisfaction pertained to students liking the layout or setup of the course. For the dissatisfaction category, codes were created for the five areas where students expressed dissatisfaction—workload, course design, assignments, personal dissatisfaction, and test dissatisfaction. For the category of recommended changes, codes were created for the five areas where students suggested changes—course design or assignment changes, workload changes, test changes, and personal changes. Finally, descriptions were developed to describe the common characteristics of the categories for each code (see Table 16).
Table 16

Coding Scheme for Written Narrative Data

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td>Course satisfaction</td>
<td>Enjoyment/interest with course content</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Instructor satisfaction</td>
<td>Liked communication and response time</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Assignment satisfaction</td>
<td>Enjoyed the assigned materials</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Design satisfaction</td>
<td>Liked layout or setup of course</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>Workload dissatisfaction</td>
<td>Disliked number of assignments or tests</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>Design dissatisfaction</td>
<td>Disliked test timer or layout of course</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>Content/Assignment dissatisfaction</td>
<td>Disliked contents or assignments</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>Personal dissatisfaction</td>
<td>Procrastination and time management</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>Test dissatisfaction</td>
<td>Disliked test answers and/or number of chapters for test</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>Neutral for dislikes</td>
<td>No dislikes were stated</td>
</tr>
<tr>
<td>Changes</td>
<td>Course Design/Assignment changes</td>
<td>Include audio, change assignments, change discussion topics</td>
</tr>
<tr>
<td>Changes</td>
<td>Workload changes</td>
<td>Minimize readings and assignments</td>
</tr>
<tr>
<td>Changes</td>
<td>Test changes</td>
<td>Increase time for tests, test over fewer chapters</td>
</tr>
<tr>
<td>Changes</td>
<td>Personal changes</td>
<td>Procrastination and time management</td>
</tr>
<tr>
<td>Changes</td>
<td>Neutral for changes</td>
<td>No changes were stated</td>
</tr>
</tbody>
</table>
Frequency of comments about satisfaction were recorded concerning instructor communication, course material, time allotted for homework assignments, structure and layout of the course, learning about learning style, and clear instructions (see Table 17). There were nine occurrences of students expressing satisfaction in the design and layout of the course. One student said, “I like how everything is laid out, very structured and easy-to-follow; straight to the point instructions.” Another student stated, “I liked the fact that everything was broken down into steps for completion and everything was easy to understand.” Finally, with respect to course design, one student reported, “I really like the class setup; all the instructions were clear to understand.”

Areas where students expressed dislike in the delivery of Unit 1 were quantity of homework questions, time allotted for unit quiz, workload for one unit, too many assigned chapter readings, too much written work, not enough discussion boards, and test material. The most common complaints were with workload and time given for the quiz. There were 11 students who commented on the quantity of work and two students who commented on the need for more time for the quiz. There were six students who indicated they did not dislike anything about Unit 1 content or delivery. There were four instances where students suggested more time should be allowed for quizzes and four instances where students suggested homework assignments should be scaled down. Seven students recommended that no changes needed to be made. One student wanted to see e-readings added to the online course (See Table 17).
Table 17

Frequency Distribution of Written Narratives from Cycle 1

<table>
<thead>
<tr>
<th>Code</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course satisfaction</td>
<td>9</td>
<td>11.50</td>
</tr>
<tr>
<td>Instructor satisfaction</td>
<td>3</td>
<td>3.80</td>
</tr>
<tr>
<td>Assignment satisfaction</td>
<td>11</td>
<td>14.10</td>
</tr>
<tr>
<td>Design satisfaction</td>
<td>9</td>
<td>11.50</td>
</tr>
<tr>
<td>Workload dissatisfaction</td>
<td>11</td>
<td>14.10</td>
</tr>
<tr>
<td>Content or assignment dissatisfaction</td>
<td>2</td>
<td>2.60</td>
</tr>
<tr>
<td>Personal dissatisfaction</td>
<td>6</td>
<td>7.70</td>
</tr>
<tr>
<td>Test dissatisfaction</td>
<td>2</td>
<td>2.60</td>
</tr>
<tr>
<td>Neutral for dislikes</td>
<td>6</td>
<td>7.70</td>
</tr>
<tr>
<td>Course design or Assignment changes</td>
<td>4</td>
<td>5.10</td>
</tr>
<tr>
<td>Workload changes</td>
<td>4</td>
<td>5.10</td>
</tr>
<tr>
<td>Test changes</td>
<td>4</td>
<td>5.10</td>
</tr>
<tr>
<td>Personal changes</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Neutral for changes</td>
<td>7</td>
<td>9.00</td>
</tr>
</tbody>
</table>

Cycle 1 reflections and Cycle 2 planning. As part of action research, it is necessary to analyze and reflect on collected data from one research cycle to strategically develop an action plan for the next cycle (Mertler, 2012). It was clear from the learning styles inventory that visual learners represented most learners in the class and that quiz and homework grades indicated that this learner group was also, initially, the lowest performing group academically. Based on this information and Written Narrative reports, several actions were designed and implemented to improve satisfaction and performance of students in Cycle 2. The plan for Cycle 2 was to deliver course content that would appeal to visual learners, which included more video presentations, models, diagrams, and charts. Students were also given a choice between two homework assignments for this unit of study. One option was for students to conduct their own online research, based on Unit 2 chapter materials and find diagrams, photos, or videos that best described chapter content. Next, students were instructed to copy and paste the image or web address into a word processing document, followed by a well-written essay that explained why
they selected these particular images or websites and how they related to the field of management.

The second homework option involved the creation of five rules or policies pertaining to digital communication in a business environment. Those who chose this option had to create a five-slide presentation and provide thorough descriptions and explanations for each rule and why they felt these rules would be beneficial in the world of business.

In addition to designing homework assignments for Unit 2, diagrams, charts, models, and videos were also loaded into Unit 2 content folders to provide students a visual representation of chapter material. Finally, the test timer was increased by 30 minutes for all remaining unit quizzes in the study.

**Cycle 2**

The plan for Cycle 2 was to deliver Unit 2 content and assignments in a manner that would best match the learning preference of visual learners, the predominant learning style in the class. Although this plan does not specifically meet all learning preferences, the purpose of this action was to improve overall class performance and satisfaction with particular emphasis on meeting the most prevalent student learning style. The plan also included administering a Unit 2 quiz and collecting satisfaction data from the Written Narratives discussion board.

**Cycle 2 observations and results.** Academic performance improved for both quiz and homework grade categories. Quiz averages increased 10 points, from Cycle 1 to Cycle 2. Homework grade averages also improved by eight points. The learner group that showed the most improvement in homework grades was visual learners with a 24 point increase. The group that showed the most improvement in quiz scores was verbal learners with a 17 point increase. The lowest performing learner groups for quiz scores were active and reflective learners whose average was 80, followed by visual learners at 83. The one verbal learner outperformed other
learning groups with a quiz grade of 100 and a homework grade of 100, which was the same homework grade earned in Cycle 1 by this student. The drop in standard deviation for homework in Cycle 2 indicates less variability in scores of Cycle 1 (see Table 18 and Figure 3).

Table 18

<table>
<thead>
<tr>
<th></th>
<th>Visual</th>
<th>Verbal</th>
<th>Active</th>
<th>Reflective</th>
<th>Range</th>
<th>Mo</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homework</strong></td>
<td>83.7</td>
<td>100</td>
<td>98</td>
<td>96</td>
<td>0-100</td>
<td>100</td>
<td>97.0</td>
<td>7.33</td>
</tr>
<tr>
<td><strong>Quiz</strong></td>
<td>83.0</td>
<td>100</td>
<td>80</td>
<td>80</td>
<td>60-100</td>
<td>85</td>
<td>81.5</td>
<td>9.60</td>
</tr>
</tbody>
</table>

*Figure 3.* Cycle 1 and 2 mean performance score comparisons.

**Narratives.** Participants recorded valuable information through the Written Narratives discussion board about what they liked, disliked or would like to see changed about the delivery and content of Unit 2. The following were noted areas of satisfaction: self-assessments on communication, information regarding digital etiquette, information about effective communication, information about proper ways to conduct business, research about marketing businesses, changes made to homework, choice of homework assignments, supplemental videos, test content and structure, visual aids, composition of the unit, and clear assignments. As Table
19 illustrates, instances in course satisfaction increased from 9 to 11. There were 12 occasions where students reported satisfaction with assignments. One student stated, “Honestly, I loved this week’s class. One of my favorite things to do is to create power points. I thought the material was very informational. I really liked watching the videos.” There were two reports of dissatisfaction concerning the design of Unit 2. According to one student, “The only thing I don’t like is not being able to see the other students’ videos or power points. I would love to be able to see others’ works and give them comments about their hard work.” One recommended change for the unit was for the instructor to record a personal video lecture of unit’s course content material. This student stated,

In an online class, the teacher should have to teach the class by video and put in the assignment so we fully understand what the book is trying to say from a teacher’s point of view. No online class should be without a video like that.

Table 19

*Frequency Distribution of Written Narratives from Cycle 2*

<table>
<thead>
<tr>
<th>Code</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course satisfaction</td>
<td>11</td>
<td>16.70</td>
</tr>
<tr>
<td>Instructor satisfaction</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Assignment satisfaction</td>
<td>12</td>
<td>18.20</td>
</tr>
<tr>
<td>Design satisfaction</td>
<td>4</td>
<td>6.10</td>
</tr>
<tr>
<td>Workload dissatisfaction</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Content or assignment dissatisfaction</td>
<td>2</td>
<td>3.00</td>
</tr>
<tr>
<td>Personal dissatisfaction</td>
<td>1</td>
<td>1.50</td>
</tr>
<tr>
<td>Test dissatisfaction</td>
<td>2</td>
<td>3.00</td>
</tr>
<tr>
<td>Neutral for dislikes</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Course design or Assignment changes</td>
<td>14</td>
<td>21.20</td>
</tr>
<tr>
<td>Workload changes</td>
<td>3</td>
<td>4.50</td>
</tr>
<tr>
<td>Test changes</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Personal changes</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Neutral for changes</td>
<td>0</td>
<td>0.00</td>
</tr>
</tbody>
</table>
**Cycle 2 reflections and planning of Cycle 3.** Based on performance outcomes and collected narrative data, visual learners responded positively, both academically and perceptually, when the course assignments and content were customized to appeal to their learning preference. In an effort to improve scores of Cycle 2’s lowest performers, assignments and content in Unit 3 were crafted to meet the learning styles of active and reflective learners. This unit design will also remove aspects that appealed to visual learners to determine if this treatment will produce lower scores for the visual learner group.

Unit 3 contained two homework assignment designs. One assignment was designed for active learners and the other assignment was designed for reflective learners. Students were allowed to select the design they liked best. Visual and verbal learners were also required to decide between these two assignment options.

Since active learners prefer to apply new knowledge, three short case studies were assigned that required students to use theories learned presented in the unit and develop a solution to the case problem through analytical thinking. Students were also required to participate in a discussion board to share ideas about their solutions.

Reflective learners were asked to write a short reflection paper on assigned chapters and develop five ideal company policies based from information learned. Each policy required a full description and explanation of its importance to management.

**Cycle 3**

Cycle 3 was designed to meet both active and reflective learners since these learner groups’ test scores were the lowest Unit 2. The design of Unit 3 kept the element of creativity that the previous cycle offered. It did not contain diagrams and charts; however, it did provide slides and videos. Cycle 3 offered an opportunity to communicate and share assignment ideas through a discussion board and to apply new knowledge through case study assignments for
students that preferred active learning. Case studies also work well for reflective learners because they provide an opportunity to reflect and process new ideas in order to apply careful analysis and critical thinking.

**Cycle 3 observations and results.** Fifteen students chose the assignment for active learners and 2 students chose the assignment for reflective learners. Reflective learners' test and homework scores improved by 4 points, while active learners' test scores went down by 2 points and homework went down by 11 points. Visual learners' test scores went down 8 points and down three points in homework. The one verbal learner maintained a perfect score of 100 in both categories. The only learner group to improve in Cycle 3 was the reflective learners, which consisted of two students (see Table 20). Figure 4 illustrates comparisons of students’ mean performance scores among the three cycles.

Table 20

<table>
<thead>
<tr>
<th>Action Research Cycle 3 Performance</th>
<th>Visual</th>
<th>Verbal</th>
<th>Active</th>
<th>Reflective</th>
<th>Range</th>
<th>Mo</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>83.8</td>
<td>100</td>
<td>86.5</td>
<td>100</td>
<td>0-100</td>
<td>100</td>
<td>93.25</td>
<td>8.64</td>
</tr>
<tr>
<td>Quiz</td>
<td>77.2</td>
<td>100</td>
<td>78.0</td>
<td>84</td>
<td>60-100</td>
<td>88</td>
<td>81.00</td>
<td>10.58</td>
</tr>
</tbody>
</table>

*Figure 4.* Cycle 1, 2, and 3 mean performance score comparisons.
**Narratives.** Satisfaction levels appeared to decline from Cycle 2 to Cycle 3. Cycle 2 had 11 reports of students expressing satisfaction with the overall course, whereas Cycle 3 had only 4 students reporting satisfaction. Reports of specific assignment satisfaction dropped nearly half from 12 to 6 occurrences. Those who reported assignment satisfaction liked having an option of homework assignments. The quiz is the only area in which students clearly expressed dissatisfaction with Unit 3. One student stated, “I dislike that the test was not in order by chapters which confused me just a little.” Nine students found no dislikes with the course, while 13 recommended no changes to the course (see Table 21).

Table 21

*Frequency Distribution of Written Narratives from Cycle 3*

<table>
<thead>
<tr>
<th>Code</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course satisfaction</td>
<td>4</td>
<td>8.30</td>
</tr>
<tr>
<td>Instructor satisfaction</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Assignment satisfaction</td>
<td>6</td>
<td>12.50</td>
</tr>
<tr>
<td>Design satisfaction</td>
<td>7</td>
<td>14.60</td>
</tr>
<tr>
<td>Workload dissatisfaction</td>
<td>3</td>
<td>6.30</td>
</tr>
<tr>
<td>Content or assignment</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>dissatisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal dissatisfaction</td>
<td>1</td>
<td>2.10</td>
</tr>
<tr>
<td>Test dissatisfaction</td>
<td>1</td>
<td>2.10</td>
</tr>
<tr>
<td>Neutral for dislikes</td>
<td>1</td>
<td>2.10</td>
</tr>
<tr>
<td>Course design or Assignment</td>
<td>9</td>
<td>18.80</td>
</tr>
<tr>
<td>changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload changes</td>
<td>1</td>
<td>2.10</td>
</tr>
<tr>
<td>Test changes</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Personal changes</td>
<td>1</td>
<td>2.10</td>
</tr>
<tr>
<td>Neutral for changes</td>
<td>2</td>
<td>4.20</td>
</tr>
</tbody>
</table>

**Cycle 3 reflections and Cycle 4 planning.** Cycle 3 data indicated that when treatment targeting visual learners was removed, academic performance decreased for this learner group. Additionally, because visual learners accounted for 60% of the class, the class grade average also
declined. Because my goal was to produce successful and satisfied students, Cycle 4 was
designed to address all learning style needs. Assignments were specifically crafted for each
learner group according to preferred learning style elements. Students were directed to their
assignment according to learning style to ensure they received an assignment that would appeal
to them most.

**Cycle 4**

The plan of the final action research cycle was to increase levels of student satisfaction
and performance by attempting to meet all learning styles. This was done by creating
assignments for each learning style group represented in the class. This cycle also delivered a
post-satisfaction survey to analyze student satisfaction at the end of the course.

Because visual learners performed well by creating a visual representation of materials
learned in Unit 2, a similar approach was taken for the Unit 4 assignment. Since verbal learners
enjoy writing summaries, this group was asked to create a written report of materials learned in
this unit. Finally, because active and reflective learners responded positively to Cycle 2
assignment design, comparable assignments were crafted in Cycle 4 for these learners.

All learners were given the same assignment scenario where they were to imagine
themselves as the newly hired department leader of a well-known company. One responsibility
of this management position is to improve the department's attendance, overall morale,
production efficiency, customer service, product quality, or teamwork. Students were assigned
to create an employee motivation plan using specific guidelines provided in Table 22.
## Table 22

### Assignments Administered in Cycle 4

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual</strong></td>
<td><strong>PART 1:</strong> Create a PowerPoint that clearly does the following:</td>
</tr>
<tr>
<td></td>
<td>• Introduces yourself to your department (provide a background as to why been hired for this position)</td>
</tr>
<tr>
<td></td>
<td>• Identifies the problem (for example, chronic tardiness throughout the department)</td>
</tr>
<tr>
<td></td>
<td>• Identifies why this problem needs to be addressed (be creative here! Explain what the problem has done to the company)</td>
</tr>
<tr>
<td></td>
<td>• Introduces your motivation plan (This could take the shape of an incentive program. For help using positive reinforcement, refer to pages 259 - 262; and for the Expectancy Theory, pages 267 - 268)</td>
</tr>
<tr>
<td></td>
<td>• Explains the benefits of your plan for both the employees and the company as a whole</td>
</tr>
<tr>
<td><strong>PART 2:</strong></td>
<td>Create an MS Word Document that answers the following questions about your PowerPoint:</td>
</tr>
<tr>
<td></td>
<td>1. What leadership traits will be necessary to make your program effective? (Don’t just list traits, please explain why each trait is necessary)</td>
</tr>
<tr>
<td></td>
<td>2. Which motivation principle did you follow?</td>
</tr>
<tr>
<td></td>
<td>3. How will you be able to evaluate motivation and identify barriers to achievement?</td>
</tr>
</tbody>
</table>

| **Verbal**     | **PART 1:** Create a proposal package for your company’s CEO using MS Word. Make sure your package contains and clearly states the following: |
|                | 1. A **cover letter** that a.) introduces yourself (provide a background as to why you’ve been hired for this position); b.) describes your team/department (how many employees and what they do); c.)Identifies the problem (for example, chronic tardiness throughout the department); d.)Identifies why this problem needs to be corrected (be creative here! Explain what the problem has done to the company) |
|                | 2. Your **motivation plan** (This could take the shape of an incentive program. For help using positive reinforcement, refer to pages 259 - 262; and for the Expectancy Theory, pages 267 - 268) |
|                | 3. A **summary** that explains the benefits of your plan for both the employees and the company as a whole |
| **PART 2:**    | Create an MS Word Document that answers the following questions about your proposal package: |
|                | 1. What leadership traits will be necessary to make your program effective? (Don’t just list traits, please explain how each trait is necessary) |
|                | 2. Which motivation principle(s) did you use for your motivation plan? |
|                | 3. How will you be able to evaluate motivation and identify barriers to achievement? |
PART 1: (choose option 1 OR option 2) Also, you must complete the Discussion Board inside this unit.

Option 1: Create a PowerPoint that clearly does the following:
- Introduces yourself to your team (provide a background as to why you've been hired for this position)
- Identifies the problem (for example, chronic tardiness throughout the department)
- Identifies why this problem needs to be corrected (be creative here! Explain what the problem has done to the company)
- Introduces your motivation plan (This could take the shape of an incentive program. For help using positive reinforcement, refer to pages 259 - 262; and for the Expectancy Theory, pages 267 - 268)
- Explains the benefits of your plan for both the employees and the company as a whole

Option 2: Create a proposal package for your company's CEO using MS Word. Make sure your package contains and clearly states the following:
1. A **cover letter** that a.) introduces yourself (provide a background as to why you've been hired for this position); b.) describes your team/department (how many employees and what they do); c.) identifies the problem (for example, chronic tardiness throughout the department); d.) identifies why this problem needs to be corrected (be creative here! Explain what the problem has done to the company)
2. Your **motivation plan** (This could take the shape of an incentive program. For help using positive reinforcement, refer to pages 259 - 262; and for the Expectancy Theory, pages 267 - 268)
3. A **summary** that explains the benefits of your plan for both the employees and the company as a whole.

PART 2: Discussion Board participation (not optional): Using the Discussion Board inside the Homework Folder, share your PowerPoint or Proposal and answer the following questions. Be sure to respond to 1 classmate.
1. What leadership traits will be necessary to make your program effective? (Don't just list traits, please explain how each trait is necessary)
2. Which motivation principle(s) did you use for your motivation plan?
3. How will you be able to evaluate motivation and identify barriers to achievement?

Reflective PART 1: (choose option 1 OR option 2)

Option 1: Create a PowerPoint that clearly does the following:
- Introduces yourself to your team (provide a background as to why you've been hired for this position)
- Identifies the problem (for example, chronic tardiness throughout the department)
- Identifies why this problem needs to be corrected (be creative here! Explain what the problem has done to the company)
- Introduces your motivation plan (This could take the shape of an incentive program. For help using positive reinforcement, refer to pages 259 - 262; and for the Expectancy Theory, pages 267 - 268)
- Explains the benefits of your plan for both the employees and the company as a whole
Option 2: Create a proposal package for your company's CEO using MS Word. Make sure your package contains and clearly states the following:

1. A **cover letter** that a.) introduces yourself (provide a background as to why you've been hired for this position); b.) describes your team/department (how many employees and what they do); c.) identifies the problem (for example, chronic tardiness throughout the department); d.) identifies why this problem needs to be corrected (be creative here! Explain what the problem has done to the company)

2. Your **motivation plan** (This could take the shape of an incentive program. For help using positive reinforcement, refer to pages 259 - 262; and for the Expectancy Theory, pages 267 - 268).

**PART 2:** Create an MS Word Document that answers the following questions about your PowerPoint:

1. What leadership traits will be necessary to make your program effective? (Don't just list traits, please explain how each trait is necessary)
2. Which motivation principle did you follow?
3. How will you be able to evaluate motivation and identify barriers to achievement?
**Cycle 4 observations and results.** Visual learners’ test scores improved by 11 points; however, homework scores went down four points due to two students receiving a zero for not submitting their work. For those visual learners who did submit their assignments in Unit 4, homework scores increased 14 points from Unit 3. The one verbal learner’s test score went down five points and homework score went down six points. Interestingly, this student had consecutive, perfect scores for Cycles 2 and 3. Active learners’ test scores went up two points and homework scores improved by ten points. Reflective learners’ test scores rose six points, while homework scores remained steady at 100 (see Table 23). Mean performance scores were compared among the four cycles as Figure 5 displays. Both class mean homework and quiz scores improved from Cycle 3 to Cycle 4.

Table 23

*Action Research Cycle 4 Performance*

<table>
<thead>
<tr>
<th></th>
<th>Visual</th>
<th>Verbal</th>
<th>Active</th>
<th>Reflective</th>
<th>Range</th>
<th>Mo</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>76.6</td>
<td>94</td>
<td>96.5</td>
<td>100</td>
<td>0-100</td>
<td>94</td>
<td>95.25</td>
<td>10.41</td>
</tr>
<tr>
<td>Quiz</td>
<td>85.5</td>
<td>95</td>
<td>80</td>
<td>90</td>
<td>60-100</td>
<td>85</td>
<td>87.75</td>
<td>6.39</td>
</tr>
</tbody>
</table>
Figure 5. Cycles 1, 2, 3, and 4 mean performance score comparisons.

Narratives. Student satisfaction with the course appeared to improve from Cycle 3 to Cycle 4. There were two additional instances of students reporting course satisfaction than in Cycle 3. A slight improvement was also noted in instructor satisfaction, while evidence of dissatisfaction in testing remained the same. One student stated, “I didn't really dislike this week’s class except for the timing on the test.” Another said, “I disliked the time given for the test this week.” Suggestions were made to allow more time on tests and to minimize number of assignments. Half the class suggested that no changes be made to the course, while 11 students found no dislikes concerning the course (see Table 24). All respondents reported that they would recommend this class to others. According to one student, “Yes I would definitely recommend this class, I really enjoyed this class.”
Table 24

*Frequency Distribution of Written Narratives from Cycle 4*

<table>
<thead>
<tr>
<th>Code</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course satisfaction</td>
<td>6</td>
<td>9.20</td>
</tr>
<tr>
<td>Instructor satisfaction</td>
<td>1</td>
<td>1.50</td>
</tr>
<tr>
<td>Assignment satisfaction</td>
<td>4</td>
<td>6.20</td>
</tr>
<tr>
<td>Design satisfaction</td>
<td>6</td>
<td>9.20</td>
</tr>
<tr>
<td>Workload dissatisfaction</td>
<td>1</td>
<td>1.50</td>
</tr>
<tr>
<td>Content or assignment</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>dissatisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal dissatisfaction</td>
<td>2</td>
<td>3.10</td>
</tr>
<tr>
<td>Test dissatisfaction</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Neutral for dislikes</td>
<td>2</td>
<td>3.10</td>
</tr>
<tr>
<td>Course design or assignment</td>
<td>11</td>
<td>16.90</td>
</tr>
<tr>
<td>changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workload changes</td>
<td>2</td>
<td>3.10</td>
</tr>
<tr>
<td>Test changes</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Personal changes</td>
<td>4</td>
<td>6.20</td>
</tr>
<tr>
<td>Neutral for changes</td>
<td>2</td>
<td>3.10</td>
</tr>
</tbody>
</table>

**Post-satisfaction Survey.** A survey was administered at the end of the course to determine student satisfaction. Items where students reported highest levels of complete satisfaction (CS) were that the dates on the course schedule corresponded to drop box and discussion board submissions, online course materials were free of spelling errors and grammatical errors, and font size and layout of the online content was consistent. This data is consistent with the written narrative data where students reported satisfaction with course design and layout.

The only report of very little satisfaction (VLS) was noted in the area of discussion board assignments. Considering most of the class was comprised of visual learners, who would not necessarily enjoy this level of interaction in a discussion board, these results were not surprising.
Active learners, which only represented four students in the course, preferred assignments such as group activities and discussion (see Table 25).

Table 25

**Post-Survey Response Summary**

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
<th>NS</th>
<th>VLS</th>
<th>SS</th>
<th>MS</th>
<th>CS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Requirements for drop box submissions were specified and easy to follow.</td>
<td>4.7</td>
<td>.588</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>16.7</td>
<td>77.8</td>
</tr>
<tr>
<td>2. Links were descriptive and provided information regarding the content.</td>
<td>4.7</td>
<td>.577</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>22.2</td>
<td>72.2</td>
</tr>
<tr>
<td>3. Assignments and activities were clearly linked to the course objective.</td>
<td>4.6</td>
<td>.685</td>
<td>0</td>
<td>0</td>
<td>11.1</td>
<td>22.2</td>
<td>66.7</td>
</tr>
<tr>
<td>4. Assignments were appropriate and effective for learning course content.</td>
<td>4.6</td>
<td>.678</td>
<td>0</td>
<td>0</td>
<td>11.1</td>
<td>16.7</td>
<td>72.2</td>
</tr>
<tr>
<td>5. Feedback was informative and clearly articulated.</td>
<td>4.6</td>
<td>.591</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>27.8</td>
<td>66.7</td>
</tr>
<tr>
<td>6. Evaluation criteria for discussion board activities were clearly specified in advance.</td>
<td>4.6</td>
<td>.591</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>27.8</td>
<td>66.7</td>
</tr>
<tr>
<td>7. Instructor effectively communicated any changes/clarified any misunderstanding regarding course requirements.</td>
<td>4.7</td>
<td>.558</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>16.7</td>
<td>77.8</td>
</tr>
<tr>
<td>8. Dates on the course schedule corresponded to drop box and discussion board submissions.</td>
<td>4.7</td>
<td>.533</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>11.1</td>
<td>83.3</td>
</tr>
<tr>
<td>9. Online course materials were free of spelling errors and grammatical errors.</td>
<td>4.8</td>
<td>.533</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>11.1</td>
<td>83.3</td>
</tr>
<tr>
<td>10. Discussion board assignments fostered a high level of interaction among students.</td>
<td>4.3</td>
<td>.943</td>
<td>0</td>
<td>5.6</td>
<td>16.7</td>
<td>16.7</td>
<td>61.1</td>
</tr>
<tr>
<td>11. Online course content included varied types of assignments to appeal to different learning styles.</td>
<td>4.6</td>
<td>.678</td>
<td>0</td>
<td>0</td>
<td>11.1</td>
<td>16.7</td>
<td>72.2</td>
</tr>
<tr>
<td>12. Online assignments included authentic, real-life activities.</td>
<td>4.6</td>
<td>.685</td>
<td>0</td>
<td>0</td>
<td>11.1</td>
<td>22.2</td>
<td>66.7</td>
</tr>
<tr>
<td>13. Font size and layout of the online content was consistent.</td>
<td>4.8</td>
<td>.533</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>11.1</td>
<td>83.3</td>
</tr>
<tr>
<td>14. Technological tools were used appropriately for the course content.</td>
<td>4.7</td>
<td>.667</td>
<td>0</td>
<td>0</td>
<td>11.1</td>
<td>11.1</td>
<td>77.8</td>
</tr>
<tr>
<td>15. Discussion board activities were designed to evoke further critical thinking about course content.</td>
<td>4.4</td>
<td>.831</td>
<td>0</td>
<td>0</td>
<td>22.2</td>
<td>11.1</td>
<td>66.7</td>
</tr>
<tr>
<td>16. Selected readings and resources were adequate for the course objectives.</td>
<td>4.7</td>
<td>.577</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>22.2</td>
<td>72.2</td>
</tr>
<tr>
<td>17. Feedback was delivered in a timely manner.</td>
<td>4.6</td>
<td>.678</td>
<td>0</td>
<td>0</td>
<td>11.1</td>
<td>16.7</td>
<td>72.2</td>
</tr>
<tr>
<td>18. Dates on the syllabus and course schedule corresponded to online readings.</td>
<td>4.7</td>
<td>.558</td>
<td>0</td>
<td>0</td>
<td>5.6</td>
<td>16.7</td>
<td>77.8</td>
</tr>
</tbody>
</table>

*Note. NS = No satisfaction. VLS = Very little satisfaction. SS = Some satisfaction. MS = Much Satisfaction. CS = Complete Satisfaction.*
Purpose Statement

The purpose of this study was to explore the effects of designing and delivering online course materials to meet a variety of student learning styles in an effort to improve student performance in and satisfaction with online courses. The process used in this study can serve as a guide to develop and design future online courses to produce successful students.

The variables of interest, student academic achievement and satisfaction, were examined after customized instructional modules, designed to meet selected learning styles, were delivered to students in a first-year online business management course. The following research questions were posed:

1. Is student academic performance affected by the manipulation of teaching materials in an online course?
2. Is student satisfaction affected when teaching materials are manipulated to reach student learning styles?
3. Are students more satisfied with their instructional experience when individual learning styles are specifically targeted or when the course is delivered in an attempt to meet all learning styles?

Analysis of Research Questions

Two surveys, two questionnaires, four unit quizzes, four homework assignments, and four end-of-cycle Written Narratives were collected from students enrolled in a college business management course (MGMT 1105) at a technical college in the state of Georgia. Participants completed surveys, questionnaires, quizzes, assignments, and narratives over an eight-week course term from March 2015 through May 2015.
Research Question One

The first research question asked, “Is student academic performance affected by the manipulation of teaching materials in an online course?” Table 26 displays the descriptive data gathered from all students in the course, including those who did not submit homework assignments. When content material was altered and delivered differently from Cycle 1 to Cycle 2, academic performance improved in both homework and quiz grades. When I continued to attempt to reach student learning styles under Cycles 3 and 4, student homework performance continued to remain higher than in Cycle 1 when student learning styles were not considered.

Table 26

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cycle 1</td>
<td>0</td>
<td>100</td>
<td>92.18</td>
<td>18.37</td>
</tr>
<tr>
<td>Cycle 2</td>
<td>0</td>
<td>100</td>
<td>97.00</td>
<td>7.33</td>
</tr>
<tr>
<td>Cycle 3</td>
<td>0</td>
<td>100</td>
<td>93.25</td>
<td>8.64</td>
</tr>
<tr>
<td>Cycle 4</td>
<td>0</td>
<td>100</td>
<td>95.25</td>
<td>5.68</td>
</tr>
<tr>
<td>Unit quiz grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cycle 1</td>
<td>33</td>
<td>100</td>
<td>73.88</td>
<td>5.06</td>
</tr>
<tr>
<td>Cycle 2</td>
<td>60</td>
<td>100</td>
<td>81.50</td>
<td>9.60</td>
</tr>
<tr>
<td>Cycle 3</td>
<td>56</td>
<td>100</td>
<td>81.00</td>
<td>10.58</td>
</tr>
<tr>
<td>Cycle 4</td>
<td>60</td>
<td>100</td>
<td>87.75</td>
<td>6.39</td>
</tr>
<tr>
<td>End-of-course grade</td>
<td>40</td>
<td>98</td>
<td>85.30</td>
<td>15.07</td>
</tr>
</tbody>
</table>

In Cycle 1, four students did not submit homework assignments and received a score of zero. Cycles 2 and 3 each had one student who did not submit homework, while Cycle 4 had 2 students who received zeros for non-submission. Table 27 depicts mean scores and standard deviations for each semester when non-submission grades were removed. Although a slight improvement in homework scores from Cycle 1 to Cycle 2 was noted, there appeared to be a more significant improvement in test scores between these two cycles. Under Cycles 2, 3, and 4
all students appeared to perform better than in Cycle 1 where student learning styles were not
used to develop the unit materials. Standard deviations also dramatically dropped from Cycle 1
to Cycle 4, meaning students who did submit work, were relatively scoring within the same score
range.

Table 27

*Academic Performance by Cycle*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cycle 1</td>
<td>38</td>
<td>100</td>
<td>92.32</td>
<td>8.93</td>
</tr>
<tr>
<td>Cycle 2</td>
<td>80</td>
<td>100</td>
<td>94.45</td>
<td>7.33</td>
</tr>
<tr>
<td>Cycle 3</td>
<td>57</td>
<td>100</td>
<td>94.25</td>
<td>6.75</td>
</tr>
<tr>
<td>Cycle 4</td>
<td>90</td>
<td>100</td>
<td>96.63</td>
<td>2.50</td>
</tr>
<tr>
<td>Unit quiz grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cycle 1</td>
<td>47</td>
<td>100</td>
<td>73.11</td>
<td>17.27</td>
</tr>
<tr>
<td>Cycle 2</td>
<td>60</td>
<td>100</td>
<td>82.94</td>
<td>13.93</td>
</tr>
<tr>
<td>Cycle 3</td>
<td>56</td>
<td>100</td>
<td>79.53</td>
<td>13.48</td>
</tr>
<tr>
<td>Cycle 4</td>
<td>65</td>
<td>100</td>
<td>85.29</td>
<td>11.11</td>
</tr>
</tbody>
</table>

**Research Question Two**

The second research question asked, “Is student satisfaction affected when teaching
materials are manipulated to reach student learning styles?” Narrative data were collected at the
end of each cycle to measure likes and dislikes with each unit and to solicit suggestions from
students about any changes they would like made to following units. Written narrative data
suggests that although items of satisfaction did not improve consistently from Cycle 1 to Cycle 4,
there appeared to be a decrease in reports of dissatisfaction from Cycle 1 to Cycle 4. In fact, all
items of dissatisfaction decreased with the exception of design dissatisfaction. Assignment
satisfaction improved from Cycle 1 to Cycle 2 (see Figure 6).
Research Question Three

The third research question asked, “Are students more satisfied with their instructional experience when individual learning styles are specifically targeted or when the course is delivered in an attempt to meet all learning styles?” To answer this question, data from each action research cycle were compared to Cycle 4 where an attempt was made to meet all student learning styles. Descriptive data of cycle comparisons are presented in Tables 27, 28, and 29. Table 28 reflects the comparison of Cycle 1 and Cycle 4 results. Under Cycle 1, student learning styles were not specifically met and content was delivered using a self-directed teaching method.
Assignments, content material, and a quiz were all preloaded and assigned a due date.

According to data collected for Cycle 1, course satisfaction appeared to be higher after Cycle 1 than Cycle 4. However, test dissatisfaction, personal dissatisfaction, workload dissatisfaction, and content dissatisfaction had fewer reports under Cycle 4.

Table 28

*Cycle 1 and Cycle 4 Written Narrative Comparisons of Satisfaction*

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th></th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cycle 1</td>
<td>Cycle 4</td>
<td>Cycle 1</td>
</tr>
<tr>
<td>Course satisfaction</td>
<td>9</td>
<td>6</td>
<td>11.50</td>
</tr>
<tr>
<td>Instructor satisfaction</td>
<td>3</td>
<td>1</td>
<td>3.80</td>
</tr>
<tr>
<td>Assignment satisfaction</td>
<td>11</td>
<td>4</td>
<td>14.10</td>
</tr>
<tr>
<td>Design satisfaction</td>
<td>9</td>
<td>6</td>
<td>11.50</td>
</tr>
<tr>
<td>Workload dissatisfaction</td>
<td>11</td>
<td>1</td>
<td>14.10</td>
</tr>
<tr>
<td>Content or assignment dissatisfaction</td>
<td>2</td>
<td>0</td>
<td>2.60</td>
</tr>
<tr>
<td>Personal dissatisfaction</td>
<td>6</td>
<td>2</td>
<td>7.70</td>
</tr>
<tr>
<td>Test dissatisfaction</td>
<td>2</td>
<td>0</td>
<td>2.60</td>
</tr>
</tbody>
</table>

Table 29 shows frequency comparisons of Cycle 2 and Cycle 4. Cycle 2 was delivered to meet the learning needs of visual learners, the most represented learning style group. Content was added to provide visual models, diagrams, and charts of chapter materials. Videos were also incorporated into Cycle 2 unit of study. The assignment style changed from end-of-chapter textbook questions to the creation of PowerPoint slides. After attempting to meet the visual learning style, which represented 60% of class, higher levels of course satisfaction and assignment satisfaction were reported. Course satisfaction and assignment satisfaction both decreased from Cycle 2 to Cycle 4 and there were more reports of dissatisfaction noted in areas of personal time management and workload dissatisfaction. Students appeared to be more
pleased with the instructor and instructional design of Unit 4 and there were fewer instances of
assignment and test dissatisfaction after Unit 4.

Table 29

*Cycle 2 and Cycle 4 Written Narrative Comparisons of Satisfaction*

<table>
<thead>
<tr>
<th></th>
<th>Cycle 2</th>
<th>Cycle 4</th>
<th>Cycle 2</th>
<th>Cycle 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
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<tr>
<td>Course satisfaction</td>
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<td>4</td>
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<td>6.20</td>
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<td>Design satisfaction</td>
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<td>6</td>
<td>6.10</td>
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<td>0.0</td>
<td>1.50</td>
</tr>
<tr>
<td>Content or assignment dissatisfaction</td>
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<tr>
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<td>1.50</td>
<td>3.10</td>
</tr>
<tr>
<td>Test dissatisfaction</td>
<td>2</td>
<td>0</td>
<td>3.00</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Cycle 3 was designed to meet the lowest performing learning style groups in the course
which were reflective and active learners. This unit removed content that appealed to visual
learners; therefore, more than half of the class’s learning styles were intentionally not met (see
Table 30). Satisfaction improved from Cycle 3 to Cycle 4, along with instructor satisfaction;
however, decreases were noted in assignment and design satisfaction. There were also fewer
instances of workload dissatisfaction under Cycle 4 and no reports of test dissatisfaction.
Table 30

**Cycle 3 and Cycle 4 Written Narrative Comparisons of Satisfaction**

<table>
<thead>
<tr>
<th></th>
<th>Cycle 3</th>
<th>Cycle 4</th>
<th>Cycle 3</th>
<th>Cycle 4</th>
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<tbody>
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<td>Course satisfaction</td>
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<td>6</td>
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<td>9.20</td>
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<td>0.0</td>
<td>1.50</td>
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<td>Assignment satisfaction</td>
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<td>1</td>
<td>6.30</td>
<td>1.50</td>
</tr>
<tr>
<td>Content or assignment dissatisfaction</td>
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<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Personal dissatisfaction</td>
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<td>2.10</td>
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<tr>
<td>Test dissatisfaction</td>
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</tr>
</tbody>
</table>

*Figure 7.* Satisfaction record through written narratives by cycle.
Finally, Pre-Satisfaction surveys were compared against Post-Satisfaction surveys. Tables 31 and 32 describe the results from each survey. The category of complete satisfaction appeared to improve most among students at the conclusion of the action research study. There were 54 more reports of complete satisfaction after this course was delivered to meet student learning styles. These results suggest that students were more satisfied with their instructional experience when individual learning styles were specifically targeted.
Table 31

Percentages for Satisfaction in Online Learning (Pre-Satisfaction Survey Results)

<table>
<thead>
<tr>
<th>N</th>
<th>No satisfaction</th>
<th>Very little satisfaction</th>
<th>Some satisfaction</th>
<th>Much satisfaction</th>
<th>Complete satisfaction</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Survey Responses</td>
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<td>1</td>
<td>32</td>
<td>107</td>
<td>165</td>
</tr>
</tbody>
</table>

Satisfaction

19. Clear Assignments
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 7
   - Complete satisfaction: 9
   - Total: 17

20. Appropriate Work
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 7
   - Complete satisfaction: 9
   - Total: 17

21. Feedback Effective
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 2
   - Much satisfaction: 4
   - Complete satisfaction: 11
   - Total: 17

22. Feedback Timely
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 3
   - Much satisfaction: 5
   - Complete satisfaction: 9
   - Total: 17

23. Discussion Board Evaluation
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 2
   - Much satisfaction: 6
   - Complete satisfaction: 9
   - Total: 17

24. Instructor Communication
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 7
   - Complete satisfaction: 9
   - Total: 17

25. Clear Syllabus
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 2
   - Much satisfaction: 5
   - Complete satisfaction: 10
   - Total: 17

26. Clear Schedule
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 6
   - Complete satisfaction: 10
   - Total: 17

27. Informative Links
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 7
   - Complete satisfaction: 9
   - Total: 17

28. Error-Free Content
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 5
   - Complete satisfaction: 11
   - Total: 17

29. Drop box Ease
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 6
   - Complete satisfaction: 10
   - Total: 17

30. Discussion Board Interaction
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 3
   - Much satisfaction: 7
   - Complete satisfaction: 7
   - Total: 17

31. Content for different Learning Styles
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 3
   - Much satisfaction: 6
   - Complete satisfaction: 8
   - Total: 17

32. Authentic Activities
   - No satisfaction: 0
   - Very little satisfaction: 1
   - Some satisfaction: 2
   - Much satisfaction: 6
   - Complete satisfaction: 7
   - Total: 17

33. Content Layout
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 1
   - Much satisfaction: 5
   - Complete satisfaction: 11
   - Total: 17

34. Technological Tools
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 2
   - Much satisfaction: 7
   - Complete satisfaction: 8
   - Total: 17

35. Discussion Board evoked Critical Thinking
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 3
   - Much satisfaction: 6
   - Complete satisfaction: 8
   - Total: 17

36. Adequate Resources
   - No satisfaction: 0
   - Very little satisfaction: 0
   - Some satisfaction: 2
   - Much satisfaction: 5
   - Complete satisfaction: 10
   - Total: 17

Race

<table>
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<th>Much satisfaction</th>
<th>Complete satisfaction</th>
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Gender

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<th>Much satisfaction</th>
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Table 32

Percentages for Satisfaction in Online Learning (Post-Satisfaction Survey Results)

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<td>4</td>
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CHAPTER 5
DISCUSSION

This chapter restates a summary of the purpose, the research questions, and summary of the research method. The chapter closes with conclusions drawn from study findings, implications of these findings for practice, and recommendations for future research that would contribute to the existing body of literature regarding the influence of learning styles in online higher education.

Purpose and Research Questions

The purpose of this action research study was to explore the effects of designing and delivering online course materials to meet a variety of student learning styles in an effort to improve student performance in and satisfaction with online courses. Instructional design strategies suggested in this study deepened my understanding of student learning needs and will serve as a guide to develop and design future online courses to produce successful and satisfied students. The investigation was guided by the following research questions:

1. Is student academic performance affected by the manipulation of teaching materials in an online course?
2. Is student satisfaction affected when teaching materials are manipulated to reach student learning styles?
3. Are students more satisfied with their online instructional experience when individual learning styles are specifically targeted or when the course is delivered in an attempt to meet all learning styles?
Research Summary

As an online instructor in technical education, I have observed that other factors are involved in student online academic success than a clearly designed course, student engagement, effective communication, and educational technology tools. Historically, traditional online courses at SCTC have followed, and have provided students with, essential elements for success including a structured format for content delivery, which provides students with standard course instructions, chapter materials and assignments, discussion boards, videos, and assessments. However, course satisfaction and student learning styles may also contribute to online academic success (Akdemir & Koszalka, 2008). For this study, academic performance was defined as end-of-unit quiz and homework grades in a business management course. Online student satisfaction was defined as “an emotional response that can be induced by actual product, service, or process quality or some combination of product and service quality” (O’Leary & Quinlan, 2007, p. 135).

In this study, my goal as the researcher and instructor was to create an online course (product) that would improve student satisfaction by offering course content designed to meet student learning styles.

Because this study was created to help me improve my teaching and learning as an online instructor through completion of systematic cycles of planning, action, data collection, and reflection (Mertler, 2012), action research was deemed the most appropriate design. The relationship between participants’ satisfaction and their academic performance (quantified using four homework assignment grades and four quiz scores) was examined at the end of each of the four cycles in this action research study. Online course satisfaction and prior online course satisfaction were measured using a pre-satisfaction survey (see Appendix C), a post-satisfaction survey (see Appendix E), and four written narrative submissions (see Appendix F) submitted
through a discussion board. A convenience sample of 17 students participated in this study. All participants were students at Southern Crescent Technical College (SCTC) located in the state of Georgia. All students were enrolled in an introductory business management course, MGMT 1105 Organizational Behavior, during an eight-week mini-semester in the spring of 2015.

Permission to conduct the study was obtained from SCTC (see Appendix K) and the University of Georgia’s Institutional Review Board (IRB) granted approval on January 13, 2015 (see Appendix I). Data collection of Pre-Satisfaction and Post-Satisfaction surveys, unit quiz scores, Written Narratives, and homework assignment grades took place throughout the eight-week mini-semester from March 10, 2015 through May 13, 2015.

Students completed the Felder-Solomon (1998) Index of Learning Styles Questionnaire, a Pre-satisfaction survey, and a short demographic questionnaire. Student learning styles were determined using the Felder-Soloman (1998) Index of Learning Styles. Students’ prior levels of satisfaction with online courses were measured using the Pre-Satisfaction Survey instrument where students were asked to rate their satisfaction for specific items relating to online learning using a 5-point Likert scale representing satisfaction levels from 0 (no satisfaction) to 5 (complete satisfaction).

The first action research cycle was spent gathering consent forms, demographic data, Pre-Satisfaction Survey results, and grouping students according to learning style. This cycle established a baseline of how students performed under the standard SCTC structure for online courses. The four action research cycles for this study were represented as Unit 1 (for Cycle 1), Unit 2 (for Cycle 2), Unit 3 (for Cycle 3), and Unit 4 (for Cycle 4). Each online unit contained chapter slides, a quiz, a homework assignment, and a discussion board over dedicated to selected course content. Additionally, each unit contained a discussion board that was labeled Written
Narratives where students were asked to answer the following three guided questions concerning the delivery of the unit:

1. What did you like about this Unit’s online course?
2. What did you dislike about this Unit’s online course?
3. What would you change about this Unit’s online course?

Following the systematic process of action research—planning, action, data collection, and reflection (Mertler, 2012), Cycle 2 was developed after analyzing data gathered from Cycle 1. Information collected in Cycle 1 revealed that there were four learning styles represented in the class—visual, verbal, reflective, and active. Data also showed that the majority of students were women and visual learners between 20 and 29 years of age. Of the four represented learning styles, visual learners received the lowest average scores on both quiz and homework grades in Cycle 1.

In response to careful reflection of Cycle 1 data, I developed a plan for Cycle 2 that specifically targeted most of my learners’ needs, which were visual learners. The second cycle consisted of populating Unit 2’s content folder with visually appealing materials in order to teach the assigned unit of study. Supplemental videos, diagrams, charts, and outlines accompanied the standard chapter slides for Unit 2. The homework assignment was also designed to allow students an opportunity to either submit their work through slide presentation software or find, via use of the Internet, a visual representation of the content that was learned for the unit of study. Students who chose to find a visual representation, were also asked to summarize their findings in an essay.

Mean homework scores improved 23 points and mean quiz scores in Cycle 2 improved 10 points for visual learners. Furthermore, performance in the entire class improved 8 points in
mean homework scores and 11 points in quiz scores. Frequency data gathered from Written Narratives also showed that student course satisfaction went from 11.5% in Cycle 1 to 16.7% in Cycle 2. Finally, frequency data also revealed that reports of assignment satisfaction went from 14.1% in Cycle 1 to 18.2% in Cycle 2.

Because I wanted to achieve similar grade improvements with the lowest performing learning style groups, I developed an action plan for Cycle 3 that delivered materials and assignments specifically designed for active and reflective learners. I also wanted to test if removing the treatment used in Cycle 2 would negatively affect visual learners’ scores. For Cycle 3, all diagrams, charts, and outlines were removed and replaced with case study assignments that required students to reflect on chapter concepts and apply those concepts to a business situation. Students were also provided the opportunity to share ideas and case solutions with classmates through a discussion board. This sharing of ideas among the class is a preferred learning style of active learners. Case study assignments are recommended for reflective learners because they allow time for reflection and processing of new knowledge in order to apply critical thinking (Felder & Soloman, 1998).

Data collected from Cycle 3 indicated an improvement of 4 points in both mean quiz and homework scores for reflective learners. However, active learners’ mean test scores went down by 2 points and homework went down by 11 points. Visual learner scores also suffered during Cycle 3 with test scores going down 8 points and homework going down 3 points. The one student representing verbal learners maintained a perfect score of 100 in both categories. Reports of satisfaction gathered from Written Narratives also suggested that students were more satisfied with the course content and assignment design from Cycle 2. In Cycle 3, course
satisfaction dropped to 8.3% from Cycle 2's 16.7%, while assignment satisfaction dropped to 12.5% from Cycle 2's 18.2%.

The fourth and final cycle for this study was developed in an effort to meet all learning styles in the course with the goal to improve both satisfaction and performance of all students. This was done by creating assignments for each learning style group represented in the class. This cycle asked students to complete a Post-Satisfaction survey in order to compare with satisfaction expressed at the beginning of the course.

Because visual, reflective, and active learners’ mean scores improved considerably after treatment given in Cycle 2, a similar approach was taken for the development of final assignments for these learners delivered in Unit 4. Visual, reflective, and active students were asked to create a slide presentation of content learned in Unit 4 and were also asked to answer selected questions concerning the topics covered. Active learners were asked to use a discussion board for submitting this assignment, while visual and reflective learners were asked to submit their assignment directly to the instructor. Since verbal learners responded well to written assignments, this group was asked to create a written report of materials learned in this unit.

Improvements were noted in Cycle 4 for active, reflective, and visual learners. Visual learners’ test scores improved by 11 points, however homework scores went down 4 points due to two students receiving a zero for not submitting their work. For those visual learners who did submit their homework in Unit 4, mean homework scores increased 14 points from Cycle 3. Active learners’ test scores went up 2 points and homework scores improved by 10 points. Reflective learners’ test scores rose 6 points while homework scores remained steady at 100. The only student who did not improve in Cycle 4 was the one verbal learner. This learners’ test
score went down 5 points and homework score went down 6 points. Interestingly, this student had consecutive, perfect scores for Cycles 2 and 3.

**Results**

This study’s first research objective sought to explain the effects of student academic achievement when online teaching materials were manipulated. The delivery approach taken in Cycle 1, requiring students to be self-directed learners, was altered in Cycles 2, 3, and 4 when student learning style needs were used to guide the creation of instructional materials and design of assignments. Possible scores ranged from 0-100, with higher scores indicating higher academic achievement. Means and standard deviations were used to determine academic performance among participants. Participants’ mean quiz scores under Cycle 1 design ranged from 33-100, while mean homework scores ranged from 0-100. Participants’ overall mean quiz score for Cycle 1 was 75.66 and mean homework score was 86.13, indicating that students performed at a passing, yet average, academic level when required to be self-directed and self-guided learners.

Starting with Cycle 2 to the end of the study, the instructional delivery was altered from a self-directed style to an accommodative style specific to learner groups, where a deliberate effort was made to meet student learning needs. Mean quiz scores from Cycle 2 ranged from 60-100 (compared to Cycle 1 range of 33-100) and mean homework scores ranged from 0-100. The overall mean quiz score from Cycle 2 was 85.75 (compared to Cycle 1s 75.55) and the mean homework score was 94.43 (compared to Cycle 1s 86.13).

Quiz and homework results from Cycle 3 and Cycle 4, under a more student-centered teaching style, also showed signs of improvement when compared to Cycle 1 delivery approach. Cycle 3 overall quiz score mean quiz score of 84.8 and Cycle 4 overall mean quiz score of 87.63,
are solid improvements from Cycle 1 mean quiz score of 75.66. The same is true when comparing Cycle 1 overall mean homework score of 86.13 to Cycle 3s 92.58 and Cycle 4s 94.28 overall mean homework scores.

The second research objective was to explain if student satisfaction with online courses is affected when teaching materials were manipulated. Frequency data and percentiles were used to determine online course satisfaction among participants. Data from a pre-satisfaction survey and a post-satisfaction survey were administered at the beginning and end of the study to determine prior satisfaction with online learning and satisfaction after the delivery of the study course. Possible responses on the Pre-Satisfaction Survey and Post-Satisfaction Survey ranged from 5 (complete satisfaction) to 1 (no satisfaction), using a 5-point Likert scale representing satisfaction levels. Written Narratives were also gathered at the end of each cycle to determine satisfaction after each delivered unit or cycle.

Since most SCTC instructors use a delivery approach that requires learners to be self-directed, self-motivated, and self-guided in their online courses, data gathered from the Pre-Satisfaction Survey may correspond with satisfaction levels of Cycle 1 and the Post-Satisfaction Survey would likely correspond with levels of satisfaction found in Cycles 2, 3, and 4. Reports from the Pre-Satisfaction Survey indicated that 35% of students were mostly satisfied with their prior online experience, while 54% percent reported complete satisfaction. The remaining 11% fell into the very little satisfied and some satisfied categories. Post-Satisfaction Surveys, taken at the end of the study, revealed that 72% of participants were completely satisfied with their online experience, 19% were mostly satisfied and 9% were either very little satisfied or some satisfied.

Written Narrative data were collected at the end of each 2-week cycle and were used to gauge satisfaction with the delivery and content of each unit. Using a coding system to track
frequency in statements of satisfaction and/or dissatisfaction, a higher number of students reported satisfaction with the course and course assignments in Cycle 2 than in the other cycles. Frequency comparisons in the category of assignment satisfaction went from 14.1% in Cycle 1 to 18.2% in Cycle 2. Overall reports of course satisfaction went from 11.5% in Cycle 1 to 16.7% in Cycle 2. Frequency comparisons revealed reports of workload dissatisfaction dropped from 14.1% in Cycle 1 to 0% in Cycle 2. However, during Cycles 3, assignment satisfaction steadily decreased from 12.5% to 6.2%, while course satisfaction went from 8.3% in Cycle 3 to 9.2% in Cycle 4.

The third research question in this study explored if students were more satisfied with their online instructional experience when individual learning styles were specifically targeted or when the course was delivered in an attempt to meet all learning styles. In this study, Cycle 1 made no attempt to meet learning styles, while Cycle 2 and 3 were designed to meet selected learning style groups. Cycle 2 targeted visual learners, while Cycle 3 focused on reflective and active learners, while Cycle 4 was designed to meet all learning styles represented in the class. To determine the answer to this third research question, comparisons of Cycle 1, Cycle 2 and Cycle 3 were made against Cycle 4.

Data reflect that after attempting to meet the visual learning styles under Cycle 2, higher levels of course satisfaction and assignment satisfaction were reported. Categories of course satisfaction and assignment satisfaction both appeared to decrease from Cycle 2 to Cycle 4 and there were more reports of dissatisfaction noted in areas of personal time management and workload dissatisfaction. Students appeared to be more pleased with the instructor and the instructional design of Cycle 4 and there were fewer instances of assignment and test dissatisfaction under Cycle 4 (see Table 28).
Student satisfaction improved in Cycle 3 where content was delivered to meet the lowest performing learning style groups in the course—reflective and active learners. In this cycle, content that appealed to visual learners was removed, therefore, more than half of the class’s learning styles were intentionally not met. Satisfaction improved from Cycle 3 to Cycle 4, along with instructor satisfaction, however, decreases were noted in assignment and design satisfaction. There were also fewer instances of workload dissatisfaction under Cycle 4 and no reports of test dissatisfaction (see Table 29).

Finally, to determine the answer to the last research question, it was necessary to consider the number of students representing each learning style group. The largest group, visual learners, consisted of 10 students. There were 4 active learners, 2 reflective learners, and 1 verbal learner. Reports of satisfaction were highest under Cycle 2 when visual learners, or the majority of the class, received materials and assignments that align with their learning style. The decline in satisfaction seen in Cycle 3 may be due to the fact that only 6 learners were targeted, meaning the other 11 learners’ (10 visual and 1 verbal) needs were not met. The comparison of results from the Pre-Satisfaction Survey against the Post-Satisfaction Survey, also supports the claim that students are more satisfied when individual learning styles are targeted rather than when a course is designed in a self-directed manner.

**Conclusions**

The findings of this study led to several important conclusions concerning how my instructional delivery affects student performance and satisfaction with online courses in higher education. Based on the findings of this study, these conclusions are (a) online delivery methods that align course content with student learning styles produced higher academic achievement, and (b) students were more satisfied when online course content met learning style needs.
Conclusion One - Student Academic Achievement and Instructional Delivery

The first conclusion drawn from this study was that instructional delivery influenced students’ achievement scores across each cycle. It may be possible that the instructional delivery used in Cycle 1 caused most students to perform at lower achievement levels than in Cycles 2, 3, and 4. Cycle 1 involved the creation of Unit 1 course content and assignments prior to determining student learning styles. Although this instructional delivery methods may not have met all student learning style needs in the class, it appeared to be ideal for the three students who represented verbal and reflective learners. Verbal and reflective learners performed better on Cycle 1’s unit quiz and homework assignment than the other 14 active and visual learners. These results align with the fact that most verbal and reflective learners enjoy a written assignment design, which was used in Cycle 1 and is commonly used by most online instructors at SCTC.

The higher levels of academic achievement from Cycles 2, 3, and 4, support prior studies that found that when instructional delivery methods are matched to student learning styles, student performance improves (Abraham, 1985; Federico, 2000). Beginning with Cycle 2, the instructional content was modified to specifically target student learning styles through careful and deliberate development of content and assignments. Tailored to meet visual learners, Cycle 2 was loaded with visually appealing items, while assignments consisted of students creating slides and other visual representations of chapter content. This redesign and change of instructional content resulted in visual learners’ quiz scores being improved. Although not specifically targeted during Cycle 2, active, verbal, and reflective learners’ homework and quiz scores improved. These noticeable improvements may not be related to content. There are several other possible reasons that may explain the widespread improvements from this cycle.
First, because Cycle 2 began two weeks after the start of semester, all course students would have had ample time to become familiar with the online course layout and procedures. Some of the students who performed poorly in Cycle 1 may have been the result of inexperience or lack of understanding of the course requirements. Another reason all learning groups performed better in Cycle 2 may have been the student interest in the instructional content presented in this unit. This unit covered topics of communication and digital technology in the workplace. Additionally, Cycle 2 contained 2 assigned chapters whereas Cycle 1 contained 3 chapters. Fewer assigned chapter readings resulted in a lighter workload, which could have affected student scores for this cycle. Finally, the instructional delivery approach applied in this cycle may have affected the attitudes and performance of students. A student-centered teaching approach was used for this cycle where student learning style needs guided the unit design. It is possible that when students perceive that an instructor cares, or has taken the time to assess learning styles within the classroom, they will try harder to please the instructor.

Cycle 3, which targeted active and reflective learning styles, and Cycle 4, which attempted to meet all learning styles through customized assignments, both generated better mean achievement scores than Cycle 1 where no learning style was considered. Scores from Cycles 2, 3, and 4 when compared to results of Cycle 1, all seem to validate claims that suggest when instructors deliver content using strategies that align with student learning strengths, performance is improved (Abraham, 1985; Federico, 2000; Lovelace, 2005).

**Conclusion Two - Student Satisfaction and Instructional Delivery**

The second conclusion drawn from this study is that levels of student satisfaction were higher when content was aligned with student learning styles. As an instructor who also teaches on-campus or face-to-face classes, I always deliver lectures, show chapter slides, discuss or
demonstrate relevant topics through videos, and assign an array of activities to help my students learn. By doing so, without consciously trying to meet student learning styles, this teaching approach uses a variety of delivery methods, and is likely to reach at some point, most student learning styles within a given course. As a result, end-of-course evaluations for my face-to-face classes always reflect high levels of student satisfaction. As an online instructor, I realized that my online students were not receiving this same variation in instructional delivery of content, meaning that not as many student learning styles or learning preferences were being equally met as my face-to-face students. Levels of satisfaction in my online courses were also lower than levels of satisfaction in my face-to-face courses. This realization and the findings of this study leads me to conclude that research question 2, which sought to determine if student satisfaction is affected when teaching materials are manipulated to reach student learning styles, was answered—yes.

Jazzar’s (2012) claim that meeting a variety of student learning styles through course content could improve student satisfaction is supported in this study. When student learning styles were used in the development and delivery of instructional content, Research Cycles 2, 3, and 4 resulted in higher levels of satisfaction. Cycle 1, which did not attempt to meet student learning styles, had the lowest levels of student satisfaction in this action research study.

**Discussion and Implications**

Akdemir and Koszalka (2008) highlighted the importance of the relationship between learning style and instructional strategies in online teaching environments. They explained how understanding the influence of learning styles and students’ perceptions of their engagement in online courses can help instructors plan, design, and deliver effective online courses. This study supports previous research indicating that when student learning styles are matched with
appropriate delivery methods, student performance is improved (Abraham, 1985; Federico, 2000; Honigsfeld & Dunn, 2006; Jazzar, 2012, Lovelace, 2005). Findings contradict prior research stating that student learning styles have little effect on academic achievement (Massa & Mayer, 2006; Pashler et al., 2009; Stahl, 2002). Of the cited studies that found either little or no value in applying learning styles in the classroom, none were performed completely online, in technical education, or in the discipline of business. Any one of these variables, or a combination thereof, may be the underlying cause that produced the results of my study. My sample size was also considerably smaller than the cited learning styles studies that produced negative results. Future, more narrowly focused research that isolates each of these variables would be helpful to clarify my results.

Overall levels of academic performance and satisfaction were correlated to delivery approach and the instructional content designed to meet student learning styles in this study. Once student learning styles were targeted, student achievement levels began to improve. This supports research from Lovelace (2005) who confirmed that when instructors deliver content in methods that align with students’ learning strengths, academic performance and attitudes are improved.

These results, taken from action research Cycle 1, should be of concern since they were produced in the unit that reflects the common instructional design used in online courses at SCTC. For example, commonly SCTC online courses are populated with instructional content prior to the beginning of the semester, which typically consist of chapter slides, written chapter assignments, occasional videos, discussion boards, and assessments. In addition to this particular content design, the predominant online instructional delivery style requires students to be self-directed learners, which results in the instructor to essentially be a facilitator of the course.
While this approach has worked in producing and instructing online classes for many years at SCTC, it may relate to the reported annual 7.5% attrition rate in online courses (Technical College System of Georgia [TCSG], 2014).

While the findings of this study imply that student academic performance and satisfaction are related to instructional design, low performance found in Cycle 1 may also be the result of course demands, such as assignment workload or time needed to get acclimated to the online course environment while being assigned to complete multiple data instruments and course assignments. Other causes may be internet connection, computer compatibility, or simply students being new to college and online courses. Finally, Cycle 1 poor performance may be the result of adult learners who are commonly faced with balancing personal life responsibilities with academic tasks, unlike traditional university students who are mostly full-time learners.

**Academic Performance**

The Technical College System of Georgia recognizes the importance of student success in online courses, since 47% of its students are enrolled in online courses (Technical College System of Georgia [TCSG], 2015). This study examined student performance as it related to instructional content design strategies and delivery. A relationship was found between student academic performance and course assignments designed to meet student learning styles.

Levels of performance of Cycle 2 in this sample of business management students were considerably higher than anticipated after learning styles were targeted through instruction. I hypothesized that the majority of students who enroll in online courses would be self-motivated, self-disciplined, and self-directed learners. However, data gathered from the learning styles inventory revealed that the class was comprised of four distinct learning types. The results of Cycle 1, where most students did not perform at high levels under a self-directed learning
approach, may indicate that student learning styles were not met or matched to instruction. However, other possibilities could include procrastination, outside school responsibilities, or poor time management.

Findings from Cycle 3 and Cycle 4 indicated that students performed at higher levels when learning styles were met through course content and assignment design. Hand (1992) believed that instructors can reach many learning styles by offering a variety of instructional delivery methods that provide opportunities for learners to acquire new knowledge through their preferred style of learning. Results of this study suggest that to achieve continuous high levels of performance, instructors must reassess student learning needs and alter delivery strategies for their online classrooms.

**Student Satisfaction**

Frequency data gathered for Cycle 1 of student satisfaction were considerably lower than reports for Cycles 2, 3, and 4 when student learning styles were targeted. This low level of satisfaction may correlate to the low levels of performance in Cycle 1. Generally, students who are satisfied with a course will do better than unsatisfied students (Abraham, 1985; Honigsfeld & Dunn, 2006). Additionally, students whose learning styles are met through course content will be more satisfied and will persist in online courses (Jazzar, 2012). Satisfaction with online learning has been identified as an underlying cause of student persistence (Weimer, 2013).

According to Hart (2012), satisfaction levels for those who graduate from online programs range above 90%.

Findings from this action research study indicate a need to understand the importance of satisfying multiple learning style needs in online courses through thoughtful lesson planning and purposeful approaches to teaching and communicating. By identifying student learning styles,
online instructors can pinpoint potential learner difficulties that may simply be remedied in the design of content or delivery approach.

Although the findings of this action research study are drawn from one online business management course, there is no reason to doubt that this teaching strategy that identifies and attempts to meet student learning style needs cannot be applied to other online courses in other disciplines as well. In addition, to broaden this online teaching delivery approach perspective, additional studies are needed that recognize the role that student learning style, student performance, and student satisfaction play in online course success or persistence. Future testing and validating of this teaching method will be beneficial to the continued growth of this important research area.

**Summary**

Since the conclusion of this study, there are areas in the design that I would change. First, I would run this study with more participants in order to have more students represented in the various learning style categories. My small sample size immensely reduced the number of learning styles I was able to analyze. Second, I would not have anonymous written narrative discussion board posts. Although I was able to gather an understanding of overall class satisfaction, I was unable to tie satisfaction to learning styles with each unit of delivery. Finally, I would record and post my face-to-face lectures for each chapter. By offering students personalized lecture videos, I would be one step closer to mirroring my face-to-face delivery style.

SCTC’s current Best Practices for online courses require instructors to provide students a course syllabus, a welcome letter, an electronic channel for communication, grade book access, attendance, weekly electronic communication, tests, assignments, interactive media, and
community building tools. While all listed components add value to an online course, perhaps asking instructors to deliver a balanced and differentiated curriculum, one that assesses student learning needs, would also contribute to improved student achievement and satisfaction in online courses.

Online learning has become the preferred channel to learn by many students in higher education; however this trend is being met with staggering attrition rates. While SCTC’s 2014 attrition rate of 7.5% (Technical College System of Georgia [TCSG], 2014) does not seem to compare to the annual 20% to 50% (Diaz, 2002) attrition rates of universities that offer only online courses, improvement in this area should still be considered. SCTC’s mission and vision is to promote lifelong learning and develop students to become work-ready through effective training and instruction. If SCTC promises to offer effective online courses that are equivalent to face-to-face courses, they must seek ways to address learning style needs in an online environment.

Although this action research was aimed to improve my practice as an online instructor, it also improved the performance and satisfaction of my students in the spring 2015 Organizational Behavior class. This study has enlightened me in ways I can use student learning styles to develop and design future online courses that produce successful students. If my teaching strategy is adopted by other online instructors at SCTC, perhaps increased student retention, enhanced student learning, improved student experience, and increased institutional effectiveness will flourish.
References


APPENDIX A

CONSENT FORM
Consent Form

I, _________________________________, agree to participate in a research study titled "ADJUSTING ONLINE DELIVERY TO MEET STUDENT LEARNING STYLES" conducted by Jennifer Cook Edwards, Doctoral Candidate from the Department Workforce Education, Leadership, and Social Foundations at the University of Georgia (404-697-5371) under the direction of Dr. Jay W. Rojewski, Department of Workforce Education, Leadership, and Social Foundations, University of Georgia (542-4461).

I understand that my participation is voluntary. I can refuse to participate or stop taking part at any time without giving any reason, and without penalty or loss of benefits to which I am otherwise entitled. I can ask to have all of the information about me returned to me, removed from the research records, or destroyed.

There are no known risks associated with participating in this research except a slight risk of breach of confidentiality, which remains despite steps that will be taken to protect my privacy.

The reason for this study is to examine student performance and perceptions of online course materials when they are designed and delivered to meet different student learning styles.

I will receive no direct benefit from my participation in this study. My participation however may provide an understanding of student behaviors to assist in the development of online classes to improve student performance and satisfaction.

My participation will involve completing 2 surveys a) Course Satisfaction Pre-Survey and b) Course Satisfaction Post-Survey; 2 questionnaires a) the Felder-Soloman Index of Learning Styles Questionnaire and b) Demographics Questionnaire. I will be logging my course experiences, opinions, and thoughts in an online journal. The researcher will also be delivering Unit quizzes and experimental assignments to assess performance when assignments are designed for specific learning styles.

The results of the research study may be published, but identifying information about me will not be used. The published results will be presented in summary form only. My identity will not be associated with my responses in any published format, and at no point in time will my course instructor know who did or did not participate in the study. When the researcher receives my surveys/questionnaires, my student identification number will be removed and replaced with a new non identifying student code.

The investigator will answer any further questions about the research, now or during the course of the project.

€ I agree that Jennifer Cook Edwards, the individual conducting this research, has permission to access my final course grades and my COMPASS Writing Skills Placement Test score.

€ I agree to take part in this research project. I will receive a signed copy of this consent form for my records.

_________________________  _______________________  __________
Name of Researcher  Signature  Date
Telephone: ________________
Email: ____________________________

_________________________  _______________________  __________
Name of Participant  Signature  Date
APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE
ADJUSTING ONLINE DELIVERY TO MEET STUDENT LEARNING STYLES

Information gathered on this questionnaire is confidential and will not be disclosed to anyone outside of this research study.

Please complete all information below.

1. Student ID Number: __________________________

2. Gender (circle) Male or Female

3. What is your Date of Birth? (mo/day/year)______________

4. How do you describe yourself (please circle one)?
   a. American Indian or Alaska Native
   b. Asian
   c. Black or African American
   d. Hispanic or Latino
   e. Native Hawaiian or Other Pacific Islander
   f. White or Caucasian
   g. Other
APPENDIX C

SATISFACTION PRE-SURVEY
Online Course Satisfaction Pre-Survey

Your race is (circle only one):

a. American Indian or Alaska Native
b. Asian
c. Black or African American
d. Hispanic or Latino
e. Native Hawaiian or Other Pacific Islander
f. White or Caucasian
g. Other

Your gender is (circle only one):

a. Male
b. Female

Using the following 10-point scale, please indicate how much satisfaction you have had with previous online courses at Southern Crescent Technical College (SCTC):

<table>
<thead>
<tr>
<th>No Satisfaction at all</th>
<th>Very Little Satisfaction</th>
<th>Some Satisfaction</th>
<th>Much Satisfaction</th>
<th>Complete Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

___ 1. Assignments and activities were clearly linked to the course objective.

___ 2. Assignments were appropriate and effective for learning course content.

___ 3. Evaluation criteria were clearly stated.

___ 4. Feedback was informative and clearly articulated.

___ 5. Feedback was delivered in a timely manner.

___ 6. Evaluation criteria for discussion board activities were clearly specified in advance.

___ 7. Instructor effectively communicated any changes/clarified any misunderstanding regarding course requirements.

___ 8. Dates on the syllabus and course schedule corresponded to online readings.

___ 9. Dates on the course schedule corresponded to drop box and discussion board submissions.
10. Links were descriptive and provided information regarding the content.

11. Online course materials were free of spelling errors and grammatical errors.

12. Requirements for drop box submissions were specified and easy to follow.

13. Discussion board assignments fostered a high level of interaction among students.

14. Online course content included varied types of assignments to appeal to different learning styles.

15. Online assignments included authentic, real-life activities.

16. Font size and layout of the online content was consistent.

17. Technological tools were used appropriately for the course content.

18. Discussion board activities were designed to evoke further critical thinking about course content.

19. Selected readings and resources were adequate for the course objectives.

20. The course has evoked further interest in this field.
APPENDIX D

FELDER-SOLOMAN’S INDEX OF LEARNING STYLES QUESTIONNAIRE
Index of Learning Styles Questionnaire

Barbara A. Soloman
Richard M. Felder
North Carolina State University

Directions

Please provide us with your full name. Your name will be printed on the information that is returned to you.

Full Name

For each of the 44 questions below select either "a" or "b" to indicate your answer. Please choose only one answer for each question. If both "a" and "b" seem to apply to you, choose the one that applies more frequently. When you are finished selecting answers to each question please select the submit button at the end of the form.

1. I understand something better after I
   - (a) try it out.
   - (b) think it through.

2. I would rather be considered
   - (a) realistic.
   - (b) innovative.

3. When I think about what I did yesterday, I am most likely to get
   - (a) a picture.
   - (b) words.

4. I tend to
   - (a) understand details of a subject but may be fuzzy about its overall structure.
   - (b) understand the overall structure but may be fuzzy about details.

5. When I am learning something new, it helps me to
   - (a) talk about it.
   - (b) think about it.
6. If I were a teacher, I would rather teach a course
   (a) that deals with facts and real life situations.
   (b) that deals with ideas and theories.

7. I prefer to get new information in
   (a) pictures, diagrams, graphs, or maps.
   (b) written directions or verbal information.

8. Once I understand
   (a) all the parts, I understand the whole thing.
   (b) the whole thing, I see how the parts fit.

9. In a study group working on difficult material, I am more likely to
   (a) jump in and contribute ideas.
   (b) sit back and listen.

10. I find it easier
    (a) to learn facts.
    (b) to learn concepts.

11. In a book with lots of pictures and charts, I am likely to
    (a) look over the pictures and charts carefully.
    (b) focus on the written text.

12. When I solve math problems
    (a) I usually work my way to the solutions one step at a time.
    (b) I often just see the solutions but then have to struggle to figure out the steps to get to them.

13. In classes I have taken
    (a) I have usually gotten to know many of the students.
    (b) I have rarely gotten to know many of the students.

14. In reading nonfiction, I prefer
    (a) something that teaches me new facts or tells me how to do something.
    (b) something that gives me new ideas to think about.

15. I like teachers
    (a) who put a lot of diagrams on the board.
    (b) who spend a lot of time explaining.

16. When I'm analyzing a story or a novel
    (a) I think of the incidents and try to put them together to figure out the themes.
    (b) I just know what the themes are when I finish reading and then I have to go back and find the incidents that demonstrate them.
17. When I start a homework problem, I am more likely to
   (a) start working on the solution immediately.
   (b) try to fully understand the problem first.

18. I prefer the idea of
   (a) certainty.
   (b) theory.

19. I remember best
   (a) what I see.
   (b) what I hear.

20. It is more important to me that an instructor
   (a) lay out the material in clear sequential steps.
   (b) give me an overall picture and relate the material to other subjects.

21. I prefer to study
   (a) in a study group.
   (b) alone.

22. I am more likely to be considered
   (a) careful about the details of my work.
   (b) creative about how to do my work.

23. When I get directions to a new place, I prefer
   (a) a map.
   (b) written instructions.

24. I learn
   (a) at a fairly regular pace. If I study hard, I'll "get it."
   (b) in fits and starts. I'll be totally confused and then suddenly it all "clicks."

25. I would rather first
   (a) try things out.
   (b) think about how I'm going to do it.

26. When I am reading for enjoyment, I like writers to
   (a) clearly say what they mean.
   (b) say things in creative, interesting ways.

27. When I see a diagram or sketch in class, I am most likely to remember
   (a) the picture.
   (b) what the instructor said about it.
28. When considering a body of information, I am more likely to
   (a) focus on details and miss the big picture.
   (b) try to understand the big picture before getting into the details.

29. I more easily remember
   (a) something I have done.
   (b) something I have thought a lot about.

30. When I have to perform a task, I prefer to
   (a) master one way of doing it.
   (b) come up with new ways of doing it.

31. When someone is showing me data, I prefer
   (a) charts or graphs.
   (b) text summarizing the results.

32. When writing a paper, I am more likely to
   (a) work on (think about or write) the beginning of the paper and progress forward.
   (b) work on (think about or write) different parts of the paper and then order them.

33. When I have to work on a group project, I first want to
   (a) have "group brainstorming" where everyone contributes ideas.
   (b) brainstorm individually and then come together as a group to compare ideas.

34. I consider it higher praise to call someone
   (a) sensible.
   (b) imaginative.

35. When I meet people at a party, I am more likely to remember
   (a) what they looked like.
   (b) what they said about themselves.

36. When I am learning a new subject, I prefer to
   (a) stay focused on that subject, learning as much about it as I can.
   (b) try to make connections between that subject and related subjects.

37. I am more likely to be considered
   (a) outgoing.
   (b) reserved.

38. I prefer courses that emphasize
   (a) concrete material (facts, data).
   (b) abstract material (concepts, theories).
39. For entertainment, I would rather
   (a) watch television.
   (b) read a book.

40. Some teachers start their lectures with an outline of what they will cover. Such outlines are
   (a) somewhat helpful to me.
   (b) very helpful to me.

41. The idea of doing homework in groups, with one grade for the entire group,
   (a) appeals to me.
   (b) does not appeal to me.

42. When I am doing long calculations,
   (a) I tend to repeat all my steps and check my work carefully.
   (b) I find checking my work tiresome and have to force myself to do it.

43. I tend to picture places I have been
   (a) easily and fairly accurately.
   (b) with difficulty and without much detail.

44. When solving problems in a group, I would be more likely to
   (a) think of the steps in the solution process.
   (b) think of possible consequences or applications of the solution in a wide range of areas.

When you have completed filling out the above form please click on the Submit button below. Your results will be returned to you. If you are not satisfied with your answers above please click on Reset to clear the form.
APPENDIX E

SATISFACTION POST-SURVEY
Online Course Satisfaction Post-Survey

Your race is (circle only one):
  h. American Indian or Alaska Native
  i. Asian
  j. Black or African American
  k. Hispanic or Latino
  l. Native Hawaiian or Other Pacific Islander
  m. White or Caucasian
  n. Other

Your gender is (circle only one):
  c. Male
  d. Female

Using the following 10-point scale, please indicate how much **satisfaction** you had with the recently completed MGMT 1105 online courses at Southern Crescent Technical College (SCTC):

<table>
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<th>No Satisfaction at all</th>
<th>Very Little Satisfaction</th>
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___ 1. Assignments and activities were clearly linked to the course objective.

___ 2. Assignments were appropriate and effective for learning course content.

___ 3. Evaluation criteria were clearly stated.

___ 4. Feedback was informative and clearly articulated.

___ 5. Feedback was delivered in a timely manner.

___ 6. Evaluation criteria for discussion board activities were clearly specified in advance.

___ 7. Instructor effectively communicated any changes/clarified any misunderstanding regarding course requirements.

___ 8. Dates on the syllabus and course schedule corresponded to online readings.

___ 9. Dates on the course schedule corresponded to drop box and discussion board submissions.

___ 10. Links were descriptive and provided information regarding the content.
11. Online course materials were free of spelling errors and grammatical errors.

12. Requirements for drop box submissions were specified and easy to follow.

13. Discussion board assignments fostered a high level of interaction among students.

14. Online course content included varied types of assignments to appeal to different learning styles.

15. Online assignments included authentic, real-life activities.

16. Font size and layout of the online content was consistent.

18. Technological tools were used appropriately for the course content.

19. Discussion board activities were designed to evoke further critical thinking about course content.

20. Selected readings and resources were adequate for the course objectives.
WRITTEN NARRATIVES

In an effort to improve the quality that each student receives while taking online classes, I need your assistance. Please answer each of the following questions giving feedback about the class:

1. What did you like about this week’s class?
2. What did you dislike about this week’s class?
3. What would you change about this week’s class?

Please be honest and respectful. This will in no way effect your grade. You will not be required to respond to another student.

Please post a 1 paragraph response (5-7 sentences) to the questions stated above.
UNIT 1 QUIZ

1. Interpersonal skills are quite important because they enable you to
A) cover up for deficiencies in technical skills.
B) become successful in business without working so hard.
C) connect with other people leading to business success.
D) trick people into believing that you are competent.

2. A competency related to soft skills is
A) developing software for measuring employee attitudes.
B) statistically analyzing employee turnover.
C) being able to accurately interpret other people’s emotions.
D) conducting an inventory of employee theft.

3. The difference between soft skills and hard skills refers to the distinction between
A) intellectual and mechanical skills.
B) personal and job-related skills.
C) irrelevant and relevant skills.
D) interpersonal and technical skills.

4. Sara sets the stretch goal of increasing her productivity on evaluating claims forms by 20 percent, meaning that
A) it will be quite easy for her to attain the 20 percent improvement.
B) she will have to improve her motivation to even try to attain the 20 percent.
C) with some concentrated effort she can reach the 20 percent.
D) her chances of increasing productivity by 20 percent are quite small.

5. Troy establishes the following goal: "I am going to be a great success in my job next year." The biggest flaw in his goal is that it
A) is not specific enough.
B) will not stretch him.
C) is too negative.
D) is set for different time periods.

6. Ashley, a customer service supervisor, has high self-efficacy. She is therefore more likely to think that her goal of becoming a CEO is
A) ridiculous.
B) realistic.
C) too mercenary.
D) too people-oriented.

7. In the learning model, self-discipline is an especially important contributor to
A) waiting to get started.
B) changing a goal.
C) creating an action plan.
D) implementing the action plan.
8. To improve our interpersonal skills, we must first be aware of
A) the difference between interpersonal and technical skills.
B) our level of intelligence.
C) the ideal we are striving to attain.
D) how we are perceived by people who interact with us.

9. A universal training need refers to
A) the most comprehensive type of need for change.
B) an area for skill improvement shared by most people.
C) a training need of most career failures.
D) an urgent need for development.

10. A current trend in helping employees grow and develop is that
A) employees are instructed to "sink or swim."
B) managers expect schools to take care of all growth and development.
C) workers are expected to help coworkers.
D) employees are given three months to grow and develop.

11. An example of the consequences of individual differences would be that
A) some workers can concentrate longer and harder on their work.
B) workers need to be treated fairly.
C) the best way to motivate most workers is through financial incentives.
D) good teamwork helps an organization succeed.

12. With respect to job performance and personality, it has been found that
A) an individual trait usually has the biggest impact.
B) a combination of traits is often associated with good performance.
C) any other trait usually has to be combined with extraversion.
D) extraversion and agreeableness are the most effective for job performance.

13. When relating to a coworker who appears to be emotionally unstable, it is best for you to
A) explain carefully that you will not be manipulated by him or her.
B) express sarcasm about his or her problems.
C) be laid back and reassuring.
D) frequently tell him or her to "lighten up" or "chill out."

14. Ginny has strong practical intelligence, so she is probably good at
A) solving everyday problems.
B) solving complex mathematical problems.
C) performing highly on intelligence tests.
D) tasks that will not help her in her career.
15. A person with high practical intelligence is likely to have good
A) analytical skills.
B) linguistic skills.
C) common sense and street smarts.
D) multiple intelligences.

16. A person with a high degree of self-management can readily
A) react with appropriate anger to situations.
B) develop passion about the work he or she is performing.
C) respond to the unspoken feelings of others.
D) understand his or her own moods.

17. An important part of emotional intelligence is
A) adding figures under pressure.
B) having an above-average IQ.
C) keeping emotions out of problem solving.
D) building strong bonds with people.

18. Sandra believes strongly in helping poor people, and she finds employment at a company that
donates generously to charity. As a result, Sandra is likely to
A) experience dissatisfaction because her values are not unique.
B) feel that her contribution is not needed.
C) experience high job performance.
D) receive a series of rapid promotions.

19. Person-role conflict occurs when an individual
A) enters into conflict with a coworker.
B) is asked to perform a task that clashes with his or her values.
C) is asked to perform a task outside his or her specialty area.
D) is expected to perform two different activities at the same time.

20. The system of classifying values presented in the human relations text suggests that people
A) search for values that match their personality traits.
B) search for values that match their intellect.
C) establish goals to match their values.
D) establish goals to match their intelligence.

21. Self-esteem tends to develop
A) while we are in the womb.
B) based on our interactions with people, events, and things.
C) during deep sleep.
D) mostly during adolescence.
22. When a large number of workers in the same organization have high self-esteem, the company is likely to
A) lose out because too many employees waste time complimenting each other.
B) invest too much money in employee benefits such as long vacations.
C) prosper because so many of the workers function well.
D) suffer because so many of the employees are self-centered.

23. Lily has developed extremely high self-esteem, therefore running the risk of
A) hating herself.
B) becoming narcissistic.
C) hating her body image.
D) decreasing her cognitive skills.

24. According to social science research, Maria is likely to enhance her self-esteem if she first
A) pursues a goal then achieves the goal.
B) receives a hug from a friend, then chooses a goal.
C) hugs somebody else then smiles.
D) fails to attain a goal, then receives a hug.

25. Positive visual imagery involves
A) sketching a map of your success strategy.
B) mentally rehearsing the successful handling of a future event.
C) thinking of everything that might go wrong in an upcoming challenging situation.
D) learning to become an optimist.

26. Amy makes use of the Galatea effect when she says to herself
A) "Whatever results I achieve will be good enough."
B) "I intend to be one of the best performers in the company this year."
C) "Life is beautiful if you stop to smell the roses."
D) "If I set my goals low enough, I know I will succeed."

27. You know that you are on the way to peak performance when you
A) are beginning to feel some fatigue from the task.
B) receive the coaching that you need to perform well.
C) engage in multitasking.
D) totally focus on what you are doing.

28. Which one of the following is the least likely to be a source of self-confidence?
A) the experience of others, or modeling
B) comparing yourself to others
C) how we feel about events around us, and manage our emotions
D) having to repeat a task not done successfully the first time
29. Jack indicates high self-efficacy when he says,
A) "I know that I will make a superior PowerPoint presentation."
B) "I am the greatest."
C) "I do poorly on technical tasks."
D) "I can handle anything."

30. A high self-esteem living space is one that
A) costs way more than the average living space in the area.
B) has the latest technology, such as being a smart house.
C) honors the person you are.
D) requires low maintenance.
UNIT 2 QUIZ

1. A recommended technique for dealing with a stressful conversation is to
A) rehearse in advance what you intend to say.
B) use intimidation tactics during the conversation.
C) hold the conversation on Monday.
D) hold the conversation on Friday.

2. With respect to taking medical or legal calls in the office on your cell phone,
A) keep your cell phone at hand so you can take the call immediately.
B) take the call, but act as if you are angry because your work is interrupted.
C) advise work associates in advance that you might be receiving such a call.
D) politely tell your work associates to stop talking so you can better hear this important call.

3. If you have to take a cell phone call while interacting with a work associate, it is recommended that you
A) take the call on the spot to avoid wasting time.
B) move about fifteen feet away to take the call.
C) use the speakerphone function so your work associate will understand the importance of the call.
D) invite your work associate to speak to the caller.

4. The concept of an "electronic pet" refers to the idea that
A) many people pay their cell phone bill in preference to buying pet food.
B) many workers now give pet names to their cell phone.
C) cell phones can be equipped with animal-sounding ring tones.
D) many people have a physical attachment to their cell phones.

5. A point of etiquette to keep in mind when sending e-mail is that
A) rules of etiquette do not apply to e-mail.
B) the way in which you send a message tells something about you.
C) using line justification is a heavy insult.
D) salutations such as "Dear ________" are now regarded as poor etiquette.

6. Rafael sends an e-mail insulting the CEO to a coworker in another department. The message is now the property of
A) Rafael.
B) the recipient.
C) the CEO.
D) the company.

7. A major problem with sending instant messages to people is that the message
A) usually only makes sense to tech-savvy workers
B) gives the impression of the sender being disorganized.
C) can be quite disruptive to the other person.
D) is typically in violation of company policy.
8. Multitasking in the presence of another person or persons can result in a positive display of interpersonal skills when the
A) parties are of equal rank in the organization.
B) parties are of unequal rank in the organization.
C) parties are working close to each other physically.
D) purpose of the multitasking is to engage in joint problem solving.

9. Norman suffers from nomophobia, and is therefore likely to
A) feel uncomfortable when coworkers refer to his as "Norm."
B) feel anxious when he is not using or touching his smartphone.
C) forget frequently to bring his smartphone to the office.
D) call in sick so he can spend the entire day sending and receiving text messages.

10. With respect to the harassment of coworkers, information technology has
A) made the process much more difficult.
B) facilitated the process.
C) made harassment a violation of the law.
D) lessened the opportunities for harassment.

11. Albert was reprimanded by his supervisor for displaying on his smartphone during break time, a video of women playing football while wearing lingerie. Which one of the following represents the most accurate analysis of this scenario?
A) The supervisor was correct. The suggestive material on Albert's smartphone is not acceptable in the workplace.
B) The supervisor should have congratulated rather than reprimanded Albert, because he (Albert) was increasing job satisfaction for himself and coworkers.
C) Albert had a right to display whatever content he wanted on his own smartphone.
D) Albert should not have been reprimanded because Lingerie Football is legal in the U.S.

12. A major purpose of feedback in interpersonal communication is to
A) know whether a message has been received and understood.
B) prevent noise from taking place.
C) make the sender appear more impressive.
D) size up the climate for communication.

13. The purpose of nonverbal communication is to
A) convey the feeling behind the message.
B) clarify the spoken word.
C) repeat the spoken word.
D) prevent the spoken word from being interpreted too literally.
14. Bruce, a manufacturing supervisor, sends a mixed message (in the technical meaning of the term) to his group members when he
A) speaks mostly English and some Spanish during the meeting.
B) tells the group that he likes some of what the group is accomplishing but not every thing.
C) wants to increase both quality and quantity of the group's output.
D) arrives fifteen minutes late to a meeting he is holding to discuss the importance of promptness.

15. A study of over 100 speeches given by business executives indicated that, in terms of impact, the sound of the speaker's voice
A) had one-half the impact of the content of the message.
B) had twice the impact of the content of the message.
C) was irrelevant so long as it was not squeaky or too low.
D) was a determining factor in terms of whether the raters would even listen to the message.

16. A key part of empathy is to imagine yourself placed in another person's role, and then
A) quickly shift to your own role.
B) ask the person something to the effect, "So what's your problem?"
C) pay the person a big compliment, such as, "You are great in your role."
D) assume the viewpoints and emotions of that individual.

17. Defensive communication often occurs because the receiver is attempting to
A) create communication barriers.
B) confuse the sender.
C) impress the sender.
D) protect his or her self-esteem.

18. A major challenge in developing good listening skills is that
A) most people speak more quickly than most people process information.
B) most people process information more quickly than most people speak.
C) too many people compete with each other to be good listeners.
D) listening is discouraged in many jobs involving people contact.

19. When two people metacommunicate, they
A) misinterpret what each other is saying.
B) agree to disagree.
C) agree to agree.
D) communicate about how they are communicating.

20. The person who does not listen actively often has to
A) pretend to have been paying attention.
B) put effort into paraphrasing what has been said.
C) minimize distractions.
D) show listening intent through body language.
UNIT 3 QUIZ

1. Two major contributors to political decision making are
   A) concern for the welfare of others and being ethical.
   B) greed and gluttony.
   C) the search for being objective and rational.
   D) the desires to be fair and just.

2. An advantage of group problem solving is that if often leads to
   A) better acceptance of the decision.
   B) more rapid decisions than individual problem solving.
   C) political approaches to decision making.
   D) low commitment to implementing the decision.

3. A study showed that disagreeing about major issues can lead to positive outcomes for the group when the
   A) team leader explains that disagreement will not be tolerated.
   B) dissenters feel they have the freedom to express doubt.
   C) dissenters are paid a small bonus to keep quiet.
   D) rest of the group pokes fun at the dissenters.

4. Melissa takes an advocacy approach to group decision making. During a problem-solving meeting she is likely to
   A) advocate whatever is best for the company.
   B) be extra courteous toward the other team members.
   C) do whatever she can to get her alternative selected by the group.
   D) be the first to offer constructive suggestions.

5. A distinguishing characteristic of brainstorming is that participation by group members
   A) takes place in a predetermined sequence.
   B) follows the decision-making steps.
   C) is spontaneous and unrestrained.
   D) is discouraged by the group leader.

6. A recommended group size for brainstorming is about how many members?
   A) 2 to 4
   B) 5 to 7
   C) 8 to 14
   D) 15 to 20

7. A widely accepted suggestion for enhancing the effectiveness of brainstorming is for the group to be composed of
   A) homogeneous members.
   B) diverse members.
   C) members belonging to a similar age group.
   D) are looking for a break from the usual job routine.
8. An important cultural factor that could inhibit a worker's willingness to share decision making is a society that values
   A) collectivism.
   B) aggressiveness.
   C) equal distribution of power.
   D) profit making.

9. Conflict occurs whenever
   A) you are experiencing stress.
   B) two sets of demands are incompatible.
   C) you deal with coworkers.
   D) your job is demanding.

10. Sam and Muriel argue over who gets to use the new company car. Their conflict is best classified as
    A) differences in goals.
    B) personal differences.
    C) competition over limited resources.

11. Peggy will most likely face role conflict when she encounters the problem of
    A) being asked to both increase customer satisfaction and spend as little time with customers as possible.
    B) not earning a high enough salary to meet her expenses.
    C) working for a boss she dislikes.
    D) being asked to choose between receiving her salary by direct deposit or by debit card.

12. An important company initiative for helping employees reduce work-life conflict is to offer
    A) anger-management training.
    B) company-sponsored medical insurance.
    C) early retirement with severance pay.
    D) flexible working hours.

13. Drama in the workplace acts much like a
    A) personality clash.
    B) win-win approach to conflict resolution.
    C) company initiative for reducing work-life conflict.
    D) family-to-work conflict.

14. Bertha and Ben are engaged in task conflict when they argue about
    A) the best way to value an old building that the company owns.
    B) who is the most skilled property evaluator.
    C) who makes a more professional appearance between the two.
    D) whether the CEO is competent.
15. Imagine yourself as the sales manager for a company that sells corporate jets. A major customer complains that a recently purchased jet makes too much noise at high altitudes. To stop the conflict surrounding the complaint, you offer to send the customer a check for $10,000 as compensation for the problem. Which style of conflict management did you use?
A) competitive  
B) collaborative  
C) accommodative  
D) sharing

16. Linda, a labor relations specialist, wants each side to leave the negotiating table well satisfied. Linda is best advised to use which style of conflict management?
A) competitive  
B) collaborative (win-win)  
C) accommodative  
D) sharing

17. The method of identifying the true source of conflict and resolving it systematically is called,
A) frame the outcome in positive terms.  
B) disarm the opposition.  
C) confrontation and problem solving.  
D) begin with a plausible offer, but allow room for negotiation.

18. Michelle is in frequent conflict with a coworker who spends much of the day on her smartphone rather than contributing to the group effort. In order to reframe the conflict by asking questions, Michelle might ask all but which one of the following?
A) "Do I have all the facts?"  
B) "What is the real issue here?"  
C) "How would I want to be treated if the situation were reversed?"  
D) "When is the best time to tell management about my lazy coworker?"

19. A recommended way of using anger to your advantage while negotiating is to
A) show genuine anger, but do not overdo it.  
B) get red in the face and clench your fist while attempting to win your point.  
C) not give the other side any indication that you are angry.  
D) always be angry while negotiating.

20. Sexual harassment is said to be an expression of power because
A) showing pornography in the workplace is usually done by powerful executives.  
B) the harasser often has more formal power than the person harassed.  
C) sexual harassers are usually physically strong people.  
D) the harassed person often feels powerful for being a victim.
21. Manfred was raised in a culture with a strong value of social support seeking, so on the job he is likely to
A) ask for help and comfort when facing a difficult problem.
B) take members of the custodial staff to lunch.
C) be persistent in asking for salary increases.
D) avoid assignments that would require him to work on weekends.

22. In attempting to understand how cultural values influence human relations on the job, the most important factor is the
A) cultural value profile of that individual's country.
B) individual's age.
C) individual's value profile.
D) level of job satisfaction and happiness.

23. Helen's attitude toward power and authority is most likely to influence whether she
A) will accept full-time employment.
B) feels comfortable working with opposite-sex coworkers.
C) is willing to work overtime regularly.
D) offers suggestions to an older manager.

24. Which one of the following values is likely to be strongly held by Americans?
A) casual time orientation
B) urgent time orientation
C) emphasis on gender inequality
D) acceptance of power and authority

25. People with high cultural intelligence are able to
A) learn foreign languages quickly.
B) observe subtle cues about how to act in another culture.
C) quickly pick up facts about a different culture.
D) get through airport customs inspection without arousing suspicion.
UNIT 4 QUIZ

1. Leadership in the workplace is mostly concerned with
   A) controlling and giving orders.
   B) influencing and persuading others.
   C) taking care of business transactions.
   D) disciplining group members.

2. A sense of humor is particularly valuable in the workplace because it
   A) is a good substitute for low wages.
   B) helps defuse hostility.
   C) increases tension, thus preventing workers from becoming too relaxed.
   D) takes some power away from leaders.

3. Team leader Casey can best practice participative leadership by
   A) sharing authority with the group.
   B) being a micromanager.
   C) participating in group activities.
   D) participating in companywide activities.

4. Barry wants to be an effective team leader. He is therefore well advised to
   A) interact frequently with team members.
   B) micromanage a little every day.
   C) have members downplay each other's accomplishments.
   D) form in-groups and out-groups.

5. The motivational principle of WIIFM means that people are motivated by
   A) concern for the welfare of others.
   B) self-interest.
   C) a need to avoid pain.
   D) a spirit of excitement and adventure.

6. Leadership in the workplace is mostly concerned with
   A) controlling and giving orders.
   B) influencing and persuading others.
   C) taking care of business transactions.
   D) disciplining group members.

7. Danielle displays leadership efficacy when she
   A) helps prepare others for leadership positions.
   B) tells group members they must perform better or be fired.
   C) is confident of her knowledge, skills, and abilities to lead others.
   D) is confident that group members work for more than money.
8. Amanda has high self-awareness and self-objectivity, which should help her become a(n) ________ leader.
A) autocratic
B) untrustworthy
C) phony
D) authentic

9. According to research, superb leaders all have one trait in common:
A) exceptional spatial intelligence
B) superb emotional intelligence.
C) a below-average tolerance for risk taking.
D) average imagination and creativity.

10. A distinguishing characteristic of charismatic leaders is that they
A) guide others toward great heights of achievement.
B) hug group members rather than shake their hands.
C) turn leadership responsibility over to the group.
D) are open to criticism.

11. A recommended way of developing your leadership potential is to
A) allow your leader to make a mistake.
B) help your leader lead.
C) aim for leadership breakthroughs and minimize small acts of leadership.
D) be self-confident enough to ignore feedback about your traits and behaviors.

12. An appropriate reward is one that
A) is much bigger than previous rewards the person has received.
B) does not create an addiction to rewards.
C) is effective for the individual involved.
D) puts a worker in a good mood.

13. When intermittent rewards are used in positive reinforcement, the
A) desired behavior fades quickly.
B) desired behavior is sustained longer.
C) undesired behavior fades quickly.
D) undesired behavior is sustained longer.

14. The purpose of a visible reward is to
A) irritate those whose work did not qualify for a reward.
B) keep coworkers from wanting the same reward.
C) let other workers observe to see what kind of behavior is rewarded.
D) make the workers who did not receive the reward jealous.
15. Expectancy theory is based on the belief that people
A) want to maximize gain and minimize loss.
B) bet on the outcomes of a situation.
C) strive to receive bigger rewards than others.
D) are willing to endure pain to receive the right reward.

16. Todd asks the question, “If I get the job done, will I really get my reward?” He is illustrating which aspect of expectancy theory?
A) valence
B) effort-to-performance expectancy
C) performance-to-outcome expectancy
D) managerial effort

17. The impact of a positive mood on expectancy theory is that
A) the person loses interest in rewards.
B) the person loses interest in punishments.
C) all three components are likely to be elevated in value.
D) all three components are likely to be lowered in value.

18. Which one among the following questions would be part of using expectancy theory to diagnose motivation?
A) How conscientious is this person?
B) How badly does this person want the reward in question?
C) How emotionally stable is this person?
D) To what extent is this person a good organization citizen?

19. Michelle is the worst performer in your group. To use the Pygmalion effect to motivate her, you should
A) criticize her privately.
B) increase her performance-to-outcome expectancies.
C) lower your expectations of her performance.
D) raise your expectations of her performance.

20. Jill rewards herself for doing something right. This is an example of
A) behavior modification.
B) goal setting.
C) raising your self-expectations.
D) getting feedback on your performance.
APPENDIX H

INDEX OF LEARNING STYLES—REPORT OF RESULTS
INDEX OF LEARNING STYLES -- REPORT OF RESULTS

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- If your score on a scale is 1-3, you are fairly well balanced on the two dimensions of that scale.
- If your score on a scale is 5 or 7, you have a moderate preference for one dimension of the scale and will learn more easily in a teaching environment which favors that dimension.
- If your score on a scale is 9 or 11, you have a very strong preference for one dimension of the scale. You may have real difficulty learning in an environment which does not support that preference.
APPENDIX I

IRB APPROVAL
January 13, 2015

Dear Jay Rojewski:

On 1/13/2015, the IRB reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review:</th>
<th>Initial Study</th>
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<tr>
<td>Title of Study:</td>
<td>DOES ADJUSTING ONLINE DELIVERY TO MEET STUDENT LEARNING STYLES INFLUENCE ACHIEVEMENT?</td>
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<th>Investigator:</th>
<th>Jay Rojewski</th>
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<tr>
<td>IRB ID:</td>
<td>STUDY00001585</td>
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<tr>
<td>Funding:</td>
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<td>Grant ID:</td>
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The IRB approved the protocol from 1/13/2015.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103).

Sincerely,

Larry Nackerud, Ph.D.
University of Georgia
APPENDIX J

INITIAL INFORMATIONAL E-MAIL
Hello Class,

My name is Jennifer Edwards, a doctoral graduate student at The University of Georgia and your instructor for MGMT 1105, CRN 40662. As you were informed during our informational session, held on March 9, 2015 this course will be used for my research study and the results of this study will be used in my dissertation.

As a reminder, I am studying the effect of designing and delivering online course materials to meet student learning styles. I will be asking your opinions and interpretations of the effectiveness of each design approach. I will also be measuring student performance as each assignment design is delivered. Your active participation in this course and the information you share will deepen my understanding of student learning needs. It will also help guide the development and design of future online courses in an effort to improve student performance and satisfaction.

Please be aware that this research will last the full eight weeks of mini-semester 2, spring 2015 semester. Also, be aware that there are no incentives offered and your participation is absolutely voluntary. Your confidentiality is guaranteed and I will not link your name to anything you submit or in the text of my dissertation or any other publications.

Before we can officially begin, your signed consent is required. Additionally, I need you to complete a short Demographics Questionnaire and a Pre-Survey. These three items are all attached to this email. Please send your completed consent forms, questionnaires, and surveys back to me through this course e-mail system.

Please don’t hesitate to ask questions! Thank you for your help with this research.

Jennifer Edwards
APPENDIX K

SITE APPROVAL
CERTIFICATION OF INTENTION TO USE THE INDEX OF LEARNING STYLES FOR EDUCATIONAL OR RESEARCH PURPOSES AT NO COST TO USERS

I certify that:

- I am affiliated with an educational institution and plan to administer the Index of Learning Styles only as part of my teaching, advising, staff development, and/or research activities with that institution.
- I will not charge a fee to anyone who completes the questionnaire under my direction or the direction of anyone working with me.
- I will keep the response sheet with the scoring key for the instrument strictly confidential. I will not share copies of it with anyone not directly involved with administering the instrument, and I will collect completed copies from everyone who takes the instrument.

Signature: [Signature]
Name: [Name]
Institution: [Institution]
Email: [Email]

Please email the signed form to rmfielder@mindspring.com

or mail it to

Education Designs, Inc.
101 Lochside Drive
Cary, NC 27518-7401
APPENDIX L

CERTIFICATION OF INTENTION TO USE THE INDEX OF LEARNING STYLES
CERTIFICATION OF INTENTION TO USE THE INDEX OF LEARNING STYLES FOR EDUCATIONAL OR RESEARCH PURPOSES AT NO COST TO USERS

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Signature: [Signature]

Name: Jennifer Creek Edwards

Institution: Southern Crescent Technical College

Email: jedwards@sctech.edu

Please email the signed form to rmfelder@mindspring.com

or mail it to

Education Designs, Inc.
101 Lochside Drive
Cary, NC 27518-7401