Universal Design for Learning: A Program Evaluation

of Faculty Implementation

by

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A dissertation submitted to the faculty of

San Diego State University

In partial fulfillment of the requirements for the degree

Doctor of Educational Leadership

April 28, 2014
SAN DIEGO STATE UNIVERSITY

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Universal Design for Learning: A Program Evaluation

of Faculty Implementation

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ABSTRACT

This study, designed as a program evaluation of the Universal Design for Learning (UDL) Scholar Program, explored the ways that the application of UDL principles in courses and curriculum design may facilitate equity in student learning, and improve student success.

The researcher designed this dissertation as a summative process and outcomes-based evaluation with the intent of adding to the body of knowledge available to faculty, administrators, and others by providing insight into the effectiveness of UDL as an educational strategy to make differences in student achievement and/or engagement in the learning process. The researcher utilized the concurrent triangulation design, a mixed methods approach to data collection and analysis, to explore the experience and perceptions of the UDL Scholars as participants of the program, as well as efficacy of the program.

The researcher collected and analyzed data using SPSS 22 statistical analysis software to perform descriptive statistical analysis of quantitative data and Atlas.ti (version 7) analysis software to perform content analysis and coding of qualitative data.
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ACKNOWLEDGMENTS

Nothing spectacular happens to any of us in a vacuum. On my educational journey there have been so many people who have walked with me; people who have encouraged me to keep moving forward. It is with great love and respect that I acknowledge those people:

Drs. Caren Sax and Mari Guillermo, who inspired me to continue my journey from my Associate program at Grossmont College through the Bachelor’s and Master’s programs at SDSU.

Dr. Marjorie Olney, who believed in me from the start.

Dr. Bobbie Atkins, who remains the most influential faculty member of my journey.

Dr. Beth Kelley who continued to hold my hand and walk with me; encouraging me each step of the way, telling me I could do it, even after she graduated.

This has been an amazing experience, and I am so grateful that you shared it with me!
I dedicate this dissertation to my husband Jerry,

and to my children, Beau, Trevor, Alex, and Paul.

This 20-year journey is one that I could never have endured

without your ongoing support and encouragement.

No words adequately express my gratitude, love, and appreciation

for the sacrifices you made through the years.

I can only hope that you are proud of the person

I have become as a result of this journey.
CHAPTER 1—INTRODUCTION

The population of students in postsecondary education is becoming increasingly diverse, resulting in diverse learning needs. There has been an increase in the number of students with disabilities, women, students from cultural or ethnic minority backgrounds, and immigrants for whom English is a second language (California Community College Chancellor’s Office [CCCCO], 2012). Whether students have disabilities, are English language learners (ELL), or are returning veterans, they deserve full access to course materials with which they can interact in meaningful ways. Many students of color and those with disabilities are coming to college campuses less prepared than their peers for college level courses and are less successful in terms of course completion and graduation rates (National Center for Public Policy and Higher Education, Southern Regional Education Board, 2010). The ability to meet these diverse learning needs in an equitable manner has emerged, and Universal Design for Learning (UDL) has “become a buzzword” in academia (McGuire, Scott, & Shaw, 2006, p. 171). Universal Design for Learning applies the principles of architectural universal design to course curriculum and materials and has been used in a number of disciplines to improve student success (Lieberman, Lytle, & Clarcq, 2008; Morra & Reynolds, 2010).

In response to the emerging needs of a diverse student population, the Higher Education Disability and Diversity project housed in Southern Coastal University’s (SCU) Worksmart Institute (all pseudonyms) initiated the Universal Design for Learning (UDL) Scholar Program. This program trained faculty, college staff, and administrators from 2- and 4-year institutions within South Coast County, to implement the principles of UDL into their curriculum and programs. Program participants, referred to as “scholars,”
participated in UDL training workshops, and volunteered to learn about and implement UDL principles in order to make course materials and curriculum accessible to a broad range of students, regardless of their ability or learning style. This study, designed as a program evaluation of the UDL Scholar Program, explored the ways that the application of UDL principles in courses and curriculum design may facilitate equity in student learning and improve student success.

The program evaluation of the UDL Scholar Program included a review of documents that were created during the 3 years of the program (i.e., annual program reviews, and pre-and postworkshop surveys). The researcher designed a new survey via the Qualtrics online survey software system and emailed the link to UDL faculty scholars to learn which of the principles of UDL were implemented into their course curriculum, and determine any changes in student success, as perceived by the scholar. The researcher defined student success as course completion with a grade of C or higher, as reported by the scholar. In order to identify the principles that appeared to facilitate, or show promise for facilitation, of learning equity, and improvement in student success, the survey asked participants to identify the principles of UDL they had utilized. The survey was sent to the 43 scholars who participated in the program from 2008-2011, to learn of any new developments since they completed the UDL training and implemented original UDL projects. Of specific interest was whether the scholars have made any new changes to curriculum or materials and whether they have shared their knowledge and skills about utilizing UDL with colleagues since the UDL Scholar Program funding period ended in 2011.
**Background**

In 2008, the U.S. Department of Education awarded funding to SCU for a 3-year Disability and Diversity (D&D) project. A significant component of the D&D project was the UDL Scholar Program, which provided opportunities for community college and university faculty and staff to learn about the principles of universal design and apply those principles in the academic setting. The purpose of the UDL Scholar Program was to increase the capacity of colleges and universities faculty to support and meet the diverse educational needs of their students and influence student success in a positive way. California college campuses have diversity initiatives in place, most of which address the traditional components of diversity (i.e., students from different ethnic and racial backgrounds, gender, age, etc.). The D&D project added disability as a dimension of the diversity found in the student body on today’s college campuses.

The link between disability and diversity and the approach to designing course curriculum, content, and materials, and making learning accessible to all students is referred to as Universal Design for Learning. Rather than limiting the focus to providing reasonable accommodations (as mandated by Section 504 of the Rehabilitation Act [1973] and the Americans With Disabilities Act [1990]) for students with disabilities, the UDL Scholar Program focused on the principles of UDL that addressed the diverse learning needs of all students. Universal Design for Learning Scholars of the D&D project were faculty members who volunteered to examine and explore UDL and apply it to their courses and programs.
Statement of the Problem

The student population in higher education is becoming more diverse; there are increasing numbers of students for whom English is a second language, who have differing learning styles and preferences, and who have disabilities enrolling in South Coast’s community colleges (CCCCO, 2012). There has traditionally been a gap between the achievement rates of minority students with their White counterparts, and this achievement gap regarding diverse learners persists (U.S. Department of Education [ED], National Center for Education Statistics, 2012). According to the National Center for Education Statistics (as cited in Aud et al., 2012), 32% of young adults ages 25-29 had completed at least a bachelor’s degree in 2010. Since 1975, there has been an increase in the achievement gap between Whites and African Americans from 13 to 19 percentage points, and the gap between Whites and Hispanics increased from 15 percentage points to 25. The percentage of Asians/Pacific Islanders who have received a bachelor’s degree has decreased from 60% to 53% since 2005 (Aud et al., 2012). In 2010, only about 12% of people with disabilities age 16-64 had attained a bachelor’s degree or higher, while nearly 31% of people age 16-64, without disabilities, had attained a bachelor’s degree or higher (Cornell University ILR School, 2010). Many students experience challenges to educational success that are associated with their racial or ethnic minority status, because institutions that serve primarily White students often maintain outdated policies and practices that produce cultural biases and result in cultural alienation of minority students (Swail, Redd, & Perna, 2003; Torres, 2003).

Negative attitudes and biases or assumptions made by faculty and staff about this diverse population can negatively affect success and academic outcomes of these
students; however, approaches to teaching that take the individual student needs and experiences into account result in more successful outcomes (Darling-Hammond & Snyder, 2000). Therefore, faculty must become more aware of and knowledgeable about skillful ways to meet the needs of diverse learners in order to improve student success on our campuses. Southern Coastal University responded by implementing the UDL Scholar program as part of the Disability and Diversity Project, funded through the U.S. Department of Education.

**Purpose of the Study**

The purpose of this mixed methods program evaluation was to examine the efficacy of the Universal Design for Learning (UDL) Scholar program. The evaluation focused specifically on the ways in which the UDL program facilitated equity in learning to improve success for college students in South Coast County. Universal Design for Learning Scholars were college faculty members who were trained in the principles of UDL and who have implemented innovative UDL practices in their course delivery. This study identified the principles of UDL that were implemented by faculty scholars in the development and delivery of their course curricula and examined the experience and perceptions of faculty scholars concerning the principles and/or innovation that were implemented. The learning experience of scholars and the perceived changes in student learning and success were examined in terms of the principles and innovations that were implemented. The outcomes of this study were used to inform college faculty and administrators about the effectiveness of the principles of UDL to facilitate equity in student learning and promote student success.
Significance of the Study

Although teacher-based methods of instruction (i.e., transactional teaching) in which students take notes in the classroom while the instructor delivers an oral lecture still occur, a learner-centered approach that shifts the focus from the instructor to the student (i.e., transformative teaching) has emerged in academia (Mintz, n.d.). The transactional teaching method can be quite effective for the “auditory” learner; however, it leaves much to be desired by the visual or kinesthetic learner who receives information more readily by seeing a graph or picture, or through performing some hands-on activity. Universal Design for Learning is a learner-centered approach (Blumberg, 2013; Meo, 2008; Rose & Meyer, 2002) that speaks to the increasingly diverse learning needs of students. Students need to receive information and materials in a variety of formats that appeal to a diverse student population with varying English language skills, abilities, and preferences.

Figure 1 depicts Edgar Dale’s Cone of Learning Theory, which supports the concept of multiple modalities of instruction (Lord, 2007). According to Dale (as cited in Lord, 2007), at 6 weeks post instruction, students retained 4-8% of information that was delivered by lecture only, while cooperative learning resulted in the retention of 60-80% of the information, and teaching others resulted in recall of 80-90% of the information taught.

The term, *Universal Design*, coined by architect Ron Mace in the mid-1980s, was originally applied to the design of buildings and products that can be accessed by “the greatest number of users” (McGuire et al., 2006, p. 168). The principles of Universal Design can be applied to educational settings in order to improve equity, access, and
Figure 1. Dale’s Cone of Learning, with percentage of retention 6 weeks posttraining. Adapted from *Audiovisual Methods in Teaching*, 1969, by E. Dale, New York, NY: Dryden Press, p. 108.

inclusion by providing “multiple means for teaching and learning” (Bernacchio et al., 2007, p. 56).

Several laws have been passed that, like universal design in architecture, were intended to benefit individuals with disabilities. These laws have been beneficial for a large majority of students, both with and without disabilities. For example, Section 504 of the Rehabilitation Act of 1973 prohibits discrimination against individuals with disabilities in programs and services that receive federal funds and pertains to a majority of institutions of postsecondary and higher education. In order to be truly nondiscriminatory, materials must be made available to individuals in a way that promotes equity and inclusion of all students regardless of ethnic background, or
disability status (U.S. Dept. of Health and Human Services [HHS], 2006). Section 508 of the Rehabilitation Act, Reauthorized 1992, requires that information technology and electronic information be made accessible to people with disabilities, and that there be increased access to assistive technology (HHS, 2009). Although this legislation was designed to improve equity and inclusion for individuals with disabilities, it also is beneficial for people whose first language is not English, and for individuals with different learning styles and preferences. Sopko (2009) explained that policy has been slow to keep up with the quickly progressing importance of implementing UDL in education. The Higher Education Opportunity Act, reauthorized in 2008, provided this specific description of UDL:

Universal design for learning (UDL) means a scientifically valid framework for guiding educational practice that: (A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient. (§ 103(a)(24))

As the student population becomes more diverse, learning needs are more varied, and educators must be responsive to those changing needs by employing a new pedagogy of teaching and learning that implements new strategies and techniques with potential for increasing student success and completion in our campuses. This study investigated the efficacy of the UDL Scholar Program to train faculty in this emerging pedagogy that strives to make classroom materials and instruction accessible to as many students as
possible. Faculty perspectives on whether there were any increases in student success as a result of implementing those techniques and strategies was also explored.

Research Questions

The research questions explored in this study were:

1. What influenced faculty to become a UDL Scholar and employ UDL in their teaching for diverse learners in postsecondary education?
2. How did UDL pedagogy influence student learning, as perceived by faculty?
3. How did implementation of UDL strategies result in ongoing changes in pedagogy among UDL scholars?
4. What measurable UDL Scholar Program outcomes were achieved?

Conceptual Framework

Creswell (2009) describes Kerlinger’s 1979 definition of a theory as a set of propositions, or hypotheses that can be positioned as a discussion, argument, or rationale that provide generalized predictions or explanations of how the world operates. A theoretical framework may provide broad philosophical overviews or a more narrowed and concrete explanation of some phenomenon.

The conceptual frameworks used for this study provided perspectives that support the need for change from teacher-based instructional strategies to student-based teaching strategies that are implemented through the use of UDL in postsecondary education. These frameworks included Malcolm Knowles’ Theory of Andragogy (Knowles, 1970), Paolo Freire’s Banking Concept of Education (Freire, 2005), and Transformative Learning Theory (Dirkx, 1998; Minow, 2009).
**Freire’s Banking Concept of Education**

Freire’s (2005) description of the banking concept of education views the teacher/student relationship as a transactional narrative relationship in which the teacher imparts knowledge to the student. Students are seen as empty vessels, filled with the knowledge given by the teacher. The subject of the narration is the teacher, and the object of the narration is the passive student listener. According to this view, the more filled the vessel (student) becomes with the imparted knowledge, the better the teacher is; and conversely, the better the student becomes at memorizing information and repeating the information, the better student they are viewed to be (Freire, 2005). Freire argues against the banking concept, and posits that for real learning to occur, the student and teacher must form a partnership rich in dialogue that results in students and teachers learning from one another. Rather than education being something done to a student, education becomes something that is perceived as being done with a student. The student learns to think critically about the information being presented and makes sense of that information in relation to his/her own reality and experience (Freire, 2005).

**Knowles’ Theory of Andragogy**

Knowles (1970) describes pedagogy as the way instructors assist children to learn, while andragogy pertains to the way instructors assist adults to learn. This is not to say that pedagogy and andragogy are two different theories, but rather that they occur on a continuum of extremes on one spectrum, from pedagogy to andragogy. Knowles’ theory is grounded in the characteristics of the learner, rather than the characteristics of the instructor. This theory views each learner as being autonomous and self-directed, and views teachers as facilitators for learning. Knowles outlines conditions for learning and
principles for teaching within this theoretical framework that are in alignment with the principles of UDL. As with the implementation of principles of UDL, Knowles posits that the instructor takes responsibility for the climate or conditions for learning. These conditions include: (a) establishing a climate conducive to adult learning; (b) creating an organizational structure for planning; (c) diagnosing learning needs; (d) formulating directions of learning (objectives); (e) developing a design of activities; (f) carry out activities; and (g) re-diagnosing learning needs (evaluation). Therefore, andragogy can be seen as both a theory and a process by which learning conditions and teaching principles work in conjunction to facilitate learning (Knowles, 1970).

**Bransford’s How People Learn**

Extending from Knowles Theory of Andragogy, Bransford, Brown, and Cocking (2000) present a framework for learning in their book, *How People Learn*, which answers questions about how students learn, and offers insight for reflection upon teaching practices. According to Bransford et al., a learner’s expertise or mastery of a subject exists on a continuum from novice to expert that does not transfer or generalize from one field of expertise to another. Student learning typically is based upon what a student already knows about a subject, as well as the new knowledge being presented to learn. The more a student can relate to the material presented, the easier they will absorb and retain what they are learning. Learners develop organizational schemes that allow them to function within the area they are learning about, but not within the field as a whole. For instance, when learning mathematics, a student must understand addition, subtraction, multiplication, and division before they can be expected to understand and perform the higher functions of algebra. This is known as scaffolding in the world of UDL and is
very effective (Hall, Strangman, & Meyer, 2011). Bransford et al. posit that thinking and learning must be made visible by allowing students to engage in activities that allow the thinking process to be seen. The instructor should also model expert thinking in order to show students what they should be learning. Universal Design for Learning models this expert thinking by providing training materials in multiple formats, and varying modes of manipulation and expression.

Bransford et al. (2000) point out that there are four facets of the learning environment that promote effective learning. Environments must be:

1. Learner-centered: understanding that all students have knowledge, beliefs, attitudes, and skills that they bring to the learning environment with them to share with the instructor and other students.

2. Assessment-centered: providing formal and informal opportunities for instructors to provide feedback based upon student understanding of a topic, and encourage student continued learning.

3. Knowledge-centered: taking into consideration that students need assistance to learn and that a foundation of basic concepts provides a strong base for the scaffolding on which further learning will be built.

4. Community-centered: where students are active participants, who are supported and encouraged to collaborate and learn from one another in an attempt to constantly improve their knowledge and ability.

**Transformative Learning Theory**

Dirkx (1998) asserts that Transformative Learning Theory does not view knowledge as something that learners “take in,” but rather it occurs within the context of
each student making sense of his unique life experience. When approached with the goal of fundamental change in pedagogy, lesson planning, teaching strategies, and evaluations are framed from the perspective of the learner’s experience (Dirkx, 1998).

Transformative learning theory posits that learning occurs in different ways for different learners, and each must be able to take in the information, manipulate it in multiple ways that make the information understandable to the individual. Minow (2009) underscores the relationship between UDL and transformative learning theory, stating that there is a focus on student engagement that is promising for the education of all because of the capacity for providing multiple modes of presentation, and allowing students to collaborate and create, thus cultivating the passion for learning in all students. Thus, there appears to be congruence between utilizing the principles of UDL in the educational arena with the transformational learning theory framework for learning.

For the purpose of this study, the researcher utilized these conceptual frameworks to provide a focused perspective in favor of new teaching paradigms such as Universal Design for Learning.

**Diffusion of Innovation Theory**

There is a turning point for trends or innovations where the majority accepts them and change within a social system becomes easily promoted. Everett Rogers’ Diffusion of Innovation Theory provides characteristics of how innovations are accepted and spread within a specific social system, is the origin of this concept (Orr, 2003). In most cases, the population (in this case, the scholars) can be divided into five segments or categories, based upon the tendency to adopt an innovation. These segments are: innovators, early adopters, early majorities, late majorities, and laggards (Robinson, 2009). Scholars were
categorized into these segments based upon the number of workshops they attended before deciding to become a scholar. A scholar who made the decision prior to attending any workshops was placed into the category of early adopter, while a scholar who attended five or more workshops was placed into the category of laggard. Individuals go through a five-step process in deciding whether or not to adopt an innovation. In this example, UDL is the innovation. Rather than attempting to persuade an individual to change, the focus of DOI is on making changes to the product or behavior. According to DOI theory (as cited in Orr, 2003), individuals choose to adopt an innovation based on time, their social system, the innovation itself, and channels of communication. In theory, the adoption and utilization of UDL by each scholar would depend primarily upon the effectiveness of the channels of communication (training workshops, follow-up technical assistance), understanding of the innovation (UDL), and an online website designed specifically for dissemination and sharing of UDL scholar innovations. In a review of Roger’s work, Orr (2003) explained that the decision to adopt an innovation is influenced by whether others in the individual’s social system adopt the innovation. Table 1 provides Rogers’ definitions of terms (as cited in Orr, 2003), along with the terms that were used in this study to explore the phases UDL scholars went through in the process of deciding to become UDL scholars.

**Methodology**

The researcher designed this program evaluation to explore the efficacy of the UDL Scholar Program to influence the faculty’s (a) perspectives and pedagogy, and (b) utilization of UDL principles and strategies in their course curricula and programs in ways that improve student success. Forty-three UDL Scholars who received training and
Table 1

*Terms and Definitions of Diffusion of Innovation*

<table>
<thead>
<tr>
<th>Roger’s terms</th>
<th>Definition</th>
<th>Study terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Person becomes aware of an innovation (UDL) but has little information and</td>
<td>Awareness</td>
</tr>
<tr>
<td></td>
<td>may or may not be inspired to investigate further</td>
<td></td>
</tr>
<tr>
<td>Persuasion</td>
<td>Person forms interest in the innovation, and actively seeks more information</td>
<td>Seeking</td>
</tr>
<tr>
<td>Decision</td>
<td>Person begins weighing advantages/disadvantages of using the innovation,</td>
<td>Decision to become scholar</td>
</tr>
<tr>
<td></td>
<td>leading to a choice to adopt or reject the innovation</td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td>Person becomes UDL Scholar; determines usefulness of the innovation; puts</td>
<td>Application of UDL</td>
</tr>
<tr>
<td></td>
<td>innovation into use</td>
<td></td>
</tr>
<tr>
<td>Confirmation</td>
<td>Person finalizes the decision to continue using the innovation</td>
<td>Sharing and continued application</td>
</tr>
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</table>

Participants in the 2008-2011 UDL Scholar Program were invited to participate in the study via an introductory email explaining the study and extending an invitation to participate in the study (see Appendix A for the email inviting scholars to participate). These scholars included full and part time faculty of community colleges and 4-year universities, including graduate level academic programs. Qualitative data regarding faculty perspectives and changes in pedagogy were obtained through a review of existing program documents and the administration of the UDL Scholar Post-Program Survey questionnaire completed by the faculty scholars (see Appendix B). Quantitative data related to implementation of the principles of UDL study were collected to learn which principles were most often used, and showed the most promise for influencing student success was explored. Analysis of student course outcomes provided useful quantitative
data regarding any improvements in student success, as perceived by the scholar following their implementation of UDL principles.

**Definitions of Terms**

The researcher has provided the following definition of terms for clarity and consistency in meaning for the reader:

*Equitable use*: Defined as making curriculum and materials available to students in such a way that they are able to access and manipulate it in ways that are meaningful to them.

*Equity*: For the purpose of this study, equity refers to the quality or act of being fair or impartial.

*Flex Week*: Staff development week at the community college level, which takes place each semester during the week prior to the beginning of courses.

*Traditional Student*: For the purpose of this study, a traditional student is one who graduates from high school and matriculates directly into the community college or university college setting.

*Universal Design*: A term coined by architect Ronald L. Mace to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life.

*Universal Design for Instruction*: An educational framework in which the principles of universal design are applied to learning environments, resulting in greater accessibility for all students.
Universal Design for Learning: An educational framework that guides the development of flexible learning environments to accommodate individual learning differences.

Framework of the Study

This dissertation utilizes a five-chapter model. Chapter 1 provides an introduction to the study; an evaluation of the UDL Scholar Program at SCU. Chapter 2 consists of a review of the literature and relevant research associated with the topic of this study. Chapter 3 outlines the methodologies, procedures, and instruments used for collecting and analyzing data in this study. Chapter 4 summarizes the research findings, and Chapter 5 provides discussion of the findings, offers implications for practitioners, and recommendations for future research.
CHAPTER 2—REVIEW OF THE LITERATURE

Access to college has improved for underrepresented (i.e., minority) students and the number of adult students, nonnative English speakers, low-income, minority, and first generation students enrolling in college is expected to continue rising (McClenney, 2004). In all institutions of higher education, except for historically black colleges, tribal colleges, or colleges located in Puerto Rico, race/ethnicity-based disparity in educational outcomes is the rule, not the exception. This disparity goes largely unnoticed because internal and external accountability structures do not include measurements that include equity (Bauman, Bustillos, Bensimon, Brown, & Bartee, 2005). With the growing diversity in the student population of community colleges, Universal Design for Learning (UDL) is a way to improve equity and access for students who may otherwise be less successful in the college arena (Engleman & Schmidt, 2007). This literature review covers the history and background of UDL, including pedagogy and instruction, and an explanation of learner diversity. A discussion about the effectiveness of UDL as a teaching strategy, and an exploration of faculty development practices and information regarding outcomes, concludes this chapter.

History and Background

During the mid-1980s, architect Ron Mace led a team of architects at North Carolina State University in developing seven principles of architectural design, and Mace aptly created the term, Universal Design (UD), as it applied to designing buildings and products in such a way as to be accessible for the greatest number of users (McGuire et al., 2006). An excellent example of UD is the curb cut. The original intent was that individuals using wheelchairs would use it; however, people pushing strollers, riding
bicycles, or skateboarders also benefit from curb cuts. The UD movement was important because it began reducing the barriers to inclusion for individuals with disabilities, and others with physical limitations due to aging, who were otherwise marginalized from full participation in society and unable to access buildings and programs in their communities. Silver, Bourke, and Strenhorn (as cited in McGuire & Scott, 2006) first used the term universal instructional design in 1998 to introduce the idea that there is a fit between instruction in higher education and UD. This newly defined concept made issues surrounding accessibility an essential component of instructional planning. Their work provided insights into challenges faced by diverse learners and the benefits when faculty used UDL approaches (McGuire & Scott, 2006).

Following the 1997 Reauthorization of the Individuals with Disabilities Education Act (IDEA), the principles of Universal Design for Learning (UDL) were developed by Anne Meyer and David Rose at the Center for Applied Special Technology (CAST, 2010; see also Bremer, 2004; Edyburn, 2010). These principles are applied to educational settings in order to improve equity, access, and inclusion by providing multiple teaching strategies (Bernacchio et al., 2007).

Just as UD in the architectural environment was beneficial to all users, UDL in the educational arena allows for full participation of all learners, including those with disabilities and those from diverse cultural backgrounds. Within the educational field, the concept of UDL was first applied in the K-12 classroom system and shortly after began to be applied to postsecondary education (Shawn, Scott, & McGuire, 2001). Moreover, Lieberman et al. (2008) have inquired into ways that UDL can be applied to a variety of educational disciplines, including physical education courses. The concept and
practice of implementing UDL strategies is becoming better known and is being referenced in educational policy briefs, teacher professional development, books, and articles for educators and research literature.

A National Task Force on UDL comprised of more than 25 national education and disability organizations was established in 2006 to improve instruction for all students through incorporation of UDL into educational policy and promote UDL through grants and technical assistance programs. The task force played a major role in the addition of UDL into the Higher Education Opportunity Act (2008), and recommended that language be included in the Reauthorization of the Elementary and Secondary Education Act (No Child Left Behind Act, 2001). At this time however, there is no reference to UDL in any federal K-12 legislation (Sopko, 2009).

Momentum is building nationally for inclusion of UDL as a framework to address the diverse learning needs of students. The States of Indiana, Iowa, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Minnesota, and New Jersey currently have initiatives to incorporate UDL into their schools (Maryland State Department of Education, 2010).

**Legislation**

Much like UD in architecture, legislation designed initially to benefit individuals with disabilities has provided better access for many students, including English language learners and students with differing learning styles. The Individuals with Disabilities Education Act (IDEA, 1997) ensures that public agencies and states provide special education, early intervention, and other related services to infants, children, and youth with disabilities throughout the United States (ED, 2004). The Assistive Technology Act (Reauthorized in 2004), was first passed in 1988 as The Technology-Related Assistance
to Individuals With Disabilities Act, to promote awareness about and provide access to assistive technology to individuals with disabilities so they will be more fully included in daily activities, employment, and education (ED, 2006). Section 504 of the Rehabilitation Act of 1973 prohibits discrimination against individuals with disabilities in programs and services that receive federal funds, and pertains to a majority of institutions of higher education (HHS, 2006). Section 508 of the Rehabilitation Act, Reauthorized 1992, requires that information technology and electronic information be made accessible to people with disabilities, and that there be increased access to assistive technology (HHS, 2009). Although this legislation provides for individuals with disabilities to be afforded with opportunities and access to technology and electronically formatted information, all students benefit when instructors provide the information to their entire class in an equitable manner rather than providing individual accommodation only for students with disabilities.

Southern Coastal University initially received funds from the U.S. Department of Education to implement the Higher Education Disability and Diversity (D&D) Project beginning October 1, 2005. The mission or goal of this project was, to enhance the knowledge and skills of administrators, faculty, and staff through a universal model linking disability and diversity in postsecondary education. An important component of the 2005 D&D project was the UDL Scholar Program, which provided training about universal design for learning to college and university faculty in South Coast County. Similar to the 2005 D&D program, the 2008 program offered opportunity for faculty of 2- and 4-year institutions to learn about UDL strategies, and techniques, but also instituted a peer-to-peer mentor program, and worked toward a farther reaching impact
on the academic community through the creation of UDL Scholar videos, that showcased each scholar’s innovative project. The 2008 program was developed in response to discrepancies in opportunities and outcomes for people with disabilities, in comparison to their counterparts without disabilities. These discrepancies exist despite the passage of landmark legislation (i.e., Individuals With Disabilities Education Act [IDEA] of 1997, Section 504 of the Rehabilitation Act of 1973, and the Americans With Disabilities Act [ADA] of 1990). In 2008, only about 20% of individuals with disabilities in the United States were employed, as compared to nearly 67% of individuals without disabilities (Bureau of Labor Statistics, 2008). The CCCCO (2013) reported that the percentage of students with disabilities enrolled in the California Community College System increased from 3.73% during the 2009-2010 school year to 4.04% for the 2010-2011 school year. Retention levels and completion rates of degree applicable courses were lower for students with disabilities than for students without disabilities. Students with disabilities showed an 11% lower course completion rate for students with disabilities than for students without disabilities, and they were 4% less likely to complete attempted workforce development courses, and 9% less likely to transfer into the State University System (CCCCO, 2013). The implications of these discrepancies are staggering in terms of the relationship between education and employment. It is well known that a college degree increases opportunities for career mobility, higher wages, and consistent employment for people with and without disabilities (Aud et al., 2012).

The D&D program developers recognized that one of the reasons students encounter challenges or do not succeed in postsecondary settings are attributed, at least in part, to society’s overall negative attitudes towards people with disabilities. Further,
college faculty, administrators, and staff, are generally unprepared to effectively respond to the needs of diverse learners. To be responsive to student needs, faculty, staff, and administrators must have information on accommodations, accessibility, and assistive technology, and pedagogy for teaching that is compatible with different learning modes. The project collaborated with 2- and 4-year public postsecondary institutions in South Coast and North City, as a means to generate significant outcomes, have widespread systemic impact, and support replicability (Atkins & Guillermo, 2008).

**Learner Diversity**

The California Community College Chancellor’s Office (CCCCO, 2013) reported that 4.04% of the California students enrolled from 2010-2011 had some type of disability. Demographics showed that 53% of the total student population was female, 32% were White, 33% were Hispanic, 11% were Asian, 7% were African American, 3% were Filipino, 0.59% were American Indian, Alaskan Native, and 0.58% were Pacific Islander (CCCCO, 2012). Previously discussed legislation has opened access to education for students from diverse backgrounds; however, educational culture and practices have not adequately changed to meet the needs of these students, resulting in barriers to access, persistence, and retention. Students from ethnic minority backgrounds; those with disabilities, and immigrants for whom English is a second language face challenges such as lack of preparation for higher education, higher dropout rates, lack of information regarding available student services and support, and financial barriers. Although providing accessible curricula provides greater learning opportunities for students with disabilities, accessibility on its own may not increase student engagement or academic achievement. An instructional design with a variety of teaching and learning
strategies is required to engage all students effectively (Holdheide & Reschley, 2008). Universal Design for Learning provides a framework for making changes in several dimensions (i.e., the curriculum, teaching and testing methods), as well as physical layout of a campus or classroom (Pliner & Johnson, 2004). Universal Design for Learning speaks to the growing diversity of the student body and enables faculty to present information in meaningful ways to students from: low socioeconomic-status (SES); ethnic and cultural minorities; English language learners; students accessing postsecondary education later in life; and students with sensory (blindness, deafness) mobility, or learning disabilities (Belch, 2004; Brown, 2010; Burgstahler, 2006; Dukes, Koorland, & Scott, 2009; Lieberman et al., 2008; Mark, 2003; Zhang, 2010).

The traditional teacher-centered approach that relies on oral lectures, written quizzes, and rote memorization of materials has limited effectiveness, particularly for students with varied learning skills and preferences. The ways that students learn, receive information, interact with content, and demonstrate learning vary from student to student. According to Tinto’s (2002) model of student retention, each student comes into the educational arena with personal goals and characteristics that include individual attributes (such as cultural background or learning styles), family attributes (such as the mother’s education level), and prior qualifications (such as grade point average, Swail, 2004; Tinto, 2002). When an institution supports student educational goals through academic program services and learning supports, academic integration takes place. Similarly, social integration takes place when student social needs are supported through family and student events. Tinto’s theory posits that, although students may come into higher
education adequately prepared, it is the effect of interactions of the student with the institution that affect whether a student persists or drops out (Racchini, 2005).

According to Tinto (2002), many of the different attributes students bring with them to higher education are out of the control of the institution; however, there are five conditions within the control of the institutions that will assist students to persist in higher education. First is the condition that there are high expectations that the student will persist. Second is a climate in which institutional requirements are clearly and consistently stated. Third, institutions provide social, academic, and personal support especially during the critical first year of postsecondary education. A fourth condition within control of the institution is student involvement with faculty/staff of the institution, as well as with other students. Students who feel valued and are involved with others are more likely to persist. The fifth, and perhaps most important condition, is that environments that are conducive to learning are created. Some theorists place importance on ways that cultural norms and organizational structures and processes influence student success but, by and large, Tinto’s dual emphasis on student attributes and institutional practices are supported as the keys to understanding college persistence and completion (Brock, 2010).

O’Banion (2007) calls for an overhaul of the “traditional architecture of education” (p. 714), as it does not expand or improve student learning. This calls for a shift that places the focus on the ways and rates at which students learn information. Variables that influence student learning are as diverse as the students themselves, including demographics (i.e., race, ethnicity, primary language, SES, gender, age), skill levels (i.e., cognitive, technological, organizational), and personal backgrounds and
experiences (i.e., first generation college student, employment, family obligations). In stark contrast to teacher-centered pedagogies, theories such as Astin’s (1999) Student Involvement Theory brings attention to the critical role student involvement plays in the achievement of student outcomes. Astin believes his theory to be an improvement above traditional pedagogical approaches because of the focus on the student in terms of behavior and motivation. Impact of the policies and practices of the institution, then, can be deemed beneficial to student learning and success based upon the level of student involvement they encourage. Likewise, faculty and staff can work with the goal of increasing student involvement in the college environment, with the intended outcome of students becoming better learners (Astin, 1999).

In addition to its architectural foundations, UDL theory emerges from the field of cognitive neuroscience and seeks to understand how individuals learn, and has been explored through brain scanning technology such as magnetic resonance imaging. Diversity in learning styles and preferences are illuminated by the individual differences found in the brain (Meyer & Rose, 1998; Rose & Meyer, 2002). Universal Design for Learning is an approach to instruction that considers and understands diverse learning styles and abilities of today’s students. Rose and Meyer (2002) suggest that research in neurosciences supports the concept that three neural networks in the brain are related to and oversee three fundamental components of learning: (a) recognition of patterns, (b) planning and generation of patterns, and (c) selection and prioritization of patterns. The UDL perspective takes into consideration that these abilities differ among students. Utilizing the UDL principles to design flexible curriculum embeds options that support the function of these neural networks (Morra & Reynolds, 2010; Rose & Strangman,
2007). Three UDL principles guide the design of flexible curricula by calling for the embedding of options that support differences in recognition, strategic, and affective networks. These principles provide for: (a) multiple, flexible methods of presentation to support recognition learning; (b) multiple/flexible means of expression to support strategic learning; and (c) multiple means of engagement to support effective learning (Rose & Meyer, 2002).

The Student Involvement Theory (Astin, 1999) states that “the greater the student’s involvement in college, the greater will be the amount of student learning and personal development” (p. 529). This theory characterizes involvement of the quality of psychological and physical energy students put into their academic experience. With an emphasis on active learning, Astin’s (1999) Theory posits that intended effects (i.e., greater involvement and learning) are achieved when curriculum elicits sufficient investment of student energy and effort to bring about desired learning. The design of the learning environment, therefore, must be conducive to maximize the amount and quality of effort and energy expended by the student. Application of the principles of UDL in academia enables students to manipulate, analyze, and synthesize information in meaningful ways based upon their diverse learning styles, preferences, and abilities, and provides a learning environment that supports higher levels of student engagement.

**Pedagogy and Instruction**

A disconnect exists between the “one-size-fits-all” curriculum and the growing diversity of students represented in the classroom. When there are problems with student success, such as lack of retention, slow progress, or failure to pass courses, educators must recognize that it may be the curriculum that is flawed or lacking, rather than an
inadequacy in the students (Edyburn, 2010; Rose & Meyer, 2005). This shift in thought to create curriculum, materials, and activities that are accessible to as many students as possible represents a major shift in the teaching paradigm (Edyburn, 2010). Utilizing UDL requires that teachers and instructors perform a preassessment by thinking about the types of students who may enroll in their courses, what their needs will be, and then provide materials in ways that makes sense to each student. This shift is strongly supported by Knowles’ (1970) Adult Learning Theory, as well as Dale’s Cone of Learning (Lord, 2007). Knowles’ theory posits that instruction must be informed by the learning needs and characteristics of the learners, and the environment in which learning is to take place.

Utilizing the principles of UDL lessens the number of individual accommodations that must be made, because information is provided in formats that students can readily access regardless of their ability level (Hall et al., 2011; Morra & Reynolds, 2010; Rose, Harbour, Johnston, Daley, & Abarbanell, 2006). Information and materials are provided in a variety of formats that appeal to a diverse student population with varying English language skills, learning preferences, and abilities. Universal Design for Learning as an instructional model utilizes insights from learning sciences, instructional design, and technology to proactively design curriculum and approach instruction in ways that value the diversity of the students in the classroom. Utilizing this proactive approach, instructors build strategies into the curriculum and materials from the beginning. Rather than waiting for students with disabilities to present the instructor with the need for an accommodation, the instructor anticipates the needs of a diverse group and then creates
and delivers course information and curriculum in ways that students can understand and manipulate from their own frames of reference (Hall et al., 2011).

McGuire et al. (2006) provide the following explanation of each UDL principle and how it may be implemented:

1. *Provision of multiple means of representation:* Students are diverse in the ways that they process and comprehend information, and some information will be more accessible to certain students depending on cognitive or perceptual strengths and challenges. Barriers to accessing information are also created when students with diverse cultural and/or language backgrounds are presented information in a way that does not account for or anticipate these learning differences. An example is an instructor who augments an auditory lecture with a power point presentation containing visuals that represent what is being spoken by the instructor, or provides article readings or copies of their lecture notes in Braille format, or electronically prior to the class meeting. The same information is provided in multiple formats that are accessed by different senses (e.g., sight, hearing, touch).

2. *Provision of multiple means of engagement:* This refers to the ways that students engage with the materials, the instructor, and other students. The important thing is to find ways to get students excited about what they are learning by understanding real life applications. No one method of engaging students will be favorable to all students. Some students may enjoy working in groups, while others prefer individual assignments. An instructor may have a group of students research a topic and submit individual reports, or augment
classroom learning and discussions with an out-of-class discussion that takes place virtually on the electronic course blackboard (Morra & Reynolds, 2010; Rose et al., 2006).

3. **Provision of multiple means of expression:** Just as students receive and process information differently, they also differ in the ways that they express what they have learned. For instance, one student may perform better on an oral or written examination, while another may excel at presenting what they have learned through a multimedia presentation or a project.

When these principles are utilized, the goals, materials, methods, and assessments are selected and developed in a way that maximizes flexibility and minimizes student barriers to learning (Hall et al., 2011). Although it takes some time up front to apply the principles of UDL to course curriculum, once adapted the time spent thinking about and implementing specific accommodations for individuals with disabilities or diverse learning styles is minimal. To say that UDL is merely good teaching is a gross misunderstanding of the framework. As Edyburn (2010) explains, the full range of diversity in the classroom has never been addressed by “good teaching” (p. 38).

Moreover, the statement prevents change in the instructional model by continuing to marginalize lower performing students and placing the blame solely on the student for failing to learn.

**Faculty Development**

Educators are traditionally taught to develop the lesson plan first and then consider individual modifications (Lieberman et al., 2008). This “one size fits all” approach in traditional curricula design is supportive of typical student needs rather than
the needs of a diverse student population (Strangman, Hitchcock, Hall, Meo, & Coyne, 2008). Because differences in student learning styles and ways of retaining and demonstrating knowledge are based on neurological differences that are as diverse as the classroom population (Rose et al., 2006), instruction must reflect these variances in terms of curriculum, materials, and methods of instruction and assessment to successfully engage today’s diverse students (Holdheide & Reschley, 2008). A rationale in support of reflecting diversity in methods of instruction, assessment, curriculum, and materials is presented in Tinto’s (2002) model of student retention. In order to provide experiences for students that result in student access and retention, Tinto states that the institutions must consider pedagogy and curriculum, along with faculty teaching skills, when looking at institutional policy to address or enhance student retention.

The principles of UDL are part of a teaching strategy, as well as an ongoing philosophy in which the instructor has responsibilities before, during, and after the course to assess student abilities, performance, and effectiveness of instruction. When planning for utilizing the principles of UDL, teachers must prepare from the start for a change in delivery styles and understand the reasons for making the change. Instructors must anticipate the needs students may have and build the curriculum materials, ways of presenting the materials, and ways for students to express/demonstrate their learning that appeal to a variety of learners (Hall et al., 2011; Strangman et al., 2008). In order to effectively implement the principles of UDL, Hall et al. (2011) recommend a basic understanding of the principles of UDL and the three neural networks that they relate to, as well as the commitment to make their curriculum accessible for all students. They specifically recommend the Planning for All Learners (PAL) model for creating, teaching,
and evaluating lesson plans and student success that appeal to a variety of learners. This
four-step model can be used as a guideline for UDL implementation: (a) Set Goals:
establish context, align to standards; (b) Analyze Status: identify methods, materials, and
assessments, identify barriers; (c) Apply UDL: Identify UDL materials, methods, write
UDL plan, collect and organize material; and (d) Teach UDL Lesson: teach lesson,
evaluate success, revise lesson or unit (Hall et al., 2011).

Universal Design for Learning researchers have not identified a specific number
of training hours required for an instructor to exhibit the skills necessary to effectively
implement the principles of UDL. Toward this end, Schelley, Davies, and Spooner
(2011) measured the effectiveness of UDL instructor training, as perceived by students
following instructor training in UDL. This study included student perceptions in terms of
multiple means of expression and representation. Results of this study indicated that
providing information and training about UDL to instructors may enhance the learning of
all students, including those with diverse abilities, and that changes in instructor behavior
can result from just a few hours of training. A study by Spooner, Baker, Harris, Ahlgrim-
Delzell, and Browder (2007) examined the effects of a 1-hour training provided to 72
graduate and undergraduate students in special education courses and general education
college courses. The participants were trained about how to apply principles of UDL to
curriculum for teaching students with disabilities. None of the participants had any
experience in applying UDL principles to their lesson plans. Participants were randomly
assigned to either a treatment or control group. Comparisons of the pre- and posttests of
the participants showed improvement for the group who received the 1-hour training.
Spooner et al.’s study further illustrated the fact that even limited training in the
principles and implementation of UDL is beneficial for increasing student learning and success for all students.

There is a wealth of information available for learning about UDL and ways to implement the principles. Universal Design for Learning as a framework for learning and teaching appears to be sound in theoretical approach; however, significant empirical research is quite lacking. This lack of research points to the need for training in implementation and evaluation of training practices and training outcomes in terms of student success, such as those efforts promoted by the South Coast University UDL Scholar Program.

**Outcomes and Effectiveness of UDL**

Application of Universal Design and research into its efficacy and outcomes have lagged behind theory, with most models focusing on architectural principles rather than educational pedagogy (McGuire et al., 2004; Rose et al., 2006). Much of the literature on the topic of UDL has explained the need for and the principles of UDL but has revealed little in terms of outcomes of implementation related to student learning and/or teacher and student perceptions of the experience learning within this framework (Meo, 2008).

The Higher Education Opportunity Act of 2008 states that UDL is

A scientifically valid framework for guiding educational practice that:

(A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement
expectations for all students, including students with disabilities and students who are limited English proficient. (§ 103(a)(24))

One flaw in this idea of UDL being scientifically valid is the fact there is no component in place for measuring student learning outcomes. Because the three principles of UDL are operationalized concurrently by multiple interventions, there is no clear way to measure whether UDL is effective for enhancing the academic performance of diverse students (Edyburn, 2010). Rather than assessing student outcomes in isolation, Rose and Meyer (2002) posited that formative and summative assessments can assist instructors to correct flawed curriculum prior to student failure. Formative assessments periodically assess student learning throughout the learning process, much like a midterm exam, while summative assessments evaluate student learning at the end of the learning period, such as a final exam. Utilizing formative assessment allows instructors to examine the instructional practices, as well, and how students are progressing for the purpose of grading (ED, Office of Educational Technology, 2010). Both types of evaluation are important; however, formative assessments may lead to improved student learning in the present moment. Finally, Rose and Meyer (2002) stated that assessment and instruction in flexible environments that make accommodations based upon individual needs are the most effective.

Izzo, Murray, and Novak (2008) reported on two longitudinal studies, each dating from 1999 to 2006, surrounding the perceptions of faculty and teaching assistants toward the application of Universal Design for Instruction (UDI) strategies. One of the main differences between UDL and UDI is that UDL is concerned with the techniques and strategies used for creating and delivering course curriculum and materials, while UDI is
concerned with applying the principles to all aspects of the learning environment, including technology and physical spaces (Burgstahler, 2012). In the first study, 271 faculty and teacher assistants were surveyed, and qualitative focus groups were conducted to assess the instructional climate of their college. This first study found that there was a need and willingness for faculty to receive professional development on UDI. The second study was developed in response to the need for professional development of faculty to learn strategies for implementing UDI. A pilot training project was developed and implemented with curriculum that included teaching modules for faculty to learn the strategies. Sixty-three faculty and administrators who used the curriculum completed pre/post training surveys, which indicated that the curriculum increased knowledge about UDL following the trainings and that administrators and faculty were aware of the increasing diversity in higher education, as well as a need for multi-modal instruction. There was no discussion, however, about any student outcomes following participant implementation of any UDL strategies into their course curriculum.

Engleman and Schmidt (2007) studied the outcomes of designing an online graduate level unit for teacher education using UDL. Their study showed that, although most of the students in their study were visual learners, the majority preferred a choice in how to access and engage in activities, and most of those choices could be tailored to different learning styles. In a study performed by Kortering, McClannon, and Braziel (2008), students with and without disabilities were placed in biology and algebra courses in which instructors applied the principles of UDL. Findings of this study showed that both groups of students reported a higher level of satisfaction with the class as compared with their other academic courses, and both groups agreed that they would like their other
instructors to use more UDL interventions in their courses. A 2008 case study by Parker, Robinson, and Hannafin documented the efforts to redesign a large core undergraduate level special education course by utilizing UDI along with adult learning theory. Online interactions of 114 students and course evaluations were analyzed following the implementation of the newly designed course. Results showed that students were more satisfied with the newly designed course than other courses offered by their department and other undergraduate courses in general that did not utilize UDI in the curriculum. McGuire-Schwartz and Arndt performed two studies in 2007. The first was an action research study, involving 36 early childhood teacher candidates who implemented at least one UDI strategy into their course curriculum. The results showed that the implemented strategies improved accessibility to instruction, as well as improved learning for students with and without learning difficulties. A second study investigated five case studies of five teacher candidates who learned about UDI and then developed and implemented lesson plans utilizing the UDI strategies they learned. Follow-up focus groups with the teacher candidate participants revealed participant perceptions that these strategies improved student engagement and learning and met the needs of diverse learning needs of the students.

As researchers note, there is promise for UDL to increase student satisfaction, as well as student success and learning; however, there is little written in the literature about outcomes following implementation of the principles of UDL (Engleman & Schmidt, 2007; Izzo et al., 2008; Kortering et al., 2008; McGuire et al., 2007; Parker et al., 2008; Schelley et al., 2011; Spooner et al., 2007). This program evaluation sought to fill some of those gaps with information about: (a) the outcomes for students whose instructors
were UDL Scholars, as perceived by the faculty scholar; (b) what principles were implemented as part of their scholar project; (c) what, if any, new innovations were infused following the initial project implementation; and (d) whether the scholars shared their knowledge with their colleagues.

**Conclusion**

Universal Design for Learning is a framework for instruction that holds great promise in terms of improved student outcomes, perceptions of learning and performance, and perceptions of the instructors implementing the principles of UDL into their course curriculum. As described above, existing literature about UDL contains historical and pedagogical information; however, little has been written in terms of student outcomes. Researchers agree that there is a need for continued research to validate the use of UDL to improve student-learning outcomes and to learn the most efficient and effective way to train instructors in the utilization of UDL (Engleman & Schmidt, 2007; Izzo et al., 2008; Kortering et al., 2008; McGuire et al., 2007; Parker et al., 2008; Schelley et al., 2011; Spooner et al., 2007). Schelley et al. (2011) and Spooner et al. (2007) also recommend further research to examine UDL strategies to determine which are most effective.

The researcher’s intent for this study was to inform the literature by providing insight into the effectiveness of UDL as an educational strategy to influence student achievement and/or engagement in the learning process as demonstrated by the outcomes of the UDL Scholar component of the Disability and Diversity program at SCU. The UDL Scholar Program viewed disability as another facet of diversity of today’s college students, such as gender, learning style, preference, and ability. The researcher has
explored the impact of UDL on students as perceived by the UDL Scholars and made comparisons between satisfactory course completion rates of students with and without disabilities to learn whether implementation of UDL has influenced student outcomes.
CHAPTER 3—RESEARCH METHODOLOGY

The purpose of this program evaluation was to examine Southern Coastal University’s Universal Design for Learning (UDL) Scholars program, which was a component of the Higher Education Disability and Diversity Project (D&D). Participants of the program were UDL Scholars, who were college faculty in South Coast County who were trained in the principles of UDL and who have implemented innovative UDL practices in their course delivery. This summative evaluation examined: (a) the ways in which the UDL program facilitated an impact on teaching, as based on scholar perceptions and practice of incorporating UDL into course curriculum, and (b) the extent to which the program met its intended objectives.

Research Questions

The study intended to enlighten faculty and administrators about the effectiveness of the principles of UDL to facilitate student learning and contribute to the literature about outcomes resulting from the UDL Scholar training program.

The research questions that were explored in this study are:

1. What influenced faculty to become UDL Scholars and employ UDL in their teaching for diverse learners in postsecondary education?

2. How did UDL pedagogy influence student learning, as perceived by faculty?

3. How did implementation of UDL strategies result in ongoing changes in pedagogy among UDL scholars?

4. What measurable UDL Scholar Program outcomes were achieved?
Setting/Context

The Worksmart Institute is an off-campus location that served as the administrative home of the UDL scholar project that was evaluated in this study. The Worksmart Institute is an auxiliary of the Department of Administration, Rehabilitation, and Postsecondary Education (within the College of Education), positioned as the organizational structure for extramural efforts. The Worksmart facility is physically accessible, offers wireless internet access, and has SMART classrooms, which were utilized for conducting the majority of the UDL Scholar training workshops, with a few trainings and workshops taking place on other South Coast campuses.

Program Overview

Because this dissertation was designed as a process and outcomes based program evaluation, the researcher needed to have an understanding of the processes and components of the UDL Scholar Program. The following sections provide information and explanation of how the UDL Scholar Program came into existence, characteristics of the participants, and provides insight as to how the program operated during the 3 years of the program.

History

As presented in Chapter 2, the UDL Scholar Program began as a component of the Higher Education Disability and Diversity Project, funded by the U.S. Department of Education for a 3-year cycle from October 1, 2005 through September 30, 2008. Toward the end of the first 3-year funding period, South Coast University (SCU) Worksmart Institute staff submitted a new grant proposal to the U.S. Department of Education and were awarded an additional 3 years of funding from October 1, 2008 through
September 30, 2011. Although extremely similar in nature, the two funded projects are two completely separate programs. The main goal of the initially funded D&D project was: *to enhance the knowledge and skills of administrators, faculty, and staff through a universal model linking disability and diversity in postsecondary education.* The second project cycle, building on the accomplishments of the first, was dedicated *to enhance the capacity of faculty and administrators to meet the needs of postsecondary students with disabilities through a universal model* (Atkins & Guillermo, 2008). The 2005 program brought knowledge about accessibility and UDL to workshop participants and faculty who elected to become scholars and assisted them to utilize the principles of UDL in their curriculum. The 2008 program invited scholars from the 2005 program to become scholar mentors to new UDL scholars, provided assistance as each scholar implemented the principles of UDL into their course curriculum or an innovative project to enhance learning outcomes for their students, and developed materials they can use to share their projects and outcomes with their colleagues. The D&D project of 2008 built upon the strength and success of the UDL Scholar Program of 2005, by utilizing scholars from the first funded cycle to act as mentors and support for scholars of the 2008 funded cycle. Although the 2008 program was a continuation from the 2005 grant, the goals and activities, (i.e., trainings, technical assistance, scholar projects, etc.), of each were different enough that they were considered as two separate programs. The researcher was interested in exploring the experiences and perceptions of the UDL Scholars from the 2008 program because there were scholars, as well as scholar mentors, from which to illicit information. Another major difference in the two programs was the creation of learning communities as an outcome of the 2008 program. Thus, rather than examining
both programs, this study focused on the second 3-year cycle of the Disability and Diversity UDL Scholar Program, funded in 2008.

**Program Participants**

Universal Design for Learning Scholars were initially recruited into the program at the workshop trainings provided by the Higher Education Disability and Diversity program. Individuals who were interested in becoming a UDL Scholar filled out an application with information about an innovative idea they had for implementing UDL in their program curriculum and materials. The scholars, comprised of faculty and administrators from 2-year and 4-year colleges, were instrumental in instituting changes in courses/programs, through the infusion of UDL. Scholars from the 2005 program acted as recruiters, guides, and mentors for scholars coming into the 2008 UDL Scholar Program. These Scholar Mentors provided peer support to new scholars as they explored and incorporated UDL into their courses/programs for the first time. Scholar Mentors shared their innovations that they created and implemented with new Scholars. Scholar Mentors expanded the application of UDL by exploring new and innovative ways to make their own courses or programs more aligned with the principles of UDL. The primary role of the Scholar was to incorporate the principles of UDL into their courses or programs. As representatives of their various disciplines, Scholars possessed an in-depth knowledge of their fields and how courses are taught in their departments. This expertise was instrumental in identifying educational issues related to diverse learners, including students with disabilities in specific majors. It was hoped that the capacity of Institutions of Higher Education (IHE) to respond to the needs of diverse learners would be enhanced significantly through the Scholars.
Program Components

Three main components of the UDL Scholar Program provided the structure for progressing through the program successfully. The training workshops provided the skills, awareness, and knowledge about UDL and other related workshop topics (i.e., using software such as Camtasia™ or Captivate™ to make materials accessible to a wider range of students). Focused technical assistance provided staff support to assist each scholar to accomplish their goals. The learning communities were the intended outcropping to result from the interactions and networking between UDL scholars and workshop presenters.

Training/Workshops

In 2008, a comprehensive training and technical assistance model was developed and implemented to address the challenges and needs of administrators and faculty related to teaching and providing support to students with disabilities. Needs assessments were conducted to gain information about the training needs of staff, administrators, and faculty that would enhance their ability to teach and support students with disabilities. Workshops lasting 2 to 4 hours were then developed to address those needs, and after training was delivered follow-up technical support was provided for the workshop participants to assist them with implementing strategies and techniques introduced in the workshop.

All workshops and trainings conducted by Project Higher Education staff focused on the principles of UDL and ways to apply the principles to courses, programs, and/or technologies that assist faculty to provide materials to students with a variety of learning
styles and preferences. All workshops provided hands on learning, with time for
participants to practice the skill, concept, or strategy introduced.

The project director and coordinator theorized that a focus on application of UDL
with support from Project staff, beyond the training session, to explore and implement
new innovations would result in new demonstration models of UDL implementation to
meet the needs of all students, including those with disabilities.

**Technical Assistance**

In addition to the workshop trainings, an important component of the UDL
Scholar Program was the individualized Focused Technical Assistance (FTA) provided to
Scholars and participants as they apply training concepts and strategies to their courses
and programs. The FTA was individualized to the specific needs of the scholars and was
provided through consultations to follow-up with scholars and participants after each
workshop.

**Learning Community**

A learning community for UDL Scholars was created to promote knowledge
sharing, encourage innovation and provide support to the scholars. Scholars came
together in person for training and for sharing ideas and information with the group about
their respective projects. Project staff assisted scholars to continue this learning
community online through the creation and dissemination of UDL Scholar Briefs and
Scholar Videos via the project website. Scholar briefs are printable summaries of each
scholar’s project; Scholar Videos are 5-minute summary videos in which scholars
describe their innovative project and the outcome of their innovation.
Program Evaluation

Evaluation provides the opportunity for researchers, evaluators, program staff, and others to explore ways that programs are implemented (process) and examine the outcomes (effect or impact on participants following participation). Outcome evaluation, as defined by Weiss (1998) is:

A study of whether or not the program produced the intended program effects, and is related to the ending phase, or end result of the program. Process evaluation, on the other hand is the study of what is happening during the implementation phase of the program, or while the program is in progress. (p. 335)

Program evaluation can be performed for several reasons, and is described by Weiss as “the systematic assessment of the operation and/or the outcomes of a program or policy compared to a set of explicit or implicit standards, as a means of contributing to the improvement of the program or policy” (p. 4). The focus of a summative evaluation, which is completed at the end of a program, is on the program goals or objectives, and results are utilized for making judgments about the effectiveness of interventions or programmatic effectiveness as a whole. Judgments are made on the extent to which efforts can be generalized to other similar programs and policy issues. The key assumption is that the effectiveness of specific interventions or activities performed in one place is also effective and works well elsewhere (Patton, 2002).

Purpose of Evaluation

The researcher performed this evaluation to examine the overall effectiveness of the UDL Scholar Program, as well as the effectiveness or validity of the process or methods used to implement the program, including workshop and training results,
products developed, and perceptions and experience of the UDL Scholar Program participants. The perspectives of the participants are of great value for evaluating the success of a program. Results from evaluations of this nature can be disseminated as part of a program report to program funders; however, the results of this evaluation will be most beneficial when shared with policymakers and other institutional entities as a tool for informing best practices and implementing UDL and potentially creating similar programs for teaching UDL strategies.

Methodological Approach

A mixed method approach is appropriate for process and outcomes-based evaluations. Creswell (2009) explained that the concept of mixed methods research originated with Campbell and Fisk in 1959 when they used mixed methods to study the validity of psychological traits. Mixed methods research includes elements of quantitative and qualitative approaches to data collection and analysis and utilizes the approaches concurrently to produce a study that is greater in overall strength than either quantitative or qualitative research alone. In a concurrent mixed methods strategy, the researcher merges the qualitative and quantitative data to provide a more comprehensive analysis of the data. Quantitative and qualitative data are collected concurrently and then integrated into the interpretation of the overall results (Creswell, 2009). Figure 2 diagrams the concurrent triangulation process, highlighting the existing data and data that were collected for this study. Analysis of these data offered insight into: (a) the efficacy of the program in terms of the extent to which program objectives were attained; (b) scholar perceptions of how UDL pedagogy may have influenced student learning; (c) whether implementation of UDL strategies resulted in ongoing changes in pedagogy
among UDL scholars; and (d) what influenced faculty to become UDL scholars and employ UDL in their teaching for diverse learners.

This process and outcomes based evaluation combined quantitative and qualitative measures to gather a greater breadth and depth of data, resulting in a more complete evaluation of the program’s efficacy. Program objectives, when well written are measurable; they have a directional impact and are time-dependent. Therefore, a quantitative analysis of program outcomes was appropriate in order to determine the extent to which the program objectives were achieved. A qualitative analysis of the UDL Scholar experience of participating in the training and UDL principle implementation processes revealed the subjective experience of the participants and their perceptions of
the efficacy of the program (Weiss, 1998). Questions regarding the recruitment process, technical assistance offered, and perceived strengths or challenges of the UDL Scholar Program were examined to obtain information about possible best practices and overall effectiveness of the program.

Diffusion of Innovation Theory (DOI), described in Chapter 1, was utilized as a lens for exploring the experience and perceptions of the UDL scholars. This provided a framework for examining information about how and when scholars decided to become scholars and apply the principles of UDL in their classroom and whether early adopters of UDL would share what they learned with colleagues and act as mentors to UDL scholars who come into the process at a later date.

The SCU Higher Education Disability and Diversity program was designed to meet four major objectives, with certain activities that related specifically to the UDL Scholar component of the program. The objectives written into the program grant proposal were:

1) To increase awareness and knowledge of a minimum of 150 faculty and administrators (annually) on issues and strategies relevant to students with disabilities; 2) To decrease the gap in completion rate between students with and without disabilities by 5%; 3) To increase the number of faculty and administrators actively integrating the training concepts and strategies in their courses by 95%; and 4) To increase access to and dissemination of universal model resources and materials through a minimum of 10 venues (annually).

(Atkins & Guillermo, 2008, p. 16)
Because this evaluation focused on the UDL Scholar component of the Disability and Diversity program, only the objectives and activities directly related to that component have been addressed in this evaluation. During the course of the program, the following evaluation activities were carried out for each program objective, providing ample data to be analyzed for this program evaluation.

**Objective 1.** To increase awareness and knowledge of a minimum of 150 faculty and administrators (annually) on issues and strategies relevant to students with disabilities. The evaluation activities included:

1. Utilize pre/posttraining surveys to assess changes in awareness and knowledge.
2. Conduct scholar focus groups to assess relevance and effectiveness of trainings.

**Objective 2.** To decrease the gap in completion rate between students with and without disabilities by 5%. The evaluation activities included:

1. Collect longitudinal student data for courses taught by Project Scholars.
2. Utilize Scholar Mentors to recruit and guide new Scholars each Project year.
3. Provide a Scholar orientation each semester.
4. Develop an individualized timeline with each Scholar, comprised of a goal, benchmarks, and deadlines.
5. Provide Scholars with Project training content schedule to coordinate with their interest.
6. Identify and explore with Scholars resources (models, technology, expertise, etc.) to facilitate achievement of Scholar goal.
7. Develop a learning community for Scholars to generate, promote, and sustain ongoing learning and application of UDL and related strategies.

**Objective 3.** To increase the number of faculty and administrators actively integrating the training concepts and strategies in their courses by 95%. The evaluation activities included:

1. Assess and document each Scholar’s/participant’s needs and interests to tailor and individualized FTA.
2. Provide selective comprehensive and ongoing FTA to support Scholars and/or workshop participants to integrate training concepts and strategies into courses and programs.
3. Conduct 1-month follow-up workshop consultation after each workshop utilizing distance technology (i.e. web conference, chat, discussion board) for additional dialogue and consultation with trainers.
4. Conduct selected site visits to Scholars’ classes and programs to provide onsite FTA.
5. Develop a learning community focused on enhancing the educational experience for students with disabilities through UDL and other related and innovative strategies.

**Objective 4.** To increase access to and dissemination of universal model resources and materials through a minimum of 10 venues (annually). Evaluation activities included:

1. Obtain feedback from participants at workshops and presentations via evaluation forms tailored to each workshop and presentation.
2. Document Scholars’ and participants’ innovations to serve as models of UDL in practice.

3. Assist Scholars to present and disseminate to peers/departments/colleges.

Research Design

This program evaluation of the Southern Coastal University’s Universal Design for Learning (UDL) Scholar Program was based primarily upon the examination of existing program documents and data that were collected over the term of the project (2008-2011), and provided to the evaluator by the Program Coordinator. This includes review of pre/post training workshop summary reports, data collected during postworkshop email and telephone follow-ups, focus group transcripts, and annual project reports. The systems management paradigm explained by Weiss (1998) examines program impact in terms of actual outcomes as compared to the targeted program outcomes. This is known as a gap analysis or discrepancy analysis. This evaluation paradigm was appropriate to address the research questions in this study, and provided the scope for the analysis of qualitative and quantitative data components. The perspectives of the participants as primary stakeholders were explored as a function of the evaluation as politics paradigm. This paradigm provided a working framework to gather quantitative and qualitative data that was triangulated to ensure validity. Table 2 contains an explanation of the data analyzed and references the program objective(s) and the research question(s) that were investigated by the evaluation.

Participants

Information provided by UDL Scholars during the program cycle was included in the program evaluation, including pre/post training evaluation summaries and focus group
transcripts created by the program’s external evaluator, and postworkshop follow-up email and telephone notes. Annual programmatic evaluations performed in 2009 and 2010 did not include feedback from faculty who became UDL Scholars during the final project year (2010), and there has been no inquiry into their experience thus far. In order to include the perspectives of all scholars from the 2008-2011 program, the researcher invited all 43 UDL scholars from the 2008-2010 cohorts to participate in the follow-up survey. There were 6 scholars from the 2008 cohort, 19 scholars from the 2009 cohort, and 18 scholars from the 2010 cohort that were invited to participate in a follow-up survey. An introductory email was sent to invite the scholars to participate in the survey.
process as a means to have their experience and perspectives shared regarding their participation in the UDL Scholar Program (see Appendix A for the email inviting scholars to participate).

**UDL Scholar Program Documents Review**

The researcher reviewed existing documents of the U.S. Department of Education funded Disability & Diversity project at Worksmart Institute, including the pre/post workshop survey summaries, focus group transcripts, and postworkshop telephone follow-up notes. This review provided information about the program efforts to train faculty and staff at local community colleges and universities about ways to implement UDL into the curriculum. The Disability and Diversity project created a UDL Scholar Program that provided training and technical assistance to college faculty and staff who wanted to learn how to implement principles of UDL into their program/classroom materials and curriculum. Scholars then designed innovative projects/programs that incorporated what they learned and that theoretically would improve outcomes for students they are teaching.

**Data Collection**

Quantitative and qualitative data were collected and examined to perform this program evaluation. Quantitative data, such as the number of scholars trained over time and the number of times each principle of UDL was utilized by the scholars, have been collected. A review of existing documents provided by the project coordinator, and a UDL Scholar Post-Program Survey (see Appendix B) developed by the evaluator to follow up with scholars who have participated in the project, provided quantitative and qualitative data for this study.
Existing Documents Review

A review of the outcomes from the quantitative analysis of the pre/post workshop surveys, and postworkshop evaluations performed during the grant period, provided quantitative data about the effectiveness of the trainings, usefulness of the topics presented, and whether participants felt their skills, knowledge, or awareness of UDL had increased after the trainings. A review of transcripts from a focus group conducted by an external program evaluator provided qualitative information regarding the participants’ experience with the program. Open-ended questions on the Pre/Post Training Surveys (Appendix C) and Workshop Evaluations (Appendix D) that were administered at each workshop (and provided by the project coordinator) provided qualitative information regarding the effectiveness of the trainings and level of participant satisfaction with trainings.

UDL Scholar Post-Program Survey

Quantitative data gathered via the post-program survey provided information about which UDL principles were utilized by a number of scholars in order to (a) determine which principles were implemented most often; and (b) examine whether there is a relationship or correlation between specific principles and scholar perception of better student outcomes. Information about the experience of the UDL scholars as participants in the UDL Scholar Program, at what point they decided to become a UDL scholar, principles implemented, and the outcomes they experienced in their classes because of implementing principles of UDL, was also collected and analyzed via the UDL Scholar Post-Program Survey. A review of existing documents, as previously described, has provided much information; however, the scholars participating in the
project have provided valuable experiential data to the evaluation. All 43 participants from the 2008, 2009, and 2010 scholar cohorts were invited to provide input via the UDL Scholar Post-Program Survey. The postprogram survey instrument inquired about the point in the training process when scholars decided to become a UDL scholar, and what has transpired for the scholars and their students since their participation in the scholar program. Experiential data included information about whether they have implemented further UDL practices in their courses, shared their knowledge and/or skill with their colleagues, and any perceived changes in the classroom atmosphere or outcomes for the students. The survey was developed and administered through the Qualtrics online survey development and administration system (see Appendix B: UDL Scholar Post-Program Survey).

**Data Analysis**

A summative analysis of the data was the analytical strategy for this study. A concurrent triangulation process was utilized to simultaneously collect and analyze quantitative and qualitative data.

**Existing Documents Review**

The researcher reviewed pre/post workshop survey summaries (Appendix C) and postworkshop evaluation summaries (Appendix D) that were prepared by the internal program evaluator during the course of the program. The pre/post workshop survey and postworkshop evaluation were created utilizing a 4-point Likert scale format, with open-ended questions to gather qualitative data at the end of the evaluations and surveys. The internal evaluator utilized SPSS 16 analytical software to conduct descriptive analysis such as the mean, median, and mode, and frequency distributions. This review
provided quantitative information about how participants rated their level of knowledge, skill, and awareness of UDL or workshop topics, and the degree to which they found the information useful or relevant to them, their department, or college. A content analysis of qualitative data collected via a review of existing program documents (i.e., pre/post workshop survey summaries, focus group transcripts, postworkshop evaluation questionnaires), along with the postprogram survey of UDL scholars was conducted. Categories, themes, and subthemes (i.e., UDL concepts, types of implementation, driving force behind becoming a scholar, perceived change in student success postimplementation) were identified during the analysis. Each of these categories or themes was created from a group of words with similar meanings, allowing the evaluator to identify trends, ideas, or perspectives of the UDL scholars as related to their participation in the UDL Scholar Program.

**UDL Scholar Post-Program Survey**

Qualitative data from the UDL Scholar Post-Program Survey were analyzed through the utilization of ATLAS.ti (version 7), which is a computer assisted qualitative management and analysis software program. The researcher manually entered the information from the existing surveys and evaluations into the software. Data were organized into categorical themes (as described previously) surrounding the scholar’s application of the principles of universal design and the perceived improvement in student outcomes as a result of the applications.

**Role of the Researcher**

I, as the researcher, was employed as a staff member of the SCU Higher Education Disability and Diversity (D&D) project for approximately 5 years. During
this time, I provided trained college faculty within the South Coast and East County
Community College Districts about the principles of UDL as part of their professional
development during Flex (staff development) Week, which takes place during the week
prior to courses beginning each semester. In my daily work on the project, I followed
up with UDL Scholars to learn about the strategies they implemented in their class
curriculum, collected data regarding their outcomes, and provided any technical
assistance they needed to stay on task and complete their projects.

In addition to the data collection tasks performed as a staff member on the D&D project, I conducted one UDL Scholar Post-Program Survey for this study to follow up with the scholars to gather additional information that allowed the full exploration of the influence UDL has on faculty pedagogy and students’ learning experiences in these courses.

I strongly believe that utilization of UDL makes a positive difference in the outcomes for students. I have gathered data for the D&D program for the past few years and have had faculty scholars inform me of some positive changes that have occurred in terms of student outcomes since implementing principles of UDL in their course design and delivery. In order to maintain an objective study, I worked diligently to ensure that all survey questions were worded with complete neutrality so as not to lead the respondent in any direction, positive or negative. I also utilized peer debriefing to maintain objectivity, especially during collection and analysis of qualitative data. A trusted colleague with no vested interest in the study was sought out to assist me to think critically about the data collection and analysis methods and activities utilized in this study. It was anticipated that the feedback regarding the completeness and accuracy of
the selected procedure for collecting and analyzing data would lead to a stronger, more objective study.

**Institutional Review Board Considerations**

An application for approval to conduct the study was submitted to the Institutional Review Board (IRB) prior to performance of any data collection or analysis. This evaluation was conducted in an established educational setting, researching the effectiveness of an instructional strategy (UDL) in terms of changes in student outcomes as perceived by the UDL scholar. The researcher explored UDL scholar characteristics, such as the number of workshops that were attended prior to deciding to become a UDL scholar and implement UDL into their curriculum. The UDL Scholar Post-Program Survey was developed and administered electronically through the Qualtrics online survey system and did not include any identifiers of the respondents. Risks associated with participation in this study as a survey respondent were no more than the risk of being a participant in the UDL Scholar Program. Apart from the UDL Scholar Post-Program Survey, all documents and data studied were existing program data, collected during the implementation of the scholar program. All information obtained was recorded in such a way that the participants were not identified in any manner. The institutional review board letter of approval to conduct this study can be found in Appendix E.

**Limitations of the Study**

The most apparent limitation of this study was the connection the researcher had to the UDL Scholar Program given her professional involvement as a project employee. To mitigate this limitation as much as possible, the researcher engaged in peer debriefing, to ensure the triangulation of findings by collecting data from multiple data sources. The
researcher was cognizant of her biases/assumptions at all times throughout the process of
data collection and analysis, and ensured that the interpretations and conclusions drawn
from the study were clearly grounded in the data. Collecting student data regarding grade
point averages, as well as comparisons of course completion rates of students with and
without disabilities before and after the implementation of UDL strategies and
techniques, was not possible, due to confidentiality standards. Therefore, this study was
limited to examining only the experience of the UDL scholars and their perception of
student success and experience. This study was somewhat limited by the time constraints
set for completion. New questions cropped up for the researcher that may have been
addressed had there been unlimited time for exploration. The positive note is that those
questions will form the basis for future research.

**Delimitations of the Study**

This study was bound to examining only the Southern Coastal University UDL
Scholar Program, which offered training in UDL principles only within South Coast
County. The outcomes for scholars and their students tell only what transpired in South
Coast County colleges, and the results may or may not have transferability to other
universities in the state or in the country.

**Summary**

This study investigated the efficacy of the UDL Scholar Program at SCU, in terms
of whether program goals and objectives were achieved, explored changes in student
outcomes after UDL was implemented within course curriculum, as perceived by UDL
scholars. Existing program documents provided by the UDL scholar project coordinator
were the primary source of data analyzed. The impact of UDL on student learning as
perceived by the scholar and ongoing changes to scholar pedagogy resulting from participation in the UDL Scholar Program was explored through a new UDL Scholar Post-Program Survey.
CHAPTER 4—SUMMARY OF FINDINGS

The purpose of this chapter is to report the findings of a program evaluation that examined the effectiveness of the Universal Design for Learning (UDL) Scholar program component of the Disability and Diversity Project at South Coast University (SCU). The intention in completing this evaluation was to examine the efficacy of the UDL Scholar Program and add to the body of literature about the perceptions and experiences of faculty who implemented UDL principles in their course curricula.

The program evaluation of the UDL Scholar Program at SCU provided insight into what transpired during and after the 2008-2011 project. In addition to reviewing existing data from the project, the researcher conducted a 2-year retrospective examination of the spread and influence of the project via the UDL Scholar Post-Program Survey.

This evaluation combined quantitative and qualitative measures and outcome-based evaluation to gather a greater breadth and depth of data, resulting in a comprehensive evaluation of the program’s efficacy. A concurrent triangulation process of data collection and analysis, as described in Chapter 3, allowed the researcher to examine the experiences and perspectives of the UDL Scholars and the extent to which the program achieved its intended objectives. The research questions also examined whether scholars continued the practice of infusing UDL into their courses and programs and disseminating information about UDL to colleagues following the end of the program.
Existing Documents Reviewed

The existing documents reviewed for this evaluation included: the original project grant proposal (including the proposed objectives and activities, and project evaluation methods); pre/post workshop training survey summaries; workshop follow-up email and telephone notes; focus group transcripts prepared by an external evaluator and postworkshop evaluation reports prepared by an internal evaluator; and project reports submitted to the program funders. The results from the review are presented in the following sections.

Project Grant Proposal and Program Reports

This program evaluation necessitated a review of the proposed program objectives with related activities and program reports to examine the extent to which the UDL Scholar Program achieved its targeted outcomes. A gap analysis was performed to compare the targeted outcomes from the grant proposal with the actual program outcomes reported to the funder. The findings from the analysis of the program objectives with related activities and reports are provided below.

Objective 1. To increase awareness and knowledge of a minimum of 150 faculty and administrators (annually) on issues and strategies relevant to students with disabilities.

During the first year, discussions with the project advisory committee resulted in the identification of key training topics. The committee was made up of representatives from student disability services, administrators, faculty, and instructional technology. The trainings at the outset of the program, were created based on the needs, challenges, and opportunities identified by committee members, as they related to their institutions.
and students, including students with disabilities. Later, workshop topics were based on
the training interests and feedback gathered from workshop participants on the post
workshop evaluations.

More than 750 college faculty and administrators attended at least one of 35 UDL
training workshops over the 3-year grant period, far exceeding the targeted number of 450
faculty and administrators to be trained over the 3-year term of the grant. Universal
Design for Learning scholars presented at nine of these workshops to highlight their
innovative projects at venues such as the California Association for Postsecondary
Education (CAPED) conference, as well as in workshops on their college campuses. In
addition to quantifying the number of participants in attendance at training workshops,
this outcome was measured in a number of ways. First, pre/postworkshop surveys were
utilized to assess any changes in participant’s skill, awareness, and/or knowledge
following the workshops. Second, postworkshop evaluations obtained information
regarding scholar perception of the effectiveness of the training and any topics the scholar
would like to see included in future trainings; and third, an external program evaluator
facilitated a UDL Scholar focus group to explore program effectiveness, and scholar
satisfaction with the program. The following sections titled Pre/Post-Workshop Training
Surveys, Postworkshop Evaluation Reports, and Focus Group Summary contain more
detailed results of those findings.

**Objective 2. To decrease the gap in completion rate between students with and
without disabilities by 5%.**

During the first year, project staff attempted to collect data about student
completion rates for students with and without disabilities who were enrolled in courses
taught by the UDL scholars. A comparison of difference between the rate at which students with documented disabilities completed courses taught by scholars, and the rate at which other students completed those courses, would determine the gap in completion rates. When filling out registration forms to attend a workshop, scholars were asked to name the discipline(s) in which they taught, how many courses they were teaching, how many students were in each course, and how many students with disabilities were enrolled in each course. Toward the end of each semester, project staff followed up with the scholars to learn about the completion rates of their students with and without disabilities to determine whether any changes in completion rates occurred after they applied strategies or techniques they learned in the training workshops. In the year 3 final program report, project staff noted a 3% gap in the completion rates between students with disabilities and their counterparts without disabilities. As was noted in the program reports, there are limitations to this type of measurement; primarily, not all students with disabilities disclose their disability to the instructors. Therefore, a larger number of students with disabilities may be completing courses than what is known. Secondly, scholars were asked to report percentages to their best ability or make their best estimate of the percentage of students who were completing their courses. The scholars were reporting based upon their memory rather than by using college completion records, so the true number or percentage is not known. Toward the end of the project, the question on the registration forms was changed to ask the scholar whether they perceived a wider range of students (in terms of ability, preference, learning style, etc.) were completing their classes. The researcher also asked this question of the scholars on the UDL Scholar
Post-Program Survey; the findings from that survey are reported under the section headed UDL Scholar Post-Program Survey.

All of the UDL Scholar Program activities related to training and mentoring of scholars were all designed with the intent of improving student outcomes, and decreasing the gap in course completion between students with and without disabilities. Four Scholar Mentors were recruited during the first year to provide peer to peer support to the scholars. Another four mentors were recruited during the second year, and three during the final year of the program. The Scholar Mentors were returning scholars who received training on UDL and applied it to their course/program during the previous funding cycle (2005-2008), or who had participated as a scholar during the first or second year of the 2008-2011 funding cycle and wanted to be a Scholar Mentor during the second or third years of the project.

Twenty-six orientations were held during the 3-year project period. Once scholar applications were received, an orientation was scheduled to give new scholars an overview of the project and explain the UDL Scholar Program purpose and goals. Following the orientation (but sometimes part of the orientation), project staff met with new scholars to generate an individual timeline that contained their overarching project goal, benchmarks, or milestones, and deadlines for completing their scholar project. During the scholar orientations, project staff learned about each scholars’ project idea and ways they intended to apply UDL to their courses or programs. Staff offered focused technical assistance for each scholar throughout the process, from mapping out timelines and milestones to completing their project. Staff offered their expertise by making suggestions for infusing UDL principles into course curricula and/or recommending
technology or software that would be beneficial for the scholar to attain their project goals. All scholars received support to (a) purchase supplies, equipment, or software needed to complete their projects, and (b) to attend a professional conference about Universal Design for Learning.

Whenever possible, orientations were scheduled for a group of scholars; however, individualized orientations were also scheduled based upon scholar availability. During the first year, two individual scholar orientations and one group orientation for 4 scholars took place. Orientations during the second year consisted of one group orientation for 10 scholars, one orientation for 2 scholars, and six individual scholar orientations. During the third year, there was one group orientation for 8 scholars, one group orientation for 4 scholars, and three individual scholar orientations.

The Scholar Mentor initiative resulted in the development of three learning communities. The scholar program acted as one learning community. A scholar spotlight event brought the scholars together in a forum where they were able to learn about each other’s work and find shared goals and connections that led to an expansion of the scholar learning community. For instance, a multi-media production studio that was developed by two scholars was showcased at this event, and became a valuable resource for other scholars in the program. Two other learning communities were developed on two other campuses. The first was established around the use of technology that would benefit all students including students with disabilities and for English Language Learners. The scholar who initiated this learning community used the principles of UDL to research the practicality of different technologies to enhance the reading and writing skills for students with disabilities, and, as a result of the research, was able to synthesize his findings and
present to his/her campus the benefits of Read Write Gold™ literacy support software for all students. The scholar established a learning community that supported the implementation of an institutional license for software. This learning community worked further to establish other UDL projects on campus, such as using Camtasia™ and captioning videos for use in the classroom. A domino effect occurred with respect to the learning community that was established on another campus between scholars from different programs on the campus. The second scholar successfully drafted and implemented a campus wide Universal Design in Education (UDE) policy that applied to the entire institution rather than only Disabled Student Programs and Services. This scholar then identified and mentored a new scholar who created a new curriculum and course on UDL and website development. The second scholar then identified and mentored a third scholar from a different program, who advocated to infuse UDL throughout the campus technology plan, including the design of future classrooms.

**Objective 3.** To increase the number of faculty and administrators actively integrating the training concepts and strategies in their courses by 95%.

Project staff contacted workshop participants at the end of each semester to ask whether they had applied any of the strategies, concepts, and/or techniques from workshop trainings to their classroom or curriculum. During the first year, 11 participants responded to the workshop follow-up, with 100% reporting that they were applying the training content to their courses. The second year, 19 scholars responded to the workshop follow-up. Sixteen of the 19 reported that they were applying the training concepts to their courses/programs. During the third year, an external project evaluator contacted 294 workshop participants for follow-up. One hundred five participants
responded to the survey, with 95 (91%) of the workshop participants reporting that they had integrated UDL strategies, techniques, and/or principles into their courses, programs, or curricula.

Program staff were in contact with scholars to determine the type and level of assistance necessary for them to meet their project timeline milestones and ultimately complete their project. Support to scholars included classroom observations, individual meetings with scholars or via online conferencing, curriculum feedback, and course website reviews. Program staff visited selected scholar classrooms and programs to assess technical assistance needs of the scholar, based on such variables as course discipline, environment (i.e., multiple classrooms, single program office, etc.), and techniques or strategies to be implemented.

Project staff conducted postworkshop follow-up with scholars via web conferencing to provide additional information regarding implementation of UDL techniques and strategies or for clarification about resources available to UDL scholars as program participants.

As discussed in Objective 2, the UDL Scholar Program resulted in the establishment of three learning communities in South Coast County. These learning communities resulted in the introduction and infusion of long-term strategies of implementing UDL in ways that affect student learning and create long term change across the campus programs and services.

**Objective 4.** To increase access to and dissemination of universal model resources and materials through a minimum of 10 venues (annually).
Project staff assisted scholars to develop a UDL Scholar Showcase Brief, which identified their scholar project in terms of the need for UDL, the innovation applied, and the result. Scholars utilized their briefs as handouts during dissemination activities to provide others with examples of ways to infuse UDL into courses and programs. Twenty-seven of the scholars recorded a 5-minute video, in which their scholar projects were described and discussed so others could use their model to replicate or create similar projects. These videos are now available for viewing on the project website.

Contacts and partnerships resulting from the UDL Scholar Program enabled UDL scholars to disseminate information to their peers in a variety of settings. Universal Design for Learning scholars themselves delivered 9 of the 35 UDL Scholar Program presentations. Project staff encouraged and assisted scholars to disseminate information to colleagues at faculty meetings, for professional development opportunities during flex week, as well as professional conferences. Topics of scholar dissemination included a variety of topics (i.e., Best Practices with Power Point, Camtasia™, and Teaching with 21st Century Resources), which provided an opportunity to share information about their innovative projects. Presenters disseminated in diverse arenas on the local, national, and international levels at conferences that included the Consortia of Administrators for Native American Rehabilitation (CANAR), the Association on Higher Education and Disability (AHEAD), and the International Conference on Higher Education and Disability.

Pre/Post Workshop Training Survey Summaries

The researcher reviewed the pre/post-workshop survey outcome summaries that were prepared by an internal project evaluator. A copy of the Pre/Post Workshop Survey
from the Universal Design for Learning workshop is included in Appendix C as an example for the reader. A discussion of the results from this review of quantitative data collection is presented, followed by the results of the qualitative data review.

At the beginning of each workshop, a pretraining survey was completed, and following each training a posttraining survey was completed by each participant. The surveys inquired about participants’ awareness, knowledge, and skills regarding students with disabilities, UDL, and the specific training topics previously mentioned.

The project’s internal evaluator utilized SPSS 16.0 (year 1), and SPSS 18.0 (years 2 and 3) analytical software to perform a statistical analysis of the pre-and posttraining mean scores.

A 4-point Likert scale (where 1 = very limited, 2 = limited, 3 = aware, and 4 = very aware), was used to gather quantitative data regarding the reported level of awareness about UDL strategies, techniques, or other topics (i.e., understanding section 508, using Camtasia Studio™, and online course accessibility) that were presented in the workshop. Examples of items that measured awareness included: At the present time, how would you rate yourself in terms of understanding the concept of (workshop topic), or [at] the present time, how would you rate yourself in terms of understanding the need for (workshop topic)?

A 4-point Likert scale (where 1 = very limited, 2 = limited, 3 = good, and 4 = very good) was also utilized for participants to rate their skills and knowledge about UDL strategies, techniques, or other specific topics that were presented during the workshop. Examples of items from the UDL pre/post survey that rated skill included: How would you rate your ability to effectively assess the learning needs of a student with a disability,
and [how] would you rate your skill level in terms of being able to provide appropriate learning environments for students with disabilities? An example of the type of items that measured participant knowledge included a four-part question rating the participant’s own understanding of the following terms: Universal Design; Universal Design for Learning; Accessibility; and Accommodation.

During the first year, four items on the surveys measured awareness. The average scores for awareness ranged from a low of 4 to a high of 16. Six items on the surveys measured skill, resulting in average scores in skill ranging from 6-24. The exception were the workshops on UDL and Online Accessibility and Usability, which had seven items each, resulting in average scores for skill ranging from 7 to 28. Four items on the surveys measured knowledge, resulting in average scores ranging from 4 to 16. The exception to this were the workshops on UDL and Online Accessibility and Usability, which had three items, resulting in scores that ranged from 3 to 12.

Fifty-two usable pre/postsurveys (meaning the participant completed both the pre- and postsurvey) from four training workshops during the first year resulted in participant reported pretraining awareness, skills, and knowledge mean scores of 11.63, 14.98, and 9.2, respectively. After the training, the reported mean score for awareness raised to 14.27, the reported mean score for skills raised to 19.6, and the reported mean score for knowledge raised to 13.01 (see Table 3).

During the second year, four items on the surveys measured awareness. The average scores for awareness could range from a low of 4 to a high of 16.

Six items on the surveys measured skill, resulting in average scores ranging from 6 to 24. The exceptions were the workshops on Online Course Accessibility, and
Table 3

*Average Scores of Participants’ Awareness, Skills, and Knowledge*

<table>
<thead>
<tr>
<th>Average scores from pre/post workshop surveys</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>3-year total scores</th>
<th>3-year average point increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>Awareness</td>
<td>11.63</td>
<td>14.27</td>
<td>10.91</td>
<td>14.01</td>
<td>11.11</td>
</tr>
<tr>
<td>Knowledge</td>
<td>9.20</td>
<td>13.01</td>
<td>8.47</td>
<td>12.67</td>
<td>10.06</td>
</tr>
</tbody>
</table>
Microsoft Office which had seven items, and resulted in average scores ranging from 7 to 28. Four items were used to rate the knowledge of participants, resulting in average scores of 4 to 16. The exception to this were the workshops on UDL and Online Accessibility and Usability, and Online Course Accessibility, which had three items, resulting in scores ranging from 3 to 12.

One hundred-eight usable pre/post surveys from seven workshops showed that the participants’ reported pretraining awareness, skills, and knowledge mean scores were 10.91, 12.39, and 8.47, respectively. After the training, the reported mean score for awareness raised to 14.01, the reported mean score for skills raised to 18.09, and the mean score for knowledge raised to 12.67.

During the third year, four items on the pre/post surveys measured awareness, resulting in average scores ranging from 4-16, with the exception of workshop on Mobility Training Devices, with five items resulting in an average ranging from 5-20. Six items measured skill, resulting in average scores ranging from 6 to 24. The exception to this was the workshop on Mobility Training Devices, with three items, and average scores ranging from 3 to 12, and the Designing Curriculum for All Students workshop, which had five items, and average scores ranging from 5 to 20. Four items on the surveys measured knowledge and resulted in average scores ranging from 4 to 16. The exception to this were the workshops on Designing Curriculum for All Students, and UDL with five items each to rate knowledge, and resulted in average scores ranging from 5 to 20. One hundred thirty-seven usable pre/post surveys from 20 training workshops in the third year showed that mean scores for scholar reported pretraining awareness, skills, and knowledge of the participants were, 11.11, 10.06, and 12.32, respectively. The scholar
participants’ mean scores following the workshop raised to 14.02 for awareness, 16.62 for skills, and 14.05 for knowledge.

Results from the analysis performed by the program’s internal evaluator revealed that the change in mean scores during all 3 years were statistically significant \((p < .05)\), indicating that there was a significant increase in awareness, skills, and knowledge in UDL following the workshops. Table 3 presents the average pre/posttraining scores of the UDL workshop participants reported by the internal program evaluator in terms of their awareness, skills, and knowledge of UDL and other related topics, and the 3-year average of points by which the participants’ awareness, skills, and knowledge increased following the trainings.

**Postworkshop Evaluation Reports**

The researcher reviewed the postworkshop evaluation reports that were prepared by the program external evaluator to explore the efficacy of the workshops and the perceived usefulness of the workshop topics. The postworkshop evaluations varied from the pre/posttraining surveys, in that the pre/posttraining surveys measured changes in the awareness, skill, and knowledge of participants in each of the training topics; whereas the postworkshop evaluation rated the usefulness of the workshop topics and effectiveness of the trainings. Usefulness of the workshop topics was defined by the participants’ perception that they would be able to put the information learned into practice following the workshop. Effectiveness of the workshops was defined by the extent to which participants believed the goals of the workshop had been attained (i.e., conveyed information about technology, techniques, strategies, and principles of UDL). The postworkshop evaluations included a 5-point Likert scale \((1 = \text{poor}, 2 = \text{fair}, 3 = \text{average},\)
4 = good, and 5 = excellent) designed to rate the usefulness of the workshop topics. An additional Likert scale (1 = not at all, 2 = a little, 3 = somewhat, and 4 = very much) was used to rate the effectiveness of the workshops. The average score rating for the effectiveness of the workshops was 3.8 for the first year, 3.85 for year 2, and 3.84 for year 3.

Tables 4 and 5 show the total number of participants and the percentages of UDL scholars who rated the workshop segments and workshop effectiveness as good or excellent.

Table 4

<table>
<thead>
<tr>
<th>Participants</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>115</td>
<td>271</td>
<td>370</td>
</tr>
<tr>
<td>Number/percent</td>
<td>109/95%</td>
<td>249/92%</td>
<td>340/92%</td>
</tr>
</tbody>
</table>

Table 5

<table>
<thead>
<tr>
<th>Participants</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>115</td>
<td>271</td>
<td>370</td>
</tr>
<tr>
<td>Number/percent</td>
<td>115/100%</td>
<td>260/96%</td>
<td>370/100%</td>
</tr>
</tbody>
</table>

Participant ratings of the different segments that related to the workshop topics generally were very good. For example, the Universal Design for Learning presentation featured three segments: needs and origin of UDL, principles of UDL, and applications of UDL in education. All of the UDL workshop participants rated the segment on principles
of UDL as good or excellent. Ninety-eight percent of the participants rated the needs and origin of UDL and the applications of UDL in education as good or excellent. A second UDL workshop featured four training segments: introduction to UDL, UDL and course revision, current and emerging technologies, and hands on activity(s). The highest rated segments were the introduction to UDL and UDL and course revision, with 100% of the participants who responded rating them good or excellent. The lowest rated segment was the hands on activity(s), with only 57% of the respondents rating it as good or excellent. This could be due to time constraints that would not allow completion of the activity, or that participants would like more hands on activities, as noted in the comments section of the evaluation.

The Designing Curriculum for All Students workshop, which featured the Read & Write Gold™ software contained five training segments: Read & Write Gold™ and the principles of UDL, summer 2010 pilot findings, tools to support reading, tools to support writing/research, and tools to support study. The highest rated segment of the workshop was that concerning tools to support study, which was rated excellent or good by 92% of the participants who completed the postworkshop evaluation. The lowest segment was the summer 2010 pilot study with only 71% rating it as good or excellent.

The Usable & Accessible Websites workshop contained five training segments: application of UDL to online courses, assistive technology, accessible word documents, accessible PowerPoint™ presentations, and built-in accessibility features. The highest rated segment of this workshop was the assistive technology segment, with 100% of the respondents rating it as good or excellent. All other segments were rated good or excellent by 89% of the respondents.
The Web Accessibility workshop contained five training segments: focus/purpose of your website, principles for creating accessible websites, principles for evaluating website accessibility, media as an environment, and hands-on activities. The highest rated training segment of this workshop was the principles for creating accessible websites, with 100% of the responding participants rating it as good or excellent. The lowest rated segment was that of hands-on activities, with only 71% rating it as good or excellent. Again, this may be due to the fact that participants would like to have more time for hands-on activities.

The Using Camtasia Studio™ to Enhance your Course Website workshop contained five training segments: Camtasia™ editor interface, Camtasia™ recorder, enhancement and editing, producing and distributing, and alternative products. The highest rated training segments of this workshop were Camtasia™ editor interface, and Camtasia™ recorder, with 100% of the participants rating them as good or excellent. The lowest rated segment was alternative products, with 73% of the participants rating them as good or excellent.

The Creating Accessible Course Content Using Microsoft™ Office workshop contained five training segments: Word styles feature, accessible images, accessible tables & charts, accessible forms, and accessible PowerPoint™. The lowest rated segment of this workshop was accessible tables and charts, with only 68% of the responding participants rating it as good or excellent. All other segments were rated as good or excellent by 81% of the responding workshop participants.
Postworkshop Follow-Up

The UDL program workshops highlighted a variety of topics such as Making Classes Accessible for All, Introduction to Section 508, and Accessible Web Pages. Other workshops were created to bring awareness to the academic needs of specific populations (i.e., returning veterans), who experience a variety of disabling conditions due to combat injuries. Universal Design for Learning training workshop participants were contacted 2-3 weeks postworkshop training via email and/or telephone to determine: (a) what they found most beneficial from the workshop; and (b) whether they were applying the concepts, strategies, and techniques from the workshop to their curriculum and/or in the classroom. Initially, an email message was sent, with a follow-up telephone call to those who did not respond to the email. A content analysis of the notes from the postworkshop follow-up telephone calls and emails provided quantitative and qualitative information about the ways that scholars were utilizing techniques and strategies following each workshop.

During the first year, 11 faculty participants responded to the postworkshop follow-up and all 11 (100%) reported they were applying techniques and strategies from the trainings to their courses. During the second year, 16 out of 19 (84%) faculty respondents reported they were actively applying the training concepts to their courses/programs.

The researcher analyzed the follow-up notes to learn what participants found to be most useful or beneficial from the workshops. Comments that appeared to have related topics were merged together, or coded into topics or categories. Emerging categories included workshops, presenters, and practice. Participants reported that the information
presented in the various workshops was relevant and immediately useful to them and/or their departments in terms of putting the new knowledge into practice. Participants noted their appreciation of the level of knowledge and skill of the workshop presenters, who were well versed in the topic being presented, but were also open to input and feedback from the participants. Overall, participants reported that the knowledge base provided by the presenters, and the hands on practice in the workshops enabled them to put ideas and concepts into immediate practice, and the workshop materials were beneficial resources. A recurring theme regarding what was most beneficial about the trainings was the increased understanding of the differences between accessibility and accommodations, and the concept of UDL as a best practice that benefits all students.

Focus Group Transcript

To complete this program evaluation, the researcher reviewed the focus group transcript that was prepared by an external evaluator during the term of the grant in order to examine perceptions of the scholars in terms of experiences with and effectiveness of the program. The external evaluator collected qualitative data via facilitation of a 2-hour focus group held at the Worksmart Institute in April 2009. Six scholars that participated in the focus group were faculty, while four others held positions in web design and accessibility compliance, information technology, and instructional design.

The researcher developed four subheadings to categorize the topics discussed as a result of the questions posed by the focus group facilitator. The questions and topics posed included:

1. I’d like to hear a little bit about your initial experiences with the Scholar program. How did you learn about the program?
2. I understand that every scholar develops a time line or a contract and a set of goals. Can you tell me about that process?

3. Let’s transition to talking about the variety of different training workshops and series and things like that. Can you tell me a little bit about your experiences with those?

4. I’ll shift gears a little bit and see if any of you have availed yourself of the peer assistance collaboration, or focus technical assistance, if you’d like to tell me about your experiences with that. Have you had any focused technical assistance?

5. Take a moment to think about what you’ve learned in the projects thus far has had a direct impact on your teaching or you as an individual. If you’d like to, tell how else the program helped to improve your responsibilities of teaching. Anything you’d like to share.

6. We want to be aware of any areas that you would see improvement that could be implemented, so by all means. Like, is there something you’ve been wishing for or something that’s been a little challenging, anything that stands out? I’d be happy to hear it.

The subheadings developed by the researcher allowed for a structured analysis of the transcript and included: the scholar experience, benefits of participation, satisfaction with experience and program, and program impact and outcomes. Within each subheading the researcher found recurring themes that included scholar satisfaction, change in pedagogy, flexibility, opportunity, and student success.
The scholar experience. The scholar experience included the recurring themes of scholar satisfaction and flexibility. Participants reported a high level of satisfaction with the project in general. Although they came into the program with different goals, the overarching reason was that they wanted to improve student success as a whole by increasing accessibility for all students, not only for students with disabilities. Scholars became aware of the program by seeing flyers, receiving electronic communication, and by word of mouth from colleagues, which piqued their interest in the program. A couple of the scholars learned about the UDL Scholar Program while attending a workshop for a different program. A number of scholars elected to become a UDL scholar prior to attending any workshops; they learned about the program from colleagues or supervisors who referred them to the program. Individuals who had been scholars in the 2005-2008 program reportedly recruited at least one participant.

With respect to scholar satisfaction with the program, scholars were very pleased with the training schedule, the presenters, interaction with others, and the workshops in general. They indicated that the workshops had an optimal number of participants, allowing for interaction between presenters and participants. Workshops were described as being well organized, with presenters that were very knowledgeable about the topics presented. Scholars noted that the workshop topics were useful, provided in a format that allowed question and answer sessions, and produced ideas from both the presenter and participants. One scholar explained:

The workshops have been diverse enough and at the same time applied enough that if you come and you have questions specifically about your courses or what
you’re doing, you can get not only the feedback from the presenter but people in
the room will say this is what I tried and so forth. So that’s been good.

Participants were appreciative of the flexibility of the process and of staff members
throughout the program. Scholars explained that there were times they could not attend a
workshop, and the coordinator had personally talked them through the information over
the phone or had gone to their campus to meet with them face-to-face and worked with
them to create their timelines and meet their project goals. An example of flexibility of
project staff is the autonomy afforded to scholars in completing their scholar project.
They enjoyed the fact that once their project was identified and timeline set, they were left
to do their work, knowing that the staff were there to support them by providing
resources, referrals, and personalized assistance as they needed.

**Benefits of participation.** Themes found within the subheading of benefits of
participation were opportunity, and change in pedagogy. Participants said the number
one benefit of participation was that their teaching methods had improved. One major
benefit was simply the opportunities that were given to them by being scholars.
Opportunities to attend conferences and workshops, try out new ideas, learn about
technology (i.e. Camtasia™, Captivate™, and Kurzweil™), and learn ways to make their
materials accessible to everyone; all combined, these improved their teaching. Scholars
unanimously mentioned that the opportunities to learn from presenters, as well as
colleagues in the workshops, were of great benefit. One of the scholars came into the
program with the explicit goal to learn from others and then share that information with
others on his campus. This program provided the opportunity to meet and share with
other scholars, plus bring concepts, skills, and techniques to faculty on campus as a
starting point for promoting UDL and the importance of accessibility in all instruction. One scholar explained that he no longer has to do last minute revamps of courses when a student with a disability enrolls because the course is already accessible for everyone. Other scholars described opportunities to team up with colleagues to form their own learning communities around UDL. Informing policy on their campus was not only of benefit to them personally, but it benefitted the entire campus and ultimately their students.

Scholars reported an overall change in pedagogy (ways of teaching, learning, and academia). Scholars reported that their attitudes changed as they began to understand UDL as a philosophy. They realized that UDL is about making opportunities and affordances in the learning products. A scholar shared that once they grasped the philosophy, they realized that the learning experience is two-way and interactive, with both involved as “co-learners,” as opposed to one-sided, where the teacher lectures and the student listens and takes notes. The scholar’s focus began to shift from compliance with policy, regulations, and accommodating students with disabilities, to accessibility, and designing learning materials and environments that appealed to a diverse group of students. A shift began happening systemically, as they began to reframe disability as part of student diversity. A scholar gave an example of what was happening on their campus, stating:

We had a global diversity conference that had nothing to do with me or disability, but the woman that was coordinating it was on our ADA committee and so she started to say we need to include disability as part of our diversity . . . and set up a UDL workshop.
Another scholar shared that the program taught how to infuse flexibility into assignments by offering students alternative ways of completing their assignments. Scholars shared that they became excited when they realized that this program was moving them from a place of mere compliance with ADA related policy on campus to one of universal access. Scholars reported utilizing technology (i.e., WebQuest™, Captivate™, and Camtasia™) and other new approaches (i.e., captioning videos) for teaching at the classroom level that increased accessibility and supported diverse learning styles.

**Satisfaction with experience and program.** The satisfaction with experience and program category includes themes of scholar satisfaction, flexibility, and change in pedagogy. Participants provided positive feedback about the workshops and their experience in the scholar program. Overall, the participants reported great satisfaction with the program and appreciated the opportunities for learning not only from the workshop presenters, but from their peers as well, and being able to share what they learned with their colleagues to increase awareness about UDL. Scholars mentioned their appreciation of the flexibility and autonomy they enjoyed in completing their scholar project. They explained that once they met with the coordinator or other staff members, identified their project, and set the timeline and milestones, the staff left them alone to do what they needed to do. One scholar noted that this autonomy was very important, along with the support of the project staff. She felt the autonomy, yet also supported in that she could contact the coordinator or project staff with any questions or concerns she had, or if she needed a referral to a person, service, or technology that would help her to complete her project. Building from there, the scholar mentioned that the overall support of project staff in terms of individual assistance and focused technical assistance was excellent and
increased her satisfaction with the program. Another scholar offered that “participating as a UDL scholar was one of the best experiences I’ve had since moving here.”

**Program impact/outcomes.** Program impact/outcomes contains the themes of opportunity, change in pedagogy, and student success. When asked about the impact the program was having on student learning and achievement, a number of participants shared student success stories. One participant shared that once they began implementing some of the UDL techniques, “it became apparent that there were more students with disabilities in the classroom,” and the techniques were in fact making the materials more accessible to them. The scholar believes that “changes in pedagogy were allowing students to be successful in their classes.” The students came forward and thanked him for doing things differently because they started succeeding in the class as soon as he incorporated some of the UDL techniques he learned in the program. The move from compliance to accessibility allowed scholars the opportunity to be more receptive to people with alternative preferences for learning. Rather than doing the very minimum to be in compliance with disability policy by posting a statement on syllabi that advises students with disabilities to see the instructor for accommodations, these faculty understood that UDL is a way to make their courses and materials accessible to the largest number and range of students possible. A scholar shared how involvement in the program inspired reading instructors in basic skills classes to come for training on What is Kurzweil™ and preparing their texts using Kurzweil™ . . . but for all of their students in the fall, not just students with disabilities which we would do anyway. And they’ve had training both from [a Scholar program trainer] coming down
from the high tech center and also from our own faculty where they’re talking the philosophy, the idea of how you would put your lectures, for example, online and make that accessible to everybody and not just one or two students. And then they’ve been implementing the training for Kurzweil™, and they hope to put that through in the fall. And so we’re starting to infiltrate.

One scholar shared the belief that the students have become more successful in classes because teacher expectations were much clearer, and the students better understood what was required of them. Scholars reported that since completing their initial scholar project, they have implemented some of the ideas into their other classes. One scholar has infused UDL into 13 classes.

Another scholar described how alternatives were provided for students to complete an assignment (multiple means of expression) in his class. One choice was to complete a field observation from a trip to national parks in the area. The other option was for students to complete the assignment via a WebQuest™—completing a problem solving exercise collaboratively using resources on the internet. Both sets of students enjoyed their chosen activities and both groups scored similarly, with the WebQuest™ group averaging about a 4.2, and the experiential group averaging about 4.8 out of 5 points. Although there is a difference in scored averages, the scholar felt reassured that this was a good implementation because both groups scored above 4.0 out of 5 points.

One scholar discussed how utilization of new technology resulted in success not only for their students with hearing impairment, but for all students. This scholar used the Captivate™ software to create an online lecture with captioning, and a second without captioning. Then at the end of the semester, the scholar polled the students on their
preference. During the first semester, 87% of the students preferred the lecture with the captions. In the second semester, 91% of the students preferred the captioned lectures. From that point forward, the scholar has used only the captioned lecture because it supported student learning and success for all students.

The UDL Scholar Program positively influenced more than just the students. The scholars believe that this program brought them credibility that allowed them the authority to begin promoting UDL and the shift in pedagogy on their campuses: “I have a title now as a UDL scholar; that gave me credibility with those in authority, and was a great motivator for me.” One scholar had such passion and motivation to institute change that she was able to write a UDL policy that affects all of campus operations and begin “initiating the policy through general institutions on a campus rather than student affairs, so it doesn’t come from a disability push but from the governing board in general.”

UDL Scholar Post-Program Survey

The UDL Scholar Post-Program Survey (Appendix B) was designed and administered to provide a 2-year retrospective look at what had transpired for the scholars and their students in the time since their participation in the UDL Scholar Program ended. When inviting scholars to complete the UDL Scholar Post-Program survey, it was discovered that two scholars had passed away since completing the program, one scholar was on sabbatical, and two were not able to be located, which brought the number of possible study participants to 38. Of the 38 scholars who were invited to participate, 31 (82%) responded; however, only 25 (65%) of those respondents completed the survey past question one. Question 1 inquired about whether scholars consented to participate in the study. If they responded yes, participants were automatically forwarded to the web
page where the survey questions began. If they answered no to the consent question, they were forwarded to the end of the survey to a “thank you” message.

The Qualtrics™ online survey system was used to create and administer the UDL Scholar Post-Program Survey. The researcher downloaded the information collected via the survey, then used the IBM SPSS (version 22) analytic software to perform descriptive statistical analysis including frequency distributions and a paired sample \( t \)-test to examine differences between outcomes. The researcher utilized ATLAS.ti (version 7), a computer-assisted qualitative analysis software, to manage and analyze qualitative data. This software allows users to manage, analyze, and store text data such as comments made by the UDL Scholars on the UDL Scholar Post-Program Survey. The researcher uploaded the UDL Scholar comments into the software, and analyzed and coded for trends and themes. The researcher read each scholar comment line by line, searching for themes or family items that would be grouped together. Demographic data are presented, followed by quantitative data including information about the number of workshops scholars attended prior to becoming a scholar, principles of UDL that were utilized, scholar perceptions of student success, and whether or not scholars shared UDL strategies or techniques with their colleagues. Qualitative data about the factors that influenced participants to become scholars, and other comments about their experience as a participant of the scholar program, follow the quantitative results.

**Data Analysis**

Data collected via the UDL Scholar Post-Program Survey provided a wealth of information about what happened during scholar participation in the program and during
the 2 years following. Following is a discussion of findings from the analyses of those data.

**Demographic Data**

Survey respondents were nearly equally divided by gender, with 13 males and 12 females responding. A question regarding the type of institution at which they were employed, revealed that the majority (52%) of scholar respondents were employed at community colleges, followed by 35% who were employed at the state university level, and one respondent reported working in both the community college and state university systems. The survey inquired about the scholar’s position within their institutions. Eighteen of the respondents were college faculty, two were college staff, one was a college administrator, and four respondents reported that they held other positions, including: staff and faculty, instructional designer, Program Manager, Science, Technology, Engineering, and Math (STEM) Education Initiative and Adjunct Faculty, and Instructional Technology (IT) Supervisor. Universal Design for Learning Scholars were asked how many years they had been employed in their current position. Two had been in their position for fewer than 5 years, 5 scholars had been in their position for 6-10 years, and 18 scholars reported being in their position for more than 10 years.

**Number of Workshops Attended**

Frequency distributions performed using SPSS 22 revealed that 10/25 (40%) of the UDL scholars became scholars prior to attending any training workshops. Seven scholars attended one workshop, six scholars attended two workshops, and one scholar attended more than five workshops before deciding to become a UDL scholar.
Principles of UDL Employed

All of the scholars implemented at least one principle of UDL when they designed and created their original UDL scholar project. The UDL Scholar Post-Program Survey inquired about which principles of UDL (multiple means of representation, multiple means of engagement, and multiple means of expression) scholars utilized as participants and during the 2 years since their involvement with the UDL Scholar Program.

Only two scholars reported that they had not implemented any new UDL strategies or techniques. Twenty-three of the 25 (92%) scholars who answered this question indicated that they had included some new principles or strategies into their curriculum. When asked to reflect upon which principles of UDL they had utilized during and after their participation in the scholar program, scholars could choose from multiple answers including multiple means of representation, multiple means of engagement, multiple means of expression, all principles, or no principles if they had not implemented any new strategies or techniques.

Figure 3 depicts the comparison of the number of UDL Scholars who utilized the different UDL principles during and after their participation in the UDL program. Data analysis revealed that a larger number of scholars (six) utilized the principles of multiple means of representation and engagement while participating in the scholar program, while only three scholars reported including these principles as part of their curriculum post Scholar program.

A lesser number of scholars (two while participating, and four postprogram) reported implementing strategies or techniques related to the principle of multiple means of expression. This may be due to the nature of pedagogical change that emphasized
Figure 3. Comparison of UDL principles utilized during and postprogram.

providing information and course materials in formats that would appeal to students with a varied range of skills, learning preferences, and abilities. Additionally, 14 scholars reported implementing strategies or techniques that related to all three principles of UDL as part of their original scholar project, and 13 scholars reported that they implemented new techniques or strategies that related to all three principles of UDL after their participation with the scholar program ended. Two scholars reported that they have not implemented any new strategies in the 2 years since the program ended.

Scholar Perceptions of Student Success

When asked about their perceptions of student success, 14 out of the 25 respondents (56%) agreed or strongly agreed that, while they were a participant in the
UDL Scholar Program, a higher proportion of students who began their courses successfully completed (with a grade of C or better), because of integrating principles and strategies of UDL.

In addition, 14 of the 25 respondents (56%) indicated that they agreed or strongly agreed that as a UDL Scholar, a wider range of students (in terms of student preparation, learning styles, preference, and abilities) successfully completed their courses because of integrating strategies and principles of UDL. Figure 4 depicts the comparisons of the UDL Scholar perceptions of student success during and following their participation in the UDL Scholar Program.

![Comparison of Student Success following implementation of UDL principles during and post-UDL School Program, as perceived by UDL scholars.](image)

A retrospective look at what had transpired in the 2 years since the UDL Scholar Program ended in terms of student success revealed that 23 out of the 25 (92%) reporting scholars agreed or strongly agreed that, since completing their original scholar project,
they had integrated new UDL principles and strategies into their courses and/or program. Fourteen of the 24 (58%) scholars agreed or strongly agreed that a higher proportion of students successfully completed their courses with a grade of C or better because of newly integrated principles and strategies. Sixteen out of 25 respondents (64%) agreed or strongly agreed that a wider range of students (in terms of student preparation, learning styles, preference, and abilities) successfully completed their courses because of newly integrated strategies and principles of UDL.

A Paired Samples $t$ Test of differences (Table 6) used to examine significance of the increase in number of scholars reporting, wider range of students succeeding in their classes post Scholar program, as compared with the number of Scholars who reported a wider range of students succeeding in their classes during the program revealed that, while this increase was encouraging, $t(24); p < 0.05$, the increase was not statistically significant.

Table 6

*Paired Samples $t$ Test of Significance*

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*Sharing of UDL Strategies and/or Techniques*

Qualitative and quantitative data gathered from the UDL Scholar Post-Program survey provided information about whether scholars had disseminated information about
UDL strategies and techniques during their tenure as a scholar and/or the 2 years since participation in the program ended.

Questions on the survey asked scholars whether they had shared any of the UDL strategies or techniques with their colleagues as a UDL scholar and/or following their participation in the program. Nineteen scholars reported that as participants of the program, they shared in informal one-on-one settings, 14 shared in professional development workshops, another 10 reported sharing in professional conferences, and 3 shared in other formats. One scholar designed a course in Universal Design that is now required for all web design students, and made a UDL video, which is shown in all computer classes on their campus. Other scholars reported that they had shared information and/or techniques in their department meetings. Two scholars reported that they had not shared any information, techniques, or strategies from the UDL workshops or trainings with their colleagues during the program.

Figure 5 depicts the comparison of the ways that UDL Scholars shared information about UDL strategies or techniques during and following their participation as a UDL scholar. During the 2 years postprogram, nine scholars reported sharing UDL strategies information and/or techniques in one-on-one informal settings, six had shared in professional development workshops, and seven reported sharing at professional conferences. Two scholars reported postprogram sharing in other formats, such as campus committees, including the institutional technology committee, distance education committee, academic technology committee, tenure/peer review committee, web design committee, remodeling task force committee, the American’s with Disabilities Act and Universal Design for education committee. Another scholar reported sharing information
in their department meetings. One scholar reported not sharing any UDL strategies, techniques, or information with colleagues in the 2 years since completing participation in the UDL Scholar Program.

Qualitative data were gathered via open-ended questions on the UDL Scholar Post-Program Survey, which provided opportunities for scholars to share information regarding their experience of participating in the UDL Scholar Program. The researcher uploaded respondent comments into Atlas.ti (version 7), and a content analysis of the scholar comments from the survey performed. With the exception of one respondent, the scholars shared positive comments about their satisfaction with the program, outcomes for themselves and their students, and program staff. Themes that emerged from the scholar comments about the reasons they decided to become a scholar were Benefits to Students and Scholars, Changes in Pedagogy, and Satisfaction with the UDL Scholar Program. These themes are presented and described below.
Factors Influencing Decision to Become a Scholar

When asked about what influenced their decision to become a scholar, the answers were varied. A content analysis of the answers given to the open-ended question allowed the researcher to code answers and arrange them into four categories or families: improve teaching, opportunity for new knowledge, project opportunity, and referred to program. Figure 6 shows the factors that influenced the scholar’s decision to become a scholar.

*Figure 6.* Categorization of factors influencing decision to become a UDL Scholar.
Two scholars reported that colleagues who had been scholars in the 2005-2008 program referred them to the scholar program; one scholar had a colleague that referred him to the program, and one scholar had a supervisor that recommended he attend the trainings and become involved as a UDL scholar. Seven scholars who wanted to improve their teaching and felt that UDL could help them make improvements to the way they were providing materials. Seven scholars believed that UDL would be of benefit to not only students with disabilities, but to all students taking their courses.

Four scholars felt that becoming a scholar would give them the opportunity to learn new knowledge about UDL strategies and techniques, as well as help them to develop the skills needed to implement changes in curricula utilizing UDL strategies and techniques. Four of the scholars had ideas for ways to utilize UDL principles but needed funding to implement the needed changes. For these scholars, the scholar program provided the perfect opportunity to receive a stipend that would fund their innovative project.

**Benefit to Students and Scholars**

Scholars commented about beneficial outcomes for their students resulting from the scholar experience. For example, one scholar stated:

In my opinion, if we adapt the UDL principles to all of our projects and assignments for our students, the desired outcomes of our students will exceed what we expected them to be! I am honored to be a UDL Scholar.

Others shared: “One of the great benefits is that this approach is, in fact, universal in terms of providing more effective learning to occur,” and “I think students feel
empowered and more inclined to perform better when they realize that the instructor is indeed taking time to reach out to them without any judgment [sic].”

Scholars reported that the UDL Scholar Program experience benefitted them in terms of increased skill and/or awareness about UDL. Comments made by scholars included: “I am more aware of UDL, and the opportunity increased my knowledge and awareness about how to better serve students with respect to providing class notes.” Scholars believed that there was an increase in the level of respect they received from college administrators. This new found respect enabled scholars to make valuable changes to their curriculum, as well as share their newfound knowledge with colleagues. One scholar commented: “They made it real to my higher-ups, and so they respected me and the curriculum changes I designed,” while another comment read, “with the imprimatur of the university, it was easier for me to speak up in meetings and to revise curriculum.”

Changes in Pedagogy

Scholars indicated that pedagogical change occurred because of their participation in the program. Scholars were provided opportunities to gain new insight, knowledge, skills, and competencies in the UDL instructional and pedagogical practice. Learning to use different software programs changed the way they documented and shared data with students. For instance, one scholar began captioning presentations and found that all of the students were benefitting from the change, not only students with disabilities. Scholars changed the design of their instructional materials and their modes of instruction. One scholar explained that he began uploading instructional materials electronically onto the course blackboard so that students would be able to access the
information at any time. One scholar remarked that the program was very effective in helping them to look at teaching differently, and as a result has changed the entire design of their instructional materials as well as mode of instruction.

**Satisfaction With UDL Scholar Program**

In general, the scholars enjoyed positive experiences and outcomes from being in the program. One scholar reported a less than satisfactory experience, stating that he had been confused about some of the processes, such as who was hosting what type of assistance to the scholars. The scholar was disappointed because one of their videos was to be captioned and converted to a web-friendly format; however, the video was never captioned. This scholar did say that the projects they implemented were interesting; however, he wished it could have resulted in a meaningful outcome.

Other scholars, however, reported great satisfaction with the program in general. Scholars appreciated the opportunities for learning new ways to create and present their course materials that appealed to diverse learners such as providing captioning. Scholars appreciated the opportunity to share their ideas with other scholars and with their colleagues. They enjoyed the design of the workshops, which allowed for not only the presenter to provide information to the scholars but allowed the scholars to share their knowledge and ideas with the group. One scholar shared that the program was made worthwhile because of the opportunities to share their discoveries and provide support to one another. Scholars were pleased with the new skills and knowledge attained from participating in the program. They believed the program was of benefit not only to them, but ultimately benefitted their students, in terms of greater student success. The technical assistance that was provided to scholars helped them to formulate their project ideas into
meaningful curriculum changes. Scholars have continued using their newfound knowledge and abilities successfully even in other countries.

**Summary**

Quantitative and qualitative methods were used to measure program outcomes and address the research questions. This enabled a comprehensive evaluation of the UDL Scholar Program in terms of scholars’ satisfaction with the program, scholar perceptions of student success resulting from program participation, and whether program objectives were attained. Existing program documents provided a view of what occurred during program participation from 2008-2011, while the UDL Scholar Post-Program Survey provided a view of outcomes for the scholars and their students, as perceived by the scholars, 2 years after program participation.

Chapter 5 provides a discussion of research findings as they relate to the research questions and connect with the literature and conceptual framework, implications for practice and policy, and recommendations for future research.
CHAPTER 5—DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This research study measured the effectiveness of the UDL Scholar Program to train college faculty and staff about UDL techniques and strategies, and student success as perceived by the scholars following implementation of UDL via a process and outcomes-based evaluation.

This chapter presents a discussion of key findings as they relate to the research questions, the literature reviewed, the conceptual framework, limitations of the study, practical application of results, and recommendations for future research.

Research Questions

Four research questions guided this program evaluation in the exploration of scholar experiences and perceptions about the impact and effectiveness of the UDL Scholar Program and the degree to which the program objectives had been attained. The research questions of this study were:

1. What influenced faculty to become a UDL Scholar and employ UDL in their teaching for diverse learners in postsecondary education?
2. How did UDL pedagogy influence student learning, as perceived by faculty?
3. How did implementation of UDL strategies result in ongoing changes in pedagogy among UDL scholars?
4. What measurable UDL Scholar Program outcomes were achieved?

The systems management and evaluation as politics paradigms (Weiss, 1998) were used as a working framework for exploring the perspectives of the participants as primary stakeholders, as well as comparing the actual program outcomes with the
targeted program objectives as a means of determining the efficacy of the UDL Scholar Program. The evaluation as politics paradigm provided context for exploring the impact and effectiveness of the UDL Scholar Program and its outcomes, as well as gain insight into the UDL scholars’ perspectives as participants of the program. Performing the program evaluation from the systems management paradigm was equally important, as it guided the researcher through the analysis of the intended program outcomes, as compared with the actual program performance as a means to determine efficacy of the UDL Scholar Program in general and whether program activities were instrumental to realizing the proposed program outcomes.

Directors, coordinators, and others in authority make decisions on whether specific programmatic changes need to be made based upon evaluation results of the effectiveness of program objectives or activities. Evaluations in general can be seen as politically charged, in that evaluations bring to light the positive and negative aspects of a program. In some cases, the results of an evaluation can warrant the closing of a program when it is clear the program is not effective or performing to standards.

The scholars were major stakeholders in the program, thus their opinions, ideas, and perceptions were vital for informing those in authority about whether program activities or components worked effectively toward achieving the targeted program outcomes.

Everett Roger’s Diffusion of Innovation Theory (DOI) was used as a lens to explore the experience and perceptions of the UDL scholars. According to Rogers’ theory, information is shared through networking, and the opinion of peers and leaders in one’s field will determine the extent to which an innovation (UDL) will be accepted, or
adopted for use (Robinson, 2009). This theory helped to explain the influence different variables, (i.e., individual awareness and peer acceptance of UDL) had on whether scholars would embrace the use of UDL. This exploration helped to explain how and when individuals decided to become scholars and apply the principles of UDL, whether they would share what they learned with colleagues and/or act as mentors to scholars who later came into the program, and whether they would continue with these activities once the program scholar program ended. Viewing the UDL scholars from the DOI framework, we see people falling into different categories (i.e., laggard, late adopter, early adopter, and innovator) based upon the timeframe that passed before they entered the program. Another way of using this theory was to consider the phase each was in at the time they entered the program (i.e., awareness, seeking, decision, application, and sharing/continued application). Although the number of scholars in this study was small, participants’ behaviors aligned with these categories. A majority of scholars fell into the innovator category, which in this study meant that they decided to become a scholar without attending any training workshops, thus entering in the decision phase of the continuum.

Diffusion of Innovation Theory plays an important role in determining the path or networks through which innovations become accepted or rejected. Often the decision to adopt an innovation is based upon a perceived cost or benefit as a result of the adoption. It is human nature to expect some type of benefit to result from their participation in any activity. This was true within the ranks of UDL scholars. For four scholars, the benefit was the opportunity to gain new knowledge for themselves that they expected would in turn benefit their students. For four others, it was the benefit of having a monetary
stipend that would pay for technology, software, or other resources to complete their project. Fourteen of the scholars saw the benefit to students as worth the cost of their time and effort to adopt UDL strategies and techniques for use in their classes.

The DOI was useful as a lens through which the researcher viewed the scholars as they moved along the continuum from the beginning to the end of the program and beyond, providing insight about their position in the various phases of the program (awareness, decision, implementation, etc.) and the actions they were taking in each phase (sharing techniques and/or continuing to implement new strategies). Utilizing these paradigms allowed for process and outcomes based measures of scholar satisfaction with the program and effectiveness of the program.

As described in Chapter 3, the researcher reviewed data that were collected via a review of existing program documents (i.e., grant proposal, pre/post workshop surveys, and postworkshop evaluations, workshop follow-up emails and telephone notes, annual program reports, and focus group transcript) and the administration of a 2-year retrospective UDL Scholar Post-Program Survey (Appendix B).

Reviewing the grant proposal allowed the researcher to better understand the purpose and processes of the program, and to perform a gap analysis of any differences between the targeted program outcomes and the actual outcomes.

Pre/post training surveys measured changes in the awareness, skill, and knowledge of scholars in each of the training topics. Measured outcomes from the pre/post workshop surveys included effectiveness of trainings and whether there was an increase in scholar awareness, skills, or knowledge of UDL and related workshop topics (i.e., website accessibility, making curriculum accessible for all students, etc.).
One of the program objectives was to increase UDL program participants’ awareness, skill, and knowledge about UDL and related topics, such as creating accessible websites, and making curriculum accessible to all students. A review of the survey summaries allowed the researcher to determine whether the participants experienced a change in awareness, skill, and/or knowledge as a result of attending the workshop and the effectiveness of the workshops.

Postworkshop evaluations were designed by program staff for workshop participants to rate the usefulness of the workshop topics and effectiveness of the training. Participants also had the opportunity to provide any comments about the workshop in general or ways that the workshops could be improved.

Program staff followed up with workshop participants via emails and/or telephone calls between 1-3 weeks after each workshop. Notes from these follow ups were reviewed to learn what scholars felt was beneficial from the workshops, and whether they had begun using any of the techniques or strategies that were presented during the workshop.

A content analysis of the transcripts from the focus group (held by an external program evaluator during year 1 of the program) provided insight into opinions, perceptions, and experiences of UDL scholars in terms of satisfaction with the program, and perceived outcomes for themselves and their students.

A 2-year retrospective postprogram survey was administered for scholars to provide information about what transpired for them during the time they were participants in the UDL Scholar Program, as well as the 2 years since the program ended. This evaluation utilized quantitative and qualitative methodologies for data collection analysis.
that enabled the researcher to substantiate findings by comparing scholars’ comments of perceptions and experiences with the quantitative data findings.

**Discussion of Findings**

The findings of this study illuminated the experience and perceptions of UDL Scholars as participants in a program that provided: (a) training about UDL techniques and strategies, and (b) assistance to implement UDL in their courses and programs. These findings provided insight into what transpired for a limited number of faculty from 2-year and 4-year institutions. The results provide qualitative and quantitative data necessary to inform college campus policy and practices, and provide a model for future training programs. Each of the research questions are addressed below.

**Research Question 1**

The first research question asked: *What influenced faculty to become a UDL Scholar and employ UDL in their teaching for diverse learners in postsecondary education?* The DOI theory was used as a lens to view the process of individuals making the decision to become a scholar. Using this theory allowed the researcher to see where individuals fit into the different categories based upon the number of workshops they attended before they decided to become a scholar. This also allowed for an analysis of each scholar’s movement along the continuum (from awareness on one end to sharing and continued implementation of UDL on the other) from the time they entered the program to where they were 2 years after the program ended. Responses from the UDL Scholar Postprogram Survey revealed that scholars came into the program for a wide variety of reasons.
Influencing factors included: colleagues had been scholars previously and recommended that they become a participant of the program, it was an opportunity to gain new knowledge and skills, they wanted to improve their teaching, and it was an opportunity to receive funding to create a project. One scholar indicated that when they visited the scholar web page and saw the previous scholars’ different projects, it made them want to become a scholar and implement UDL. Several scholars decided to become involved with the program because respected colleagues had been involved with the program, and recommended they apply to be a scholar.

Twenty-three scholars were placed into the categories of innovators, early adopters, and/or early majority (entered the program having attended 0-2 workshops) from the DOI framework. Ten scholars entered the process in the decision phase; having decided that they wanted to be a scholar and utilize UDL prior to attending any training workshops, seven others made the decision after attending only one training workshop; and another six made the decision to become a scholar after attending their second training workshop. It appears that at the time they decided to become involved with the program, most of the scholars were aware of UDL and several entered the program at the seeker phase; they wanted to gain more skills and knowledge about strategies and techniques, and/or respected colleagues had been involved with the program and told them they should become a scholar.

Looking at these behaviors from the perspective of DOI theory, it makes sense that individuals placed into the early adopter category would enter the program in the decision phase. There was a previous acceptance of the innovation (UDL) in social and professional circles of these scholars; therefore, it was not only acceptable, but also
advisable to take part in the UDL Scholar Program. One of the scholars was placed into
the category of late majority because they came into the program attending at least three
training workshops, and one scholar was placed into the laggard category because they
attended five or more workshops before deciding to become a scholar. One might
think the laggards would fail to share information with their colleagues during their
participation in the program or during the 2 years since the program ended; however,
that is not the case here. One early adopter who decided to become a scholar prior to
attending any workshops, did not share techniques, strategies, or information regarding
UDL with their colleagues, either during the scholar program, or during the 2 years
following the end of their participation. Conversely, it was a laggard, who shared
information while participating as a UDL scholar, but who did not continue during the
2 years after the program. The UDL scholars came to the program in the seeker phase,
having at least some awareness of the innovation (UDL) and actively sought to learn
more by attending training workshops. Ten of the scholars entered the program already in
the decision phase; they had already made the decision to become a scholar before they
attended their first training workshop. Some became scholars because they wanted their
students to have a positive college experience, and they wanted to improve accessibility
for their students. One scholar expressed that attending the workshop on disability and
accessibility made them realize that an improved course for one group improves it for all.
Twenty-three of the scholars moved into what Knowles (1970) would refer to as the
“confirmation” phase, whereby they continued to implement new strategies and/or
techniques into their curriculum during the 2 years since their association as a UDL
Scholar ended.
These findings are consistent with the notion that faculty must recognize that their current teaching strategies and curriculum may be inadequate (Edyburn & Gardner, 2009; Meyer & Rose, 1998). The UDL scholars came to the program willing to participate in trainings to acquire skill and knowledge about UDL (Izzo et al., 2008). Although the number of scholars in the 2008-2011 UDL Scholar Program was small (N = 43 total scholars), this study showed that the acceptance of a new innovation can greatly increase once a few people become involved—depending upon who is involved at the start. The UDL Scholar Program can be used by institutions as a model for beginning their own training programs. It would be beneficial to first contact and recruit individuals who have experience using UDL techniques and strategies to help promote the practice, and generate excitement to learn more. People like hands-on examples of what they can do now, so being able to walk away with even one strategy to increase equity in learning is vital. Like the UDL scholars, an entire college community can use the techniques and strategies of the UDL framework to begin to understand and anticipate the learning needs of a diverse group, and then create usable and accessible environments in which each student can manipulate and understand from their own frames of reference (Hall et al., 2011). The fact that these scholars have come into the program to learn new ways to infuse UDL strategies and techniques into their curricula to make them accessible to as many students as possible is representative of the shift in teaching paradigm discussed and encouraged by Edyburn and Gardner (2009). The scholars have proactively integrated UDL strategies and techniques into their curricula, enhancing the accessibility rather than waiting for students with disabilities to contact them with lists of their accommodation needs. This is important for institutions that want to be on the cutting
edge and be seen as change agents for their students. Not only can faculty move beyond thinking about individual accommodations for students with disabilities, but the entire college, across all departments (i.e., student services, facilities, instruction) can and should be implementing changes that enhance physical access, as well as equitable use of all course materials by all students.

**Research Question 2**

The second question asked: *How did UDL pedagogy influence student learning, as perceived by faculty?* More than half of the scholars (54%) who responded to the postprogram survey reported that a higher proportion of students successfully completed their courses following the implementation of UDL strategies or techniques both during their participation in the program and in the 2 years since participating in the program. Additionally, 54% of the scholars indicated that a wider range of students (in terms of abilities, learning styles, and preferences) were successfully completing their courses following the implementation of UDL strategies and techniques into their curricula while they were participating in the program. Sixty-four percent reported that a wider range of students successfully complete their courses as a result of implementing new UDL strategies in the 2 years since they participated in the program.

An open-ended question on the postprogram survey invited scholars to comment on their perception of the impact of UDL principles on student outcomes. Scholars had been utilizing the principles, techniques, and strategies for approximately 5 years at the time of the postprogram survey, so their answers would have been based upon their experience with students completing and succeeding in their courses. Scholars perceived that students in general are more successful in classes where they felt the instructor had
positive expectations for them, or that the teacher was investing time in their success. This makes sense when one thinks of the time involved in creating course content and materials that are accessible in a variety of formats. The instructors first needed to think about what types of students might be in the class and then create the content that would be accessible for them.

The majority of scholars (16 during the program, and 14 postprogram) utilized all three principles of UDL (i.e., multiple means of representation, multiple means of engagement, and multiple means of expression) in their courses. One example of utilizing multiple means of representation and engagement is that of the scholar who used Captivate™ software to create online lectures, and utilized features to include closed captioning. The intention was to make the lectures accessible to students who are hard of hearing, and they wondered how it would be received by students since there were only a few who needed captions. It turned out that 91% of the students preferred the captions, so while the scholar had accessibility for students with hearing impairment in mind, their efforts benefitted all of the students in the class. The scholar related, “To me, that was just a grand success . . . a lot of people start to become hesitant and again wondering about the small number of students who were being served by these efforts, and it helped everyone as well.”

An outcome for the students appears to be greater involvement or engagement in their own learning process because they are given choices in how they will interact with the learning materials. In response to the impact of UDL on student success, one scholar championed UDL pedagogy, stating that one of the benefits of this approach is that “it is universal in terms of allowing more effective learning to occur.” This scholar explained
that classroom assignments were more accessible for students, and the students had commented that things were easier for them to understand since implementation of the UDL strategies. Some of the scholars shared their belief that the student awareness of the instructor’s expectations of them was clearer following implementation of UDL. An example of how this might occur is through the use of grading rubrics for an online course. The rubric outlines what is expected of the student in terms of what they must include in an assignment or answer to a question in order to get the highest score possible. Some of the scholars were able to experiment with the techniques and strategies to learn for themselves whether UDL would affect student learning and success. For instance, looking back into student records to see how students performed prior to the infusion of UDL principles and strategies into the curriculum enabled one scholar to examine what transpired for the students when they began posting course materials electronically for students to access. For 5 years, the GPA ranged from 2.7 to 3.0. The very first semester of implementing UDL strategies that related to multiple means of representation and engagement increased the GPA to 3.3. To learn whether the change could be attributed to the UDL, the scholar then went back to the old way of teaching (i.e., removed all of the transcripts, guided notes, and PowerPoints), which resulted in the GPA being reduced to what it was previously. That proved, according to the scholar that “they’re getting better grades because we’ve engaged them in technologies that make learning easier and more effective.”

Another scholar experimented in providing multiple means of engagement and expression for students by giving students a choice in how they would complete a course assignment (i.e., WebQuest™ assignments versus a field assignment). The scholar did
not share whether students were more successful following the change in pedagogy, but indicated that he was impressed that the scores between both groups were so similar (4.2 for WebQuest™ and 4.8 for the field assignments). Because the student score rankings were above 4.0 on a range up to 5.0 for both groups of students, the scholar was encouraged to continue using the principles of UDL because of the similarity in student outcomes.

These student outcomes in these examples support Tinto’s (as cited in Racchini, 2005) theory, which points out that the interactions of the student with the institution (including experience and interactions with instructors and course materials) affect student success and persistence. Researchers have found that instructors have more successful outcomes when they approach teaching in such a way that takes the individual student experience and needs into consideration (Darling-Hammond & Snyder, 2000). The UDL scholars have taken the time to think about learning preferences, and the range of skill or ability of the students enrolled in their courses, and adapted the curriculum to appeal to diverse learning needs. Scholars believed that their students were more successful because they were taking the time to create learning environments that addressed the diverse needs of the students in their classes:

Students were inclined to perform better and feel empowered when their instructor took time to reach out to them, stating that, in my opinion, if we adapt the UDL principles to all of our projects and assignments for our students, the desired outcomes of our students will exceed what we expect them to be.

Not only did scholars perceive that UDL increased student success, but student satisfaction with courses also increased, as evidenced by student comments to the scholar
following the infusion of UDL strategies and techniques. This is consistent with a study by Kortering et al. (2008), in which students with and without disabilities reported a higher level of satisfaction with a class following implementation of UDL, as compared with their other academic courses. Both of the student groups in Kortering’s study would like their other instructors to use more UDL interventions in their courses, and, according to scholar reports of student satisfaction with the implementations, their students most likely would like to have more of their instructors use UDL techniques and strategies, as well.

It would stand to reason that the more principles of UDL that were implemented, the greater the perceived student outcomes would be, and the researcher did find such relationships. For example, during their tenure as a scholar, the three who infused only the multiple means of representation reported that there was neither a higher proportion, nor a broader range of students completing courses; however, the two scholars who implemented multiple means of representation along with multiple means of engagement reported a higher proportion and wider range of students succeeding. For the 12 scholars who utilized all three principles (representation, engagement, and expression), 7 reported a higher proportion and wider range of students succeeding, 1 reported a higher proportion only succeeding, and 4 reported that there was no change following implementation. For 11 out of 14 scholars who implemented new techniques and strategies that related to all three principles, there was a perceived change in both the proportion and range of students who were succeeding in their classes, and the same scholar who reported only a change in the proportion of students succeeding while a scholar, also reported a higher proportion of students succeeding in the 2 years after the
program ended. Only 2 of those scholars who implemented all three principles reported no change in the proportion or range of students succeeding in their classes. These figures can lead one to believe that UDL strategies and techniques have affected student success in a positive way; however, there is a fairly small difference (8 percentage points) between scholars who reported a higher number of students succeeding in their classes both as a participant in the program and 2 years after the program ended and those who reported no change. More encouraging for research into the effects of UDL on the success of students with diverse learning needs was the increase of 16 percentage points between scholars who said there was a wider range of students (in terms of diverse learning needs) succeeding in their courses and those who reported no change while they were in the program.

The UDL Scholar Program and this program evaluation both relied heavily on faculty recollection of what transpired for students rather than accessing and surveying the students directly. That type of evaluation was out of the scope of work for the UDL program and was not realistic for the time constraints of the researcher to include in this study. Memories can be flawed, especially after a period of time; therefore, without checking student records it is impossible to be certain that there were changes in student success. It is also possible that some scholars may have reported a change simply by virtue of having implemented the strategies without taking true measures of the effects. The idea that the scholar program provided them with a monetary stipend or other resources may have influenced their decision to report positive outcomes because they wanted their labors to appear in a positive light. One scholar who was very committed to the process performed his own experiment to test whether UDL influenced the outcomes
for his students by removing all of the techniques and strategies he had infused. Once he
compared the differences in student scores, he returned to the UDL infused curriculum, as
he had proven to himself that the UDL principles, strategies, and techniques he used had
positively influenced student outcomes.

To further explore the impact on student outcomes, faculty and institutions that
decide to put UDL programs into place, or infuse UDL into their curriculum need to find
concrete ways of measuring the effect of pedagogical changes. For example, faculty can
document student outcomes by creating two lesson plans: one that includes the principles
of UDL and a second that does not. Students could complete the lesson with no UDL
toward the beginning of the semester, then repeat it toward the end of the semester with
UDL infused into the lesson. Differences in the student scores would indicate whether
UDL influenced student learning. This could also be done as a comparison of multiple
courses taught by one instructor in which UDL is included in some of the courses but not
others, and the differences in student outcomes compared. Outcomes could also be
compared from one semester to another, with no UDL infused during the first semester
course, but added to the course for the second semester. The instructor would use the
first semester student GPA as a baseline, and then compare the GPA of students who
take the class in the second semester. One flaw with the second two designs is that the
outcomes compared would not be from the same group of students, so there would be no
way to know whether some outside factor was the reason for changes in student success.

**Research Question 3**

The third question asked: *How did implementation of UDL strategies result in
ongoing changes in pedagogy among UDL scholars?* Twenty-three out of the 25
scholars (84%) who responded to the UDL Scholar Postprogram Survey reported that they continued to implement new strategies or techniques into their courses and programs during the 2 years postprogram. More than half (16 during the program and 14 postprogram) of the scholars reported that they had incorporated strategies or techniques that related to all three UDL principles (i.e., multiple means of representation, multiple means of engagement, and multiple means of expression). Eighteen percent more scholars reported a wider range of students succeeding as a result of implementing UDL during the 2 years after the program ended and those who reported no change following implementation of UDL.

Eleven of the 14 scholars who reported infusing all three principles of UDL into their curriculum (78%) indicated that there had been an increase in the proportion of students, as well as an increase in the range of students who were successfully completing their courses in the 2 years following their participation in the program. One scholar (who reported the same outcome while in the program) reported an increase in the proportion of students succeeding. Two scholars who used all three principles reported no change in student outcomes due to implementation of all three principles.

It is interesting to note that twice as many scholars implemented principles of UDL that related to multiple means of representation and engagement during their tenure as a UDL scholar (seven scholars) than after the project ended (four scholars). This may be due to the nature of pedagogical change that emphasized providing information and course materials in formats that would appeal to students with a varied range of skills, learning preferences, and abilities. The scholars would have needed to address and make changes to the curriculum to implement multiple means of representation and expression,
so that the course materials would be of benefit to all students, with attention to multiple
means of expression occurring later.

Twenty-four of the scholars (96%) who responded to the postprogram survey
reported that they continued to disseminate information about UDL principles, strategies,
techniques, and/or their innovative project during the 2 years following participation as a
UDL scholar. These scholars shared strategies information and/or techniques in one-on-
one informal settings at professional development workshops and professional
conferences. Additionally, scholars shared information in other formats such as campus
committees including the institutional technology committee, distance education
committee, academic technology committee, tenure/peer review committee, web design
committee, remodeling task force committee, the American’s with Disabilities Act and
universal design for education committee, and department meetings. One scholar
reported that they have not shared any UDL strategies, techniques, or information with
their colleagues in the 2 years since completing their participation in the UDL Scholar
Program.

The scholars realized the value of the principles and strategies once they began
infusing them into their courses and programs. With student success (as perceived by the
scholar) increasing for a larger proportion of students, as well as a broader range of
students in terms of diversity in learning style, preference, and ability, there would be no
turning back to old styles of teaching. During the focus group facilitated by the project’s
external evaluator, one scholar described how he experimented with outcomes of the
pedagogical change by implementing the principles of UDL. As described previously, he
posted all of his materials electronically for students to access to find out whether there
would be any change in student outcomes. The next semester he removed all of the materials to find out whether there would be any changes. He learned that providing the materials electronically did influence student outcomes in a positive way and now posts all materials for his students to access.

Scholar attitudes changed as they grasped the concept of UDL as a philosophy, as well as a framework for instruction. Scholars realized that learning is an interactive experience, with both the instructor and student involved as co-learners, rather than being one-sided where the teacher lectures and the student listens and takes notes.

During the focus group the scholars discussed how the program offered them a new perspective that shifted their practices from that of compliance with policy and regulations, and accommodating students with disabilities, to that of accessibility, and designing learning materials and environments that appealed to a diverse group of students. One scholar explained: “It is the idea that we’re changing the mindset about disability that whatever we’ve come up with as accommodations and services work for all students and benefit the universal learner.” A shift began happening systemically as they began to reframe disability as part of student diversity. Scholars shared that the program taught them how to infuse flexibility into their assignments by offering students alternative ways of completing their assignments. Scholars shared that they became excited when they realized that this program was moving them from a place of mere compliance with ADA related policy on campus to one of accessibility. The issue became how to address the big picture thinking both in services and in teaching, not just in technology and online materials and accessibility that is tangible that way, but how do we address the whole student. It was this understanding of UDL as a framework, or
paradigm, that enabled a scholar to write and implement a policy for including universal design in all aspects of the college, including instruction, student services, and campus facilities. The scholar explained: “If we don’t have policy, then the college isn’t embracing it . . . we need to put policy in place that commits the institution in all of its fingers to bring in universal design.” Another scholar’s project was to implement a fitness course for older adults that met in the community in a series of outdoor settings, such as the beach or at a park. The scholar surveyed the environments to ensure physical access, including restroom accessibility, and would someone using a wheelchair be able to fully participate at the site. It does little good to implement changes to curriculum if a student is not able to access the physical learning environment.

Essentially, scholar attitudes about the teacher/student relationship shifted away from what Freire (2005) described as the banking concept of education. This concept posits that the teacher must fill students with knowledge, as if filling empty vessels. In contrast, Freire explains that real learning occurs only when the student and teacher forms a partnership in which they learn from one another. Thus, the attitude and perceptions about education shifts to being something done with a student, as opposed to being done to a student.

Tinto’s theory (2002) supports the concept of implementing systemwide policy on UDL. Institutions must consider pedagogy and curriculum along with faculty teaching skills when looking at institutional policy to address or enhance student retention (Tinto, 2002). As Astin (1999) explains, institutional policies and practices will benefit student learning and success when polices are in place that encourage student involvement.
These are major changes that institutions need to champion if they truly care about student success. Institutions will need to embrace UDL as a philosophy and implement policy such as one scholar did so that it encompasses every part of campus life, from student services, to instruction and facilities. Institutions need to approach UDL from the standpoint of equity and inclusion for all of their students, beyond the mandated compliance policies. Students must be able to engage with their environments from the moment they step foot (or wheel) onto campus from the pathways, to whether they can open a classroom door, turn on a light switch, a water faucet, or access a computer in the writing lab. Designs for classrooms and buildings should incorporate elements of UD that allow use by all individuals. For example, rather than stairs leading to a front door with a sign pointing to an access ramp at the back of a building, building designs could include a ramped walkway that allows all students access to the building. Desks need to be adjustable to accommodate a variety of body sizes and shapes, as well as wheelchair users. Rather than one end of the counter in student services being lowered to allow a student who uses a wheelchair to speak with staff, the entire counter needs to be low enough that all students, regardless of height can see and access staff behind the counters. This top down approach with policymakers and administration showing enthusiasm, embracing and promoting UDL across the campus culture, is the way to pedagogic change that will have lasting influence on accessibility and equity in learning for students with diverse learning needs.

**Research Question 4**

The fourth question asked: *What measurable UDL Scholar Program outcomes were achieved?* As a funded grant program, there were certain outcome measures that
were mandated by the organization that awarding the funding. Good program objectives generally increase, decrease, or improve upon something, and are measurable within a certain time frame. In order to receive funding, the program was required to provide a compelling case for the need for the program, and include the mandatory Government Performance and Results Act (GPRA, 1993) indicators, which were measures or features that the funding organization wanted to see in the program.

For this grant program, objectives 1 and 2 were the GPRA indicators that were required to be eligible for funding. Specifically, the program intended to (a) address the gaps in educational attainment between students with and without disabilities, and (b) address the gaps or weaknesses experienced by the IHE in meeting the learning needs of postsecondary students with disabilities. The program director and coordinator wrote the program objectives in such a way that funding was awarded for the 3-year period.

It appeared that the UDL Scholar Program was successful in meeting and in most cases exceeding the proposed outcomes of the 3-year project. The following is a discussion of the outcomes that were attained.

**Objective 1.** To increase awareness and knowledge of a minimum 150 faculty and administrators (annually) on issues and strategies relevant to students with disabilities.

Project staff maintained a record of all workshops that included names of UDL scholars and others who participated in the workshops. In addition, pre/post workshop surveys and postworkshop evaluations were utilized to measure changes in awareness and knowledge of the workshop participants. More than 750 college faculty, staff, and administrators attended program events and workshops during the 3-year program. This
is substantially higher than the targeted 150 to be trained annually. Findings from the pre/post workshop surveys indicated that scholar awareness, skill, and knowledge of UDL strategies, techniques, and UDL related topics (Section 508, website accessibility) were increased significantly. The quality of the information allowed scholars to infuse the principles and strategies learned into their courses and programs. Training workshops lasted anywhere from 1.25 hours to full day (6 hour) workshops, depending upon the venue. For instance, professional development trainings for faculty during flex week lasted 1.5 hours and were created to introduce the concept of UDL and capture the interest of faculty to implement ideas from the workshop, while a workshop about using Camtasia™ to enhance course websites lasted 4 hours. In both instances, workshop participants were given strategies and ideas that they could (and according to postworkshop follow-ups did) put into practice upon leaving the workshop. In the majority of cases, the workshop presenters modeled the principles, strategies, and techniques of UDL by using them during the workshops. An example of this was using guided notes where the participants have handouts with the lecture in which they fill in the blanks as the presenter speaks to the group. This was extremely important because it moved the trainings beyond telling faculty how to implement UDL to showing them first-hand how they might integrate some of the strategies into their courses. Workshop participants were given take away items, such as flyers depicting the principles of UDL and ways to infuse them, or resource booklets that participants could be use indefinitely. One scholar from the focus group who had attended a few of the workshops was very excited, saying that the workshops he attended had been “real good”, but the one that
stood out for him was one in which a printed resource book given to workshop participants:

[It] was full of information about 2 years ago that I still keep, still refer back to and it . . . has so much and sums up the essential qualities on the back and everything . . . I went through the PowerPoints that were included in that and some of the other information and found that just an incredible resource.

Even if that scholar had attended only the one workshop, the information provided to him was valuable enough that he continued using the booklet as a guide and resource for years after he attended the workshop. This is consistent with research by Schelley et al. (2011) that found that changes in instructor behavior (implementing UDL principles or techniques) and learning of all students can be enhanced from attending only a few hours of training.

**Objective 2.** To decrease the gap in completion rate between students with and without disabilities by 5% in courses taught by Project Scholars.

Universal Design for Learning addresses the learning needs of all students, and implementation of UDL principles is intended to increase student learning and success for students with diverse learning preferences, abilities, and needs. Thus, one would expect to see improvements in student success or completion rates following faculty training in the principles of UDL. According to a program report that was sent to the funding organization, there was a 3% gap in completion rate for the students with disabilities, as compared with those without disabilities who were enrolled in scholar classes at the end of the first year of the program, and a 4% gap at the end of years 2 and 3. These measures
are an indication that this outcome cannot be realized, as there was no baseline for
measure, and the measured gap is less than the targeted percentage of reduction.

Fourteen of the 24 (58%) scholars who responded to the postprogram survey
question about the proportion of students succeeding indicated that a higher proportion of
their students were successfully completing their courses as a result of implementing
UDL. Sixteen of the 25 who answered the question about the range of students
succeeding indicated that a wider range of students in terms of learning styles, abilities,
preferences, and so forth, were successfully completing their courses following the
infusion of UDL into their courses.

This measurement does not speak to the objective as stated within the proposal.
The wording in the proposal was the measurement that the funding body required for a
program to receive funding. The focus of this objective was the reduction of the
performance gap between students with and without disabilities. The intended measure
was the difference in course completion rate between students with disabilities and
students without disabilities in courses taught by faculty who had attended training
workshops. This objective was difficult to measure as designed for a few reasons. First,
there was not a starting average baseline of measure; instructors had to look at the
completion rates for the previous semester, prior to implementing UDL, and use that as
their baseline for comparison. Second, students with disabilities often do not disclose
their disability to their instructor, or receive services through the disabled student services
and programs department; therefore, not all students with a disability have a documented
disability. The instructor may have an idea that the student has a disability, but cannot be
positively certain. Third, the data collected relied heavily upon faculty recollection of
student completion as opposed to records of that data. Project staff attempted to collect these data via questions on the postworkshop follow up, and on the workshop registration forms. In some circumstances, faculty may not have provided the information requested in reply to the follow-up email or on the workshop evaluation. In addition, the question asked the instructor to estimate to the best of their ability; thus, the data collected were reliant on the ability of the instructor to recall the number of students with and without disabilities who had successfully completed their courses to the best of their ability.

Without consulting student records, and without knowing positively how many students with disabilities were enrolled in the courses, it is very likely that this method of inquiry would result in what could be significantly erroneous calculations. Fourth, formal inquiry into student records that pertained to disability status, grade point average, or course enrollment was outside of the scope of the work plan for the scholar program. Given that his was a training grant, not a research grant, time and resources were dedicated to creating and delivering training and technical assistance. Program staff instead designed a plan to complete a longitudinal study that would allow scholar program staff to track student outcomes via the self-reporting of the scholars on registration forms and through answering questions about student outcomes in the postworkshop follow-up emails and telephone calls over the 3 years of the program.

Even with the difficulty in measuring this outcome, the majority of scholars reported that an increased number of students succeeded in their courses following the scholar’s implementation of the principles of UDL. Institutions have the capacity to study the impact of UDL on student outcomes. Studies can be conducted districtwide to
compare what is happening on the different campuses within the district. This inquiry could also inform a larger, statewide study.

**Objective 3.** *To increase the number of faculty and administrators actively integrating the training concepts and strategies in their courses and programs by 95%.*

Program staff wrote this objective with the supposition that workshop participants (faculty and administrators) in attendance would have little knowledge or skill in using the principles, strategies, and techniques of UDL and therefore, would not be utilizing these strategies or techniques prior to their attendance at the workshop. The percentage was calculated by following up with the participants 2-3 weeks after a workshop to ask them whether they were using any of the techniques or strategies presented in the workshop. For example, if 20 out of 20 participants responded that they were utilizing the information they learned in the workshop, that would be a 100% rate of use.

A review of the program report that was written by program staff and sent to the funding organization at the end of the third year of the program revealed that follow ups with 105 out of 295 workshop participants resulted in finding that 91% of the 105 respondents indicated that they had been infusing UDL into their courses and programs. During each scholar’s tenure with the program, they integrated strategies and techniques related to at least one of the three principles of UDL into the courses they teach and programs they administer.

Focus group transcripts revealed that scholars successfully incorporated the principles of UDL not only in their courses, but utilized the principles of UDL in physical environments through the remodeling of a writing center to include adjustable desks and computer monitors that swiveled to accommodate a variety of users including those who
use wheelchairs. In order to fully integrate UDL throughout the college environment, one scholar was successful in the establishment of an institutional UDL policy that addressed campus-wide access to all physical environments, as well as access to programs, services, and instruction. Along those same lines, other scholars were able to provide new technology such as Read & Write Gold™ and other resources for instructional design such as Captivate™ and Camtasia™ that would have a positive influence on student outcomes.

The research of Pliner and Johnson (2004) support these practices and the concept that UDL provides the framework for making changes in teaching and testing methods, curriculum design, as well as the physical layout of the classroom and campus. In order to promote UDL across campus programs, it was important that scholars gained respect from those in authority. The concepts of UDL must be embraced as a philosophy and a framework for learning in a top down effort for real change to occur and be sustained. To that end, one UDL scholar has implemented UDL policy for the campus that reaches across all aspects of the system, including student services, instruction, and facilities.

It is known that the 43 UDL scholars (100%) over the 3-year term used the techniques and strategies from the workshops in their courses and programs, as they developed an innovative project as part of their tenure in the program. Scholar projects were showcased in Scholar Showcase Briefs and videos that were placed on the program website for others to access as models for their own projects. The UDL Scholar Postprogram Survey revealed that 23 of the 25 UDL scholar respondents (92%) continued to infuse principles, techniques, and strategies into their programs and courses during the 2 years after the program ended. If we look at this objective with the perception that the
scholars were not utilizing UDL principles, techniques, or strategies prior to attending workshops, and then began infusing UDL into their courses and programs following the workshops, then it appears that this objective was met.

As with other program outcomes, the measurement of this outcome relied upon self-reporting of the workshop participants and scholars. As such, it is possible that participants will answer affirmatively because they feel bad for not using the information, or because they want to look good in the eyes of the program staff. This was a difficult measurement because only the percentages of those who responded to follow-up inquiries are known; therefore, there may be a much larger percentage of workshop participants who are using the information they acquired in the workshops. The only known percentages are those of the UDL scholars, who could be tracked much more easily than the workshop participants as a whole.

For institutions of higher education to implement a UDL training program and measure whether the information is being utilized, it would be beneficial to not only inquire about whether they are using the information and which principles are related to their infusion, but also ask them to give more concrete examples of exactly how they are using the techniques or strategies. The scholar briefs and videos were excellent tools, not only for capturing information from the scholars about what, why, and how each scholar utilized UDL, but for disseminating that information to others, as well. This or a similar activity could be built into training requirements as a way to ensure that the participants are providing accurate and timely feedback about the ways they are implementing the information from the workshops. For instance, participants could have access to the UDL page so that they can post updates for others to follow their progress and success. A
study that will follow participants for a longer period of time would be beneficial for learning about long-term outcomes of the changes in policy and practice that are put into place by participants. For instance, we know that a campus-wide policy was instituted by one scholar, but it would be more interesting to be able to follow those outcomes for the college, and share that information with other campuses. A follow up could be conducted on a yearly or bi-yearly basis to monitor the sustainability of newly developed policies and procedures.

**Objective 4.** *To increase access to and dissemination of universal model resources and materials through a minimum of 10 venues (annually).*

Project records indicate that this objective exceeded the targeted number of dissemination opportunities. There were 35 workshops conducted during the 3-year project; UDL scholars presented their projects at four of these workshops, including a scholar spotlight event. In addition, 23 of the 25 scholars who responded indicated that they have shared and continue sharing information about their project and the principles, strategies, and techniques of UDL at conferences and presentations at their colleges, and informally with colleagues. This indicated that the scholars were excited to share the changes they have made in the curricula and hoped to inspire others to embrace the concept of UDL as a framework and best practice.

Universal Design for Learning scholars were assisted to create a Scholar Brief, which highlighted the innovative project that the scholar implemented as a participant in the program. Scholars then used these briefs as handouts when presenting at professional development presentations or other conferences. The briefs were a useful tool for dissemination that would allow presentation participants to have a working understanding
of how the scholar project was carried out, thus enabling participants to use the brief as a model for inspiration of their own innovation.

Twenty-three scholars used the Personal Video Studio (developed as a UDL scholar project by three of the scholars) to record short videos in which they discussed their innovative project, including the purpose of their innovation, and exactly what they did to complete it, often with Power Point or some other means of showcasing the way they infused the principles of UDL. These videos were created to serve as examples to others with interest in UDL and who might like to replicate the way the scholars used UDL in their courses and programs.

The UDL scholar project website is another avenue developed for dissemination and promotion of UDL to a broader audience. The UDL scholar showcase briefs and videos that describe the ways scholars applied the principles of UDL in their courses and programs both during and after participation as a UDL Scholar. Other information on the website includes online UDL training modules, and a section of useful resources and links that are related to UDL. By the end of the third year of the project, there were more than 10,000 hits on the UDL scholar project website. While this number is impressive, it is not clear how many of these hits were due to individual, one-time visitors, and how many can be attributed to people making repeat visits to the website. It is reasonable to believe that individuals accessing information from the website would share that information with others; thus, the program may be much farther reaching and beneficial to more than just the website visitors, the scholars, and their students.

Institutions that embrace the philosophy and practice of UDL will offer opportunities for training of faculty and will provide avenues for sharing and showcasing
the success of faculty at infusing the principles, techniques, and strategies of UDL, not only into the course curriculum, but across all campus operations and within the campus culture. Professional development workshops are an avenue of dissemination that cannot only provide information about the principles of UDL, but also provide hands on activities that enable faculty and staff to immediately put what they learn into practice. Most colleges have a website that would enable easy access to a page developed specifically for sharing of this information. In order to get a more reliable count of website visits to know the reach of dissemination efforts, it will be important for the Information Technology (IT) workers to place a counter that will count individual visits to the site, as opposed to how many times the site is “hit” or visited in general.

**Limitations**

Several limitations, such as the small number of participants in this study, and the fact that the study is limited in scope to only South Coast County, were discussed in Chapter 3. Other limitations that restricted exploration presented themselves as the study progressed, in addition to those previously discussed. These newly emerged limitations are presented below.

First, the UDL Scholar Program staff were not able to accurately measure differences in course completion rates between students with and without disabilities (objective 2). This is partly because not all students with disabilities disclose their disability to their instructor or receive accommodations through the Disabled Student Services and Programs department. Inquiring about and accessing course completion or grade point averages was beyond the scope of the scholar project, as this would have
required an application for approval from the Institutional Review Board (IRB) of each college in which the students were enrolled.

Second, the focus group conducted during the first year provided insight into the perspectives of only six scholars that were participating at that time. Although this gleaned valuable information about the opinions and perceptions of those few UDL scholars, it was a very small representation of a group that was limited to one geographic area.

Third, completing interviews with UDL scholars, to gather qualitative information was beyond the scope of this study. As a program evaluation, the researcher relied heavily upon existing program data and utilized a survey with short open-ended questions to gather opinions and perceptions of the UDL scholars.

Fourth, it was beyond the scope of this study to interview or survey the students about their experience or perceptions as students enrolled in the courses in which UDL scholars implemented their projects. All research that involves gathering information from or about students requires IRB approval from each college in which the students are enrolled. This study was a 2-year retrospective look at what transpired for the students and scholars during the 3 years of the program, plus the 2 years after the program ended. Some of the students attending scholar courses that had UDL infused may have graduated and/or moved on to other colleges by the time this study was conducted. It would be nearly impossible to identify and make contact with the students who were in these classes over the 5-year period covered by this study, and the time constraints for obtaining IRB approvals and conducting that line of inquiry were limited; thus, this was not an option for this study.
Last, the UDL scholar project relied on the scholars to accurately report on student outcomes. It is possible that self-reporting of the scholars could result in erroneous data collected. Scholars may have wanted to look good in the eyes of program staff, and may have reported in such a way that outcomes appeared to be better that they actually were.

**Practical Application of Results**

Outcomes of this study point to the positive impact of the UDL Scholar Program with regard to changes in pedagogy, and improved student learning and success. With these outcomes in mind, the researcher makes the following recommendations for the application of the results.

**Implications for Institutions**

1. Promote dialogue between administrators and faculty about the benefits of UDL for students. Informing administrators and faculty about UDL strategies and techniques implemented by UDL scholars will generate excitement about what utilization can mean for students on their campus. Faculty from different departments can be brought together to share ideas and information about ways that UDL can improve their courses.

2. Implement UDL training for staff and faculty at individual campuses, or as a districtwide effort with the UDL Scholar Program as a model. Trainings could be provided as a specialized program for select individuals such as the UDL Scholar Program, or as a series of professional development trainings that are available to all faculty and staff.

3. Create a community of practice, utilizing DOI to increase the expansion of UDL implementation across all campus disciplines. This will address changes
in ways that UDL is introduced so that it is more appealing to faculty and staff. Using the strategies recommended, such as providing how-to manuals, or examples of other’s implementation, to make it easier for others to adopt and replicate. Faculty with experience can offer peer-to-peer support as less experienced faculty learn to implement the principles of UDL.

Implications for UDL Training Programs

1. Create a database for tracking participants through the workshop series to track information about which trainings, and the number of hours of trainings, each participant has received. This will be useful as a way of investigating the effect that the length of trainings may have on student outcomes.

2. Create a webpage for participants to document their experience and progress with the implementation of UDL, including specific details about how they are using principles, techniques, and strategies, so that others can use their examples as a model. Documentation could be in a narrative with photos similar to the UDL scholar spotlight brief, or could feature videos of the participant explaining in a type of show and tell style, such as those created by the UDL scholars.

3. Develop a database for tracking changes in student GPA following UDL implementation. This could track the influence of UDL on student learning with measurements taken prior to implementation of UDL and then compare differences in student learning following the implementation.
4. Implement website tracking that enables a count of individual visits to the website rather than the number of total website “hits,” which may include multiple visits from the same person.

Implications for Policy

1. Implement UDL policy that encompasses a campus-wide or districtwide perspective. All departments can implement UDL, and some type of award or recognition could be given to the department with the most innovative or successful outcomes. Access and equity for students occurs on more than just the instructional level. Policy is needed to address all elements of the learning environment, including physical space, classroom curriculum, student services, and student programs.

2. Implement programs that inform policy and practice at the district level, which can be gathered and applied to a statewide study on outcomes of UDL for students, faculty, and institutions. When administrators and policymakers enthusiastically embrace and promote UDL, the result will be a sustainable change in pedagogy that will truly influence accessibility and equity.

Implications for Funding

1. Legislation such as the No Child Left Behind Act and Section 504 of the Rehabilitation Act of 1973 as amended require a Free Appropriate Public Education (FAPE) for students with disabilities. Funding has been provided to develop programs for students with disabilities that include making reasonable accommodations for students with disabilities. Utilizing some of the funds to include UDL in course curriculum increases the likelihood of
providing a FAPE to not only students with disabilities, but to all students from Kindergarten through postsecondary education.

2. College initiatives such as the basic skills initiatives are in place to find effective ways to improve student success and completion rates. Funding provided for implementing programs that push these types of initiatives can be used to implement UDL training programs and demonstration programs to explore the effectiveness of UDL to positively impact student outcomes.

Future Research

The infusion of UDL into the curriculum directly affects students. The study of student outcomes from the student perspective, including the student experience, preferences, opinions, and perceptions of changes in pedagogy resulting from the implementation of UDL strategies and techniques is necessary to round out the literature concerning the benefits of UDL to student learning and success.

This dissertation is but one effort to study programs that provide training in implementation and evaluation of training practices and training outcomes in terms of student success. This researcher recommends that studies continue as more universities and community colleges institute training programs that are modeled after the UDL Scholar Program.

Studies into the effect of UDL on student success must include both quantitative information, such as changes in GPA or changes in the number of students succeeding in classes following the infusion of UDL, along with qualitative information from the students about the opinions, concerns, perceptions of any changes in their grades, success, or satisfaction with classes following implementation of UDL. The quantitative
information can be gathered by accessing student records of course completion and GPA, and the qualitative data can be collected via surveys, focus groups, and/or individual interviews.

If an extension study could continue from the results of this dissertation, it would be to perform a follow-up study with the scholars whose reported outcomes did not include experiencing a higher proportion or wider range of students completing their courses. It would be interesting to examine to what may be attributed the lack of change in student completion rate. Possibly there is something lacking in the delivery of the curriculum, for instance, if the scholar utilized techniques related to multiple means of representation, but students needed multiple means of expression to synthesize their learning as it would affect their ability to successfully complete their courses. This would require gathering data from the scholar about the principles, techniques, and strategies used, along with data from students about the ways that they were able to interact with the course materials.

Investigation into how the number of hours of training in UDL that each scholar received prior to using the principles of UDL may have influenced the reported student outcomes in terms of higher proportions or wider ranges of students completing the scholar’s courses. A database can track the workshop hours and topics of training, and student records will reveal whether there is any change in student outcomes following infusion of UDL into the course curriculum.

Other research might examine the level that administrators embrace the concepts and philosophy of UDL and their level of support they provided to UDL scholars as participants in the program. It would be interesting to learn what part, if any, the
administrator support played in the scholars’ interest and level of success in implementing UDL into their courses.

Research into the level that administrators support the integration of UDL into the campus culture can be conducted via a survey of administrators, staff, and faculty to examine the effect administrator attitudes, knowledge, and perceptions of UDL have on faculty and staff attitudes, interest, and ability to infuse UDL into the campus culture. Faculty attitudes about their teaching style and willingness to try different strategies to engage students may have an impact on outcomes following the implementation of UDL into their courses. It would be interesting to study whether the characteristics of the instructor, such as their perceptions about the need for and willingness to implement UDL have an impact on student outcomes following implementation of UDL. In other words, if an instructor infuses UDL into their course, but does so reluctantly, will course outcomes be similar to those of another instructor who is passionate about the opportunity to utilize UDL in their course. Surveys could be conducted with both the instructors and the students to gain insights and make comparisons between what the students experienced and what the instructor believed the student experience to be.

Universal Design for Learning is making its way through education from K-12 into postsecondary education; however, much research consists of studying the training of faculty and the implementation on a course-by-course basis. Information is needed on a larger scale to compare all courses within a department, perhaps to learn whether outcomes from training and implementation will transfer across all classes within the department, or whether certain components of a class lend themselves more readily to the use of UDL than others. Again, gathering quantitative data about student GPA and
course completion rates, as well as qualitative input from students regarding their experience in the classes, will shed light on their opinions and ideas about what sections of a class work well with UDL and those that do not. For instance, in an English course that focuses on reading and writing essays, certain principles of UDL or techniques may work well for the reading component that would not work as well with the writing component.

There is a need for research into the effect of district wide implementation of UDL. More than putting new techniques or technologies into place, this research will provide insight into methods that ensure and sustain long-term systemic change. For example, if we can gather quantitative and qualitative data on a large scale by comparing outcomes of the different colleges within a district. Information would be compared about policies regarding diversity and UDL that may be in place on some campuses but not others, how welcoming or accessible are the physical environments, what are the attitudes of the administration, faculty, and staff about accommodation versus access, and so forth, are some of the lines of inquiry that can and should be followed to learn how each of these factors affect student success and influence equity in learning.

Building further, comparisons of the results of any of the possible studies mentioned previously can be made between districts within a county, or statewide to learn what are the best practices, what could be held up as a model district with elements to be replicated throughout the county or state.

At all levels there is a need to complete more longitudinal studies into the efficacy of training programs, and for gathering more data about the outcomes for students once an instructor begins using UDL in the classroom. Information regarding the principles
used, how utilization evolves as the instructor learns more and experiments more with different strategies and techniques can be collected, as well as student information such as any changes in rate of course completion, changes in GPA, the level of satisfaction students have with the class, student perceptions about the course components as they relate to the principles, techniques, or strategies of UDL that have been implemented. Research is needed to examine what it will take to move from a system of compliance with policy and regulations that center on accommodations to inclusion and accessibility in all aspects of campus culture and environment. Universal Design for Learning scholars experienced such a shift in attitude and thoughts as they learned about the principles of UDL and the strategies and techniques for implementation. Surveys, focus groups, and/or interviews can be used to inquire about their experience and learn whether there was a certain point in their training, or a specific piece of information, that made them realize that UDL is about accessibility. This type of information may provide a basis for trainings that are intended to assist people to begin thinking about UDL in terms of providing access and equity in learning for all students.

**Conclusion**

With the increase of student diversity on college campuses comes an increase in the diversity of student learning styles, preferences, and abilities. There is great need for instructional strategies and techniques to be integrated into the curriculum that will meet the learning needs of a broad range of students, and the need for programs to provide innovative and effective ways of providing training in these methods to community college and university faculty and staff.
This study was limited by the small number of survey participants (25 out of 43 UDL Scholars) and geographically limited to the 2- and 4-year colleges and universities in South Coast County. Results of this study indicate that the UDL Scholar Program was effective in training faculty and staff to meet the learning needs of students on their campuses. Admittedly, there is more research needed in the subject of UDL and the implications for policy and practice in postsecondary education. Although this study was small, it did provide answers to at least a few questions. Fifty-four percent of the scholars who responded reported that changes in pedagogy resulted in course completion of a higher number and wider range of students with diverse learning needs because of the UDL strategies and techniques utilized in their courses. Did the UDL Scholar Program influence long-term change in pedagogy? For the 3 years of the program and the 2 years following scholar participation, the answer is yes, for 64% of the scholars in this study. The demonstrated passion and excitement of the UDL scholars would cause one to believe that their curriculum will continue to evolve with the infusion of new strategies and techniques. For others the campus climate and culture has undergone a change in policy that embraces UDL as a philosophy and a framework that values accessibility and equity. Valuable knowledge and skills have been provided to the scholars through their participation in the UDL Scholar Program that, with continued implementation and dissemination, has the potential to effect long-term change, not only on their campuses, but throughout their districts, counties, and across the nation.
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http://www.hhs.gov/web/policies/accomodation/index.html

Saddle River, NJ: Prentice Hall.

APPENDIX A

Study Recruitment Email Invitation

Greetings!

My name is Janice Goforth-Melroy. I am a Doctoral Student in San Diego State University’s Educational Leadership program.

Because you are one of SDSU’s Universal Design for Learning (UDL) Scholars, you are being invited to participate in a UDL Scholar Postprogram Survey that will be utilized in my dissertation research. The survey has been developed to be taken electronically via the Qualtrics online survey development and administration system and should take approximately 5 minutes of your time.

My study looks into the efficacy and impact of your participation in the UDL Scholar Program. The survey inquires about what helped you to decide to become a UDL Scholar, the principles of UDL that were utilized in your innovative project, perceived changes in student success, including any increase in the percent of students who successfully completed your course after implementing your innovation, and whether you shared what you were learning as a scholar with your colleagues.

Some demographic data such as your age, gender, job title, and racial or ethnic background will be asked; however, supplying such information is voluntary. No identifying information such as your name or other identifying information will be collected, so your responses will be completely anonymous.

By completing this survey, you are giving consent for your information to be included in this research study. Your participation in this study is voluntary; even if you consent to participate, you can change your mind at any time simply by contacting me to tell me you are no longer interested in sharing your views or experience.

The link for you to complete the survey is: (Link will be inserted once the survey has been developed online).

If you have any questions or need any clarification about the questions or purpose of the survey, please contact: Janice Goforth-Melroy, M.S. CRC 619-743-9323; jgoforth@interwork.sdsu.edu

If you have any questions or would like more information about your rights as a research participant please contact the Institutional Review Board (IRB) at: (619) 594-6622 Monday-Friday between 8:00 am and 4:00 pm.

I hope you are as excited to share your experience and perceptions as I am to learn about your experience with the UDL Scholar program!

Thank you so much for your time,
Janice L. Goforth-Melroy, M.S., CRC
APPENDIX B

Universal Design for Learning (UDL) Scholar Post-Program Survey

PART I—Experience in Scholar Program

1) Approximately how many training workshops did you attend before you decided to become a UDL Scholar?
   A) None, I became a scholar before attending any workshops
   B) One
   C) Two
   D) Three
   E) Four
   F) Five
   G) More than 5

Please use the blanks below to answer the following question:

2) What factor(s) influenced you to become a UDL Scholar?

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Likert Scale

On a scale from 1 to 5, with 1 being the least and 5 being the greatest, please indicate the extent to which you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. While I was in the UDL program, a higher proportion of the students who began my course(s) succeeded (with a C or better), as a result of integrating principles and strategies of UDL.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. While I was in the UDL Scholar program, a wider range of students (in terms of student preparation, learning styles, preference, abilities) successfully completed my course(s) as a result of integrating principles and strategies of UDL.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. As a UDL Scholar, I shared strategies and techniques for UDL implementation with my colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Multiple Answer Questions**

In order to expand on the information provided above, please answer the following questions. Please check all that apply:

1) As a UDL Scholar, I incorporated techniques or strategies into my teaching relate to:
   A) Multiple Means of Representation  
   B) Multiple Means of Engagement  
   C) Multiple Means of Expression  
   D) All of the Above

2) As a UDL Scholar, I shared information about UDL techniques and strategies with my colleagues in the following formats or modalities:
   A) Informal one-on-one sharing  
   B) Professional Development Workshops  
   C) Professional Conferences  
   D) Other  
   If Other, please specify______________________________________________

**PART II—Post Scholar Program Experience**

**Likert Scale**

<table>
<thead>
<tr>
<th></th>
<th>1 Strongly Disagree</th>
<th>2 Disagree</th>
<th>3 Neutral</th>
<th>4 Agree</th>
<th>5 Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Since finishing my original scholar project, I have integrated NEW UDL principles and strategies into my courses (or programs).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. As a result of NEWLY integrated principles and strategies, a higher proportion of the students who began the course succeeded (with a C or better).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. As a result of NEWLY Integrated principles and strategies, a wider range of students (in terms of student preparation, learning styles, preference, abilities) successfully completed my course(s).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Since completing the UDL Scholar program, I have shared strategies and techniques for UDL implementation with my colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Multiple Answer Questions

In order to expand on the information provided above, Please answer the following questions.
Please check all that apply:

1) Since completing the UDL Scholar program, new techniques or strategies that I have incorporated into my teaching relate to:
   A) Multiple Means of Representation
   B) Multiple Means of Engagement
   C) Multiple Means of Expression
   D) All of the Above

2) Since completing the UDL Scholar program, I have shared information about UDL techniques and strategies with my colleagues in the following formats or modalities:
   A) Informal one-on-one sharing
   B) Professional Development Workshops
   C) Professional Conferences
   D) Other
   If Other—Please Specify____________________________________

PART III—Comments or Additional Information
Please provide any comments or additional information that you would like to share regarding your experience as a UDL scholar, your perception of the impact of UDL principles on student outcomes, etc.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Thank you for completing the survey!
Universal Design for Learning (UDL) Pre/Post Training Surveys

Universal Design for Learning (UDL) Pre-Training Survey

Directions: This is an anonymous survey of your knowledge of Universal Design for Learning. Your answer to the questions will help us develop and improve the contents of this presentation. It will take about 5 minutes to complete the survey. Please read each statement carefully and answer the questions honestly.

AWARENESS
1. At the present time, how would you rate yourself in terms of understanding the rights of students with disabilities?
   - Very limited
   - Limited
   - Fairly aware
   - Very aware

2. At the present time, how would you rate yourself in terms of understanding the needs of students with disabilities?
   - Very limited
   - Limited
   - Fairly aware
   - Very aware

3. At the present time, how would you rate yourself in terms of understanding the concept of UDL?
   - Very limited
   - Limited
   - Fairly aware
   - Very aware

4. At the present time, how would you rate yourself in terms of understanding the need for UDL?
   - Very limited
   - Limited
   - Fairly aware
   - Very aware

SKILL
5. How would you rate your ability to use the UDL concept to develop a course syllabus?
   - Very limited
   - Limited
   - Good
   - Very good

6. How would you rate your ability to use the UDL concept to develop a course website?
   - Very limited
   - Limited
   - Good
   - Very good

7. How would you rate your ability to effectively assess the learning needs of a student with a disability?
   - Very limited
   - Limited
   - Good
   - Very good

8. How would you rate your skill level in terms of being able to provide appropriate learning environments for students with disabilities?
   - Very limited
   - Limited
   - Good
   - Very good
9. How would you rate your ability to effectively secure information and resources to better serve students with disabilities?
   - Very limited
   - Limited
   - Good
   - Very good

10. How would you rate your ability to accurately identify biased assumptions as they relate to students with disabilities?
    - Very limited
    - Limited
    - Good
    - Very good

**KNOWLEDGE**
At the present time, how would you rate your own understanding of the following terms:

11. Universal Design
    - Very limited
    - Limited
    - Good
    - Very good

12. Universal Design for Learning
    - Very limited
    - Limited
    - Good
    - Very good

13. Accessibility
    - Very limited
    - Limited
    - Good
    - Very good

14. Accommodation
    - Very limited
    - Limited
    - Good
    - Very good

*Thank You!*
Universal Design for Learning (UDL) Post-Training Survey

Directions: This is an anonymous survey of your knowledge of Universal Design for Learning. Your answer to the questions will help us develop and improve the contents of this presentation. It will take about 5 minutes to complete the survey. Please read each statement carefully and answer the questions honestly.

AWARENESS
1. At the present time, how would you rate yourself in terms of understanding the rights of students with disabilities?
   Very limited  Limited  Fairly aware  Very aware
2. At the present time, how would you rate yourself in terms of understanding the needs of students with disabilities?
   Very limited  Limited  Fairly aware  Very aware
3. At the present time, how would you rate yourself in terms of understanding the concept of UDL?
   Very limited  Limited  Fairly aware  Very aware
4. At the present time, how would you rate yourself in terms of understanding the need for UDL?
   Very limited  Limited  Fairly aware  Very aware

SKILL
5. How would you rate your ability to use the UDL concept to develop a course syllabus?
   Very limited  Limited  Good  Very good
6. How would you rate your ability to use the UDL concept to develop a course website?
   Very limited  Limited  Good  Very good
7. How would you rate your ability to effectively assess the learning needs of a student with a disability?
   Very limited  Limited  Good  Very good
8. How would you rate your skill level in terms of being able to provide appropriate learning environments for students with disabilities?
   Very limited  Limited  Good  Very good
9. How would you rate your ability to effectively secure information and resources to better serve students with disabilities?
   Very limited  Limited  Good  Very good
10. How would you rate your ability to accurately identify biased assumptions as they relate to students with disabilities?

   Very limited  Limited  Good  Very good

**KNOWLEDGE**

At the present time, how would you rate your own understanding of the following terms:

11. Universal Design
    
    Very limited  Limited  Good  Very good

12. Universal Design for Learning
    
    Very limited  Limited  Good  Very good

13. Accessibility
    
    Very limited  Limited  Good  Very good

14. Accommodation
    
    Very limited  Limited  Good  Very good

*Thank You!*
APPENDIX D

Universal Design for Learning (UDL) Post-Workshop Evaluation

Please take a few minutes to complete the evaluation. Your feedback is important to us.

**I. Featured Segments of Workshop:**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Fair</th>
<th>Poor</th>
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<tr>
<td>Needs and Origin of Universal Design for Learning (UDL)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Principles of UDL</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Applications of UDL in Education</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Student Perspectives of UDL</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Faculty Perspectives of UDL</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**II. Overall Rating of Workshop:**

<table>
<thead>
<tr>
<th>Rating</th>
<th>Very Much</th>
<th>Somewhat</th>
<th>A Little</th>
<th>Not at All</th>
</tr>
</thead>
<tbody>
<tr>
<td>The workshop increased my understanding of universal design for learning</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>The workshop provided my understanding of universal design for learning</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>The workshop provided me with a forum for identifying identifying universal design approaches</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>The workshop was effective</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I am satisfied with the workshop</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I am satisfied with the Trainer(s)</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**III. Please provide us with your comments about the workshop & suggestions for improvement:**

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
APPENDIX E

Institutional Review Board Approval Letter

Exempt Verification
Reg: 46.101(b)(2) – minimal risk

April 8, 2014

Student Researcher: Janice Goforth-Melroy
Faculty Researcher: Dr. Caren Sax
Department: Educational Leadership and Administration, Rehabilitation & Post Sec Educ
vIRB Number: 1448089
Contract/grant number: Not Applicable
Title: A Program Evaluation: Universal Design for Learning Scholar Component Of the Disability and Diversity Project at San Diego State University
New Title: Universal Design for Learning: A Program Evaluation of Faculty Implementation

Re: Modification and Exempt Verification

Dear Janice Goforth-Melroy:

The above referenced research was reviewed in conjunction with the modification submission and verified as exempt in accordance with SDSU's Assurance and federal requirements pertaining to human subjects protections within the Code of Federal Regulations (45 CFR 46.101). This review applies to the conditions and procedures described in your protocol and fully described within the modification to change your study title to:

- Universal Design for Learning: A Program Evaluation of Faculty Implementation

The determination of exemption is final and requests for continuing review (Progress Reports) are not required for this study. However, if any changes to your study are planned, you must submit a modification request and receive either IRB approval (per 45 CFR 46.110 or 46.111) or IRB verification that the modification is exempt (per 45 CFR 46.101). To submit a modification request, please follow the necessary steps below:

Modification steps:
- Access the protocol via the Webportal (https://sunspot.sdsu.edu/pls/webapp/web_menu_login/)
- Protocol main page click on “Modifications” to enter a report
- Once the report has been filled out completely, click “submit”
- Make sure to email the IRB (irb@mail.sdsu.edu) notifying them that a modification has been submitted.
Additionally, please notify the IRB office if your status as an SDSU-affiliate changes while conducting this research study (you are no longer an SDSU faculty member, staff member or student).

**Graduate Students:** This notification may be used as documentation to register in Thesis 799A. Attach a hard copy of this notice to your Appointment of Thesis/Project Committee form prior to submitting the completed form to Graduate and Research Affairs - Student Services Division.

For questions related to this correspondence, please contact the IRB office [(619) 594-6622 or e-mail irb@mail.sdsu.edu](mailto:irb@mail.sdsu.edu). To access IRB review application materials, SDSU's Assurance, the 45 CFR 46, the Belmont Report, and/or any other relevant policies and guidelines related to the involvement of human subjects in research, please visit the IRB web site at [http://gra.sdsu.edu/research.php](http://gra.sdsu.edu/research.php).

Sincerely,

[Signatures]

Ramona Pérez  
Chair, Institutional Review Board

Choya Washington  
Regulatory Compliance Analyst
Important information for ALL exempt studies:

a) If this research involves the use of existing or secondary data sources, information obtained must be recorded so that subjects cannot be identified, either directly or through identifiers linked to the subjects.

b) If information will be obtained from individual medical records, please check with the organization authorized to provide access to those records to determine whether regulations relating to the Health Insurance Portability and Accountability Act (HIPAA) pertain to your research. Likewise, if academic records are accessed, Federal Education Rights and Privacy Act (FERPA) requirements must be respected. Notify the SDSU IRB office if protocol revisions are necessary to comply with HIPAA regulations.

c) If recruitment will take place through an outside agency or organization, confirm with that institution that you have permission to conduct the study prior to initiation of any study activities. If this research involves the use of existing or secondary data sources, confirm with the data owner that you have permission to access the data.

d) Approval is contingent upon the completion of the SDSU human subjects tutorial (found at: http://www-rohan.sdsu.edu/era/login.php) by all members of the research team. This certification must be renewed every 2 years.